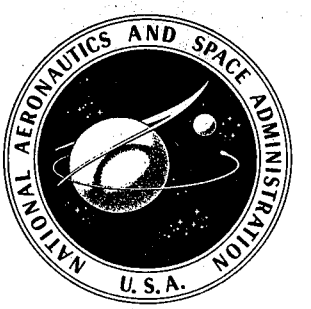
HYDROGEN

TECHNOLOGICAL SURVEY—

THERMOPHYSICAL PROPERTIES



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Preface

This publication is part of a major hydrogen safety review in progress by the NASA Aerospace Safety Research and Data Institute (ASRDI). The objectives of the review include:

1. Recommendations to improve NASA's hydrogen handling practices by comparing NASA and contractor hydrogen systems including the design, inspection, operation, maintenance and emergency procedures.

2. Assessment of the vulnerability to failure of hydrogen equipment from a variety of sources so that hazards may be defined and remedial measures formulated.

3. Contributions to safe hydrogen handling techniques through research.

4. Formulation of criteria and standards on all aspects of hydrogen handling storage and disposal.

This Special Publication is composed of the thermodynamic functions, transport properties, and physical properties of both liquid and gaseous hydrogen. The low temperature regime is emphasized. The tabulation of the properties of normal hydrogen in both SI and engineering units is presented on microfiche in an envelope inside the back cover. The tabulation of parahydrogen is presented in the text. Because the data are detailed beyond that previously available, this handbook should fill an existing need for both the scientific and technical communities.

Solomon Weiss, Acting Director
Aerospace Safety Research and Data Institute
National Aeronautics and Space Administration

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Key Words for NASA and CDC Information Systems

Liquid hydrogen, gaseous hydrogen, solid hydrogen, hydrogen, handbook thermophysical properties, tables, graphs, computer programs, property value uncertainties.

PVT properties, compressibility, virial coefficients, fixed points, melting curve, vapor pressure, ideal gas state.

Enthalpy, entropy, internal energy, free energy, specific heat, heat of transition, T-S diagrams.

Thermal conductivity, viscosity, diffusion, accommodation coefficient, thermal transpiration.

Joule-Thomson effect, Prandtl number, velocity of sound, specific heat input.

Dielectric constant, electrical conductivity, index of refraction, infrared radiation, surface tension, sound absorption, mixtures.

Key Words for ASRDI Information System

(Liquid hydrogen, properties, handbooks)
(Gaseous hydrogen, properties, handbooks)
(Liquid hydrogen, "list properties using keywords listed above")
(Gaseous hydrogen, "list properties using keywords listed above")
(Hydrogen, properties, computer programs)
(Liquid hydrogen, gaseous hydrogen, properties, uncertainties)

1. Introduction

As part of NASA's Aerospace Safety Research and Data Institute (ASRDI) responsibility to provide up to date technical information, this document gathers together the thermophysical properties of hydrogen under one cover. (Chemical properties have been excluded).

The work was performed at the Cryogenic Data Center of the National Bureau of Standards in Boulder, Colorado. The Cryogenic Data Center has been collecting data and documents pertinent to the field for fifteen years and presently has about 100,000 coded entries which may be computer searched to give bibliographies on the physical properties of materials at low temperatures. A computer search of the data center holdings produced a bibliography for hydrogen of about 2500 references. All of these references were considered, some of them do not appear here as a result of the review.

2. Scope and Philosophy

The scope of this handbook is defined as all physical properties of fluid hydrogen (chemical properties were excluded) with no limits on pressure or temperature. Although the solid phase was not included in the original scope, articles dealing with the properties of solid which were encountered during the review of the literature have been noted on the description sheets and values of properties for the solid at the triple point have been included where possible. In addition short descriptions of slush and metallic hydrogen are given. Properties of the isotopes of hydrogen have not been included, except in a few instances, and for the properties of the isotopes the reader is referred to [83866].

Papers on engineering processes utilizing hydrogen were specifically excluded in the bibliographic search and subsequent review. The subject of hydrogen embrittlement of materials is not treated here, see [96890].

The level of review of the properties of hydrogen varies from the extensive tabulations of "critically evaluated" thermodynamic and transport properties to the selection of a few representative values from the literature by persons knowledgeable in the field. In the latter case the data selected were judged to be the most useful to the largest number of potential users of this handbook. For those who need to pursue the subject in greater detail, a list of references is provided. References to articles which treat areas of limited interest in which only a few articles exist have also been pointed out.

2.1 Pagination

The volume has been divided into three major sections. Section A contains a descriptive sheet for each property: Section B contains all the graphs and Section C contains all the tables.

Each major section is preceeded by a table of contents. Two systems of pagination are used. Normal pagination is used on the bottom of each page, keyed to the table of contents in the front of the volume. In the upper right and left corners is another number which is preceeded by the letter of the section. These numbers are keyed to the section table of contents and the number remains constant by property from section to section. For example A-22 is the descriptive sheet for the Joule Thomson coefficient, B-22 is the graph of the Joule Thomson inversion curve, and C-22 is the table of values for the inversion curve. This system is not always possible since some of the tables contain entrys for many different properties, but the descriptive sheet in section A will always indicate the location of graphs or tables if they exist. In addition there is an index which contains many property synonyms and cross references.

2.2 The Descriptive Sheets, Section A

These sheets serve as the starting point for the use of this handbook. For a given property each sheet usually contains the following:

1. A brief description or definition of the property to distinguish between similar sounding terms.

2. A locator of tabular values of the property. The range and units of the tables are given for convenience.

3. A locator of graphs and charts of the property.

4. Mathematical equations which represent the property provided the functional form is simple.

5. One or more values of the property, usually at fixed points to illustrate the range of the property.

6. An estimate of uncertainty is usually given. If an estimate of uncertainty is given it is made on a 2 σ level of probability. This means that there is a 95% chance that new experimental measurements (of equal or greater accuracy) of the property will fall within a 2 σ band of the quoted numbers. The estimate of the uncertainty of a property is seldom straightforward and is often made on the basis of the accuracy of the instrumentation used rather than the random scatter of a given set of data. In the case of a property which is tabulated over a wide range of pressure and temperature, the stated uncertainty is for the most uncertain value and the uncertainty of most of the tabular entries is much less. Exceptions to the above convention are noted individually on the descriptive sheets. The most common exception is the critical region where the uncertainty of most properties is greater than the stated value. In no case should the quoted uncertainty be associated with values from other than recommended sources or values extrapolated from the tables.

7. A list of references is given with each descriptive sheet. Each list of references is seperated into at least two categories, the first being those from which data were actually used or recommended for use and a list of references that were reviewed but not used or recommended. There are, in many cases, references in the

latter category which contain very good data, but are not included in the recommended category because the data for one reason or another are not as well suited to the purposes of this compilation as some others were. (See the section on evaluation).

In addition to the two primary categories of references, the list sometimes contains others. These were introduced during the course of the review when articles were encountered which might be of special interest to a potential user of this handbook. These categories include; High Temperature or High Pressure (beyond the range of tabulations here); Ortho-Para differences; and Solid hydrogen.

2.3 Figures, Section B

Section B is a collection of property charts and diagrams. These charts were taken from the literature in the original form of presentation and consequently the units on the graphs are a complete mix of SI, metric and engineering. The page numbers in the upper right hand corner of section B are preficed with a B and are numerically keyed to section A. In most cases the prime purpose of the charts is to illustrate the behavior of a property over wide ranges of pressure and temperature. Although the graphs will provide adequate values for rough calculations, for precise calculations the tabular values are recommended.

2.4 The Tables, Section C

The tables of properties are collected in section C. The page numbers which appear in the upper right hand corner of section C are preficed by the letter C and are numerically keyed, where possible to sections A and B. Some of the tables contain many properties making it impossible to maintain the page number to property correspondence with sections A and B. The extensive tabulations of thermodynamic and transport properties cover the range from the triple point to 5000 R (3000 K) with pressures to 15,000 psia (100 MPa). They are presented in both SI and engineering units for both para and normal hydrogen. The tabulations of the properties of normal hydrogen are presented in the form of microfich in a jacket on the inside of the back cover.

2.5 The Appendices

There are two appendicies in this report. The first is a bibliography of references which were considered for contribution to this document. The bibliography is arranged by the accession numbers of the Cryogenic Data Center. All of the references which appear in the bibliography appear also in or near the descriptive sheets, however unless the reference was selected as a source of data, no citation is given on the descriptive sheet. The second is an autor index to the bibliography.

2.6 Index

An index is included as an aid to the user. If, for some reason, the information on property cannot be located in section A via the table of contents, the index should be consulted.

3. Computer Programs and Extrapolation

In many instances a computer program is a convenient source of property data. In other instances, particularily where a large number of values are needed in a short time, a computer program to furnish these values is a necessity. For these and other reasons, the use of computer programs to furnish fluid property data has steadily increased in recent years. This increased usage has resulted in a variety of computer programs. At the present time there does not seem to be a single program which will satisfy every need and a choice must often be made on the basis of the particular job requirements. Table 1 gives a list of the more important fluid property programs for hydrogen and some of the pertinent information needed to select the proper program for a particular job. A column by column description of table 1 is given below.

Column 1 lists four general methods used to computerize the thermodynamic properties of fluids. The linear interpolation method is as the name

implies an interpolation on a table of property values stored in the computer. This method is fast but not very accurate and requires more computer core storage than the other methods. The most accurate method, if programmed properly, is the polynomial interpolation method. The disadvantages of the polynomial method are a lack of versatility and the computations are slow relative to the other methods.

A good compromise and a widely used method is the equation of state approach using a modified Benedict Webb Rubin (MBWR) equation. This method offers accuracies only slightly worse than the polynomial interpolation method and has the advantage of being faster, more versatile, and gives a continuous, thermodynamically consistent surface. The main disadvantage of the MBWR is that it is functionally incorrect in the critical region, i.e., $\rho = \rho_c \pm 20\% \rho_c$ and $T = T_c \pm 5\%$.

The nonanalytic equation of state approach (no programs using this method are listed in table 1) does give theoretically correct results in the critical region but these equations usually are difficult to use.

2. The range of validity of a program is given in terms of pressure and temperature limits. Extrapolation of these programs beyond the stated limits is not recommended. If properties are needed beyond the stated range of validity, the list of references for that property in section A should first be scanned as references to properties at extreme temperatures and pressures have been noted there. If extrapolation of one of the programs is necessary, the modified BWR type is the most convenient and least likely to yield large errors.

Table 1. Major Hydrogen Properties Computer Programs

Program Name	1* Type	2 P-T Range	3 List of Properties	4 Accuracy	5 Availability	6 Continuous	7 Modifications	8 Input
Tab Code [80837]	Linear Interpolation	0-5000 psi 25-6000 R	P, T, ρ, H, S, λ, η C_p, C_v	1% Average	NBS Cryogenics Division	No	Para & Equilibrium	P, T & P, H
H_2 Props [98426]	33 term MBWR	0-12000 psi 25-2000 R	P, T, ρ, H, S, C_p, C_v, ω	0.1% Average	NBS Cryogenics Division	Yes	Para, Ortho, Equilibrium & Normal	P, T or D, T
H_2 Gen** [29210]	Polynomial Interpolation	0-15000 psi 25-6000 R	P, T, ρ, H, S, λ, η, ω C_p, C_v, E, γ, RI, ϵ	Better than 0.1% Average	NBS Cryogenics Division	No	Para	P, T
GASP [87293]	20 term MBWR	0-12000 psi 25-2000 R	P, T, ρ, H, S, γ, τ C_p, C_v, ω, $\frac{\partial P}{\partial \rho}$, $\frac{\partial P}{\partial T}$	0.1% Average	NASA	Yes	Para	(P, T) (ρ, T) (T, ρ) (H, P) (S, P)

* Numbers refer to explanations in text

** This program used to calculate tables in section C

3. The symbols used in column 3 of table 1 are defined as follows:

P = pressure

T = temperature

ρ = density

H = enthalpy

s = entropy

λ = thermal conductivity

η = viscosity

c_p = specific heat capacity at constant pressure

c_v = specific heat capacity at constant volume

ε = dielectric constant

γ = surface tension

RI = refractive index

ω = speed of sound

The units of the properties vary from program to program.

4. The accuracy of the properties calculated from these programs varies from property to property within a given program. The accuracies quoted in the table are for densities calculated from a P-T input. Since they are an estimate of the average accuracies, they are most useful as a basis of comparison with the other programs.

5. This column is self explanatory. Copies of the program or use of the program may be had by contacting the agency listed.

6. For certain applications the mathematical continuity of the properties is important. In other words the numbers coming from the program must not contain abrupt changes in the property or derivatives. Such requirements often occur in iterative calculations. If this column has a "No" in it, discontinuities may be expected.

7. The modification refers to the relative orientation of the nuclear spin of the two hydrogen atoms in the molecule. See the explanation in section A under ortho-para modifications.

8. The input to the various programs is given in this column. The units of both input and output of the programs are not mentioned because in some cases there is available a choice of units and in most cases the user converts the units to suit his particular need. An explanation of the input and output is furnished when the program is requested.

4. Evaluation of the Literature

The preparation of this review involved the evaluation of each reference to hydrogen data found in the literature.

The Cryogenic Data Center's storage and retrieval system was quiered for references pertaining to the physical properties of hydrogen (chemical properties excluded), this search yielded 2543 references. The resulting bibliography from the Cryogenic Data Center was further crossreferenced by property which greatly aided the evaluation process.

In many cases preliminary examination of the bibliography for a given property would be sufficient to determine whether or not an article should be included in the final evaluation process a copy of each remaining article was then obtained and evaluation was then made on the basis of content of the article.

4.1 Critical Selection of "Best Values"

When selecting so called "best values" many factors must be taken into consideration. The first tendency is to equate "best" with most accurate, and indeed in some cases this is true, but in other cases it is not. For example, in many engineering problems, a continuous and thermodynamically consistent set of properties is of utmost importance. This is not to say that accuracy is not important and in the selection process, both factors were considered. Selections were made to provide the

most accurate, and consistent set of properties over the widest possible range of pressure and temperature.

In that regard, the tables in sections C-2 and C-5 are thermodynamically consistent and mathematically continuous.

The properties tabulated in sections C-2 and C-5 were calculated by means of a computer program (see section 3) which is available from the Cryogenic Data Center.

5. Acknowledgement

The editor is indebted to many colleagues for their assistance in preparing this volume; however, special contributions were made to this volume by V. J. Johnson who supervised the preparation of the charts and by W. R. Parrish who wrote the section on mixtures. Special thanks go to Phil Angerhofer for his very able assistance in securing the required articles from the literature and to Mildred Birchfield and Salli Schiffmacher for the many hours of typing manuscripts. Paul Ordin and George Mandel of the Lewis Research Center were the Project Manager and Technical Advisor, respectively, for the Aerospace Safety Research and Data Institute.

6. Appendices

6.1 Appendix 1, Bibliography of References

Presented in this appendix are the references which were considered as sources of data for this volume. The references appear in the text or on the descriptive sheets of Section A in either a listing of sources selected or in a section of sources not used. The bibliography is arranged by the accession numbers of the Cryogenic Data Center. In the column headed "authors" the first author is listed. Additional authors, if any, for a given paper are indicated by "et al." Citations for formal publications follow conventional format. Citations for reports or other less formal documents are as complete as possible.

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64187 BEENAKKER,J.J.M. (KAMERLINGH ONNES LABS., LEIDEN, NETHERLANDS)
82798 BEGHI,G.
52734 BEHRINGER,K. KOLLMAR,W. MENTEL,J. (MUNICH TECHNISCHE
34228 BELLEMANS,A. FUKS,S. (UNIVERSITY LIBRE DE BRUXELLES, BELGIUM)
14622 BELL,D.A.
25959 BELL,G.M. FAIRBAIRN,W.M.
45318 BELL,G.M. FAIRBAIRN,W.M. (CHELSEA COLL. OF SCIENCE AND
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34481 BELL,R.J. (NATIONAL PHYSICAL LAB., TEDDINGTON, ENGLAND)
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34369 BELONOGOV,A.V. GORBUNKOV,V.M. (UNITED INSTITUTE FOR NUCLEAR
45432 BELONOGOV,A.V. GORBUNKOV,V.M.
85284 BELONOGOV,A.V. POVAROV,YU.I. DOBROV,V.M. BUTKEVICH,I,K.
53934 BELOZEROVA,V.P.
59647 BELYAEV,YU.N. LEONAS,V.B.
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74201 BEREZNYAK,N.G. BOGAYAVLENSKII,I.V. KARNATSEVICH,L.V.
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27092 BHAGAVANTAM,S.
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51168 BLAGOI,YU.P. KROPACHOV,G.P. PASHKOV,V.V.
61035 BLAGOI,YU.P. PASHKOV,V.V. (AKADEMIYA NAUK UKRAINSKOI SSR,
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29553 BLOOM,M. OPPENHEIM,I. LIPSICAS,M. WADE,C.G. ET AL.
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47822 BOSTANJOGLO,O. LISCHKE,B. (BERLIN TECHNISCHE UNIVERSITAT,
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8009 BOYD,W.K. WHITE,E.L.
42268 BOYD,W.K. BERRY,W.E. WHITE,E.L.
86904 BOYER,K.
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59946 BRAU,C.A. JONKMAN,R.M. (AVCO-EVERETT RESEARCH LAB., EVERETT,
940 BREBACH,W.J. THODOS,G.
34333 BREBACH,W.J.,JR.
59750 BRECKENRIDGE,D.R.
87705 BREEDVELD,G.J.F. PRAUSNITZ,J.M. (CALIFORNIA UNIV., BERKELEY.
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54964 BREWER,J.
59349 BREWER,J. VAUGHN,G.W. (MIDWEST RESEARCH INST., KANSAS CITY,
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67658 BULANIN,M.O. TONKOV,M.V.
70569 BULANIN,M.O. ZHITENEV,F.N. KOUZOV,A.P.
7014 BULATOVA,R.F. KOGAN,V.S. LAZAREV,V.G.
12243 BULATOVA,R.F. KOGAN,V.S. LAZAVEV,V.G.
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30351 BULATOVA,R.F. KOGAN,V.S.
54572 BULATOV,A.S. KOGAN,V.S. (AKADEMIYA NAUK UKRAINSKOI SSR,
85331 BULATOVA,R.F. KOGAN,V.S. KUZIN,I.A. LOSKUTOV,A.I.
10790 BULLE,F.
39186 BURKE,T. LEBOWITZ,J.L. LIEB,E. (YESHIVA UNIV., NEW YORK)
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60954 BURNIER,P.H. MOREAU,J.L. LEHMANN,J.P. (SOCIETE ALSTHOM,
63701 BURNIER,P. DE LA HARPE,A. (AIR LIQUID, SASSENAGE, FRANCE.
68433 BURNIER,P. (SOCIETE ALSTHOM, PARIS, FRANCE)
71753 BURNIER,P.H. (SOCIETE ALSTHOM, MASSY, FRANCE)
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82002 BURNIER,P. MOREAU,J. (SOCIETE ALSTHOM, PARIS, FRANCE)
79779 BURSHTEIN,L. RABINOVICH,V. (ALL UNION PHYSICO-TECH. AND
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28653 BYK,A.
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76374 CAMANI,M. (YALE UNIV., NEW HAVEN, CONN.)
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41837 CARBO,R.
12724 CARERI,G. REUSS,J. BEENAKKER,J.M.
74646 CARMAN,R.L. MACK,M.E. (HARVARD UNIV., CAMBRIDGE, MASS. GORDON
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56734 CARNEVALE,E.H. CAREY,C. MARSHALL,T. UVA,S.
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34450 CARR,N.L. PARENT,J.D. PECK,R.E.
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11264 CASSUTT,L. BIRON,D. VONNEGUT,B.
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87118 CATALAND,G. PLUMB,H.H.
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13779 CATH,P.G. ONNES,H.K.
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37750 CHAKRABORTI,P.K. (LEEDS UNIV., ENGLAND, SCHOOL OF CHEMISTRY)

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80989 CHAPLINE,G.F.,JR. (CALIFORNIA UNIV., LIVERMORE. LAWRENCE
24504 CHAREVSKAIA,D.I. ASTROV,D.N. ET AL.
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33802 CHERNYSHEV,A.K.
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76346 CHERY,D. (ECOLE NATIONALE SUPERIEURE, NANCY, FRANCE. DEPT. OF
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30101 CLARK,R.G. HYMAN,F. WILSON,G.M.
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28146 CLINCH,J.M. KARPLUS,H.B.
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26651 CLUSIUS,K. BARTHOLOME,E.
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6061 CODEGONE,C.
6151 CODEGONE,C.
16296 CODEGONE,C.
16375 CODEGONE,C.
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13983 COHEN,K. UREY,H.C.

22428 COHEN,K. UREY,H.C.
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66961 COLL,C.F.,III HARRIS,A.B. BERLINSKY,A.J. (PENNSYLVANIA
73612 COLL,C.F.,III HARRIS,A.B. (PENNSYLVANIA UNIV., PHILADELPHIA.
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30358 COOK,G.A. DWYER,R.F. (LINDE CO., DIV. OF UNION CARBIDE CORP.,
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45265 COPPOCK,J.B.M.
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8758 COREMANS,J.M.J. BEENAKKER,J.J.M.
13113 COREMANS,J.M.J. BEENAKKER,J.J.M. VAN ITTERBEEK,A.
6331 CORNER,J.
29484 CORRINGTON,L.C. THORNBURY,K.L. HENNINGS,G.
11926 CORRUCCINI,R.J.
23178 CORRUCCINI,R.J.
23360 CORRUCCINI,R.J.
25535 CORRUCCINI,R.J.
26598 CORRUCCINI,R.J.
28391 CORRUCCINI,R.J.
30250 CORRUCCINI,R.J.
30251 CORRUCCINI,R.J.
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17638 COTTON,J.E.
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44913 CRANE,A.
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66508 CROFT,A.J. (OXFORD UNIV., ENGLAND. CLARENDON LAB.)
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28350 CROMMELIN,C.A.
29233 CROMMELIN,C.A. SWALLOW,J.C.
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76054 CULLEN,J.R. MUKAMEL,D. SHTRIKMAN,S. ET AL (UNITED STATES NAVY
6428 CUPPLES,H.L.
28237 CURTISS,C.F. HIRSCHFELDER,J.O.
35812 CURZON,A.E. MASCALL,A.J. (IMPERIAL COLL., LONDON,
19279 CUTHBERTSON,C. CUTHBERTSON,M. (UNIV. COLLEGE, LONDON)
73657 DALGARNO,A. FORD,A.L. BROWNE,J.C. (HARVARD COLL. OBSERVA-
18949 DALTON,J.P.
30108 DALTON,B.J. BARIEAU,R.E.
48936 DANEY,D.E. MANN,D.B. (NATIONAL BUREAU OF STANDARDS, BOULDER,
28638 DANIELIAN,A.
29963 DARROW,K.K.
11137 DAVID,H.G. HAMANN,S.D.
8706 DAVID,W.T. LEAH,A.S.
18763 DAVIES,D.E. SMITH,D. MYATT,J.
44223 DAVIES,D.B. MATHESON,A.J. (ESSEX UNIV., COLCHESTER, ENGLAND)
45254 DAVISON,W.D.
26613 DAVIS,C.O. JOHNSTON,H.L.
67014 DAWSON,R. KHOURY,F. KOBAYASHI,R. (RICE UNIV., HOUSTON,
14418 DAYNES,H.A.
6560 DEAN,J.W.
14023 DEAN,J.W.
45178 DEB,S.K. BARUA,A.K. (INDIAN ASSOCIATION FOR THE CULTIVATION
55189 DEB,S.K. (INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE,
85788 DEB,S. DAS,M. (JADAVPUR UNIV., CALCUTTA, INDIA. DEPT. OF
25259 DEFENSE DOCUMENTATION CENTER
66970 DEFENSE DOCUMENTATION CENTER
8646 DEITZ,V.
517 DEMING,W.E. SHUPE,L.E.
6191 DEMING,W.E. SHUPE,L.E.
6281 DEMING,W.E. DEMING,L.S.
29219 DEMING,W.E. SHUPE,L.E.
61215 DENNER,H. (FRITZ-HABER-INSTITUT DE MAX-PLANCK-GESELLSCHAFT,
68948 DENNE,D.R. (LEICESTER UNIV., ENGLAND. DEPT. OF PHYSICS)
27186 DENNISON,D.M.
53152 DENTON,E.H. HORD,J. JACOBS,R.B. MARTELL,E.A.
6230 DE BOER,J.
9545 DE BOER,J. (AMSTERDAM UNIV.)
12231 DE BOER,J. MICHELS,A.
14621 DE BOER,J. BLAISSE,B.S.
26316 DE BOER,J. (INST. FOR THEORETICAL PHYSICS, UNIV. AMSTERDAM)
26647 DE BOER,J. VAN KRANENDONK,J.
26648 DE BOER,J.
26650 DE BOER,J.
28652 DE BOER,J.
40731 DE BOER,J. BIRD,R.B.
37845 DE CASTRO,E.M. HUSA,D. GAINES,J.R. DAUNT,J.G. (OHIO STATE
38028 DE CASTRO,E.M.
12617 DE GRAAFF,W. TEN SELDAM,C.A.
21794 DE GRAAFF,W.
13296 DE LAET,J.
33981 DE PALMA,J.V. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
37208 DE PALMA,J.V. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
66021 DE REMIGIS,J. WELSH,H.L. (TORONTO UNIV., ONTARIO. DEPT. OF
69692 DE REMIGIS,J. MACTAGGART,J.W. WELSH,H.L. (TORONTO UNIV.,
962 DE TROYER,A. VAN ITTERBEEK,A. VAN DEN BERG,G.J.
82813 DESAI,R.C. KAPRAL,R. (TORONTO UNIV., CANADA. DEPT. OF PHYSICS)

35400 DEUTCH,J.M. KINSEY,J.L. OPPENHEIM,I. (MASSACHUSETTS INST.
37746 DEUTCH,J.M. OPPENHEIM,I. (MASSACHUSETTS INST. OF TECH.,
44771 DEVARAJ,N. HOLLIS HALLETT,A.C. (TORONTO UNIV., ONTARIO,
6217 DEVIENNE,M.
1130 DEWAR,J.
2889 DEWAR,J.
5215 DEWAR,J.
6250 DEWAR,J.
6259 DEWAR,J.
6621 DEWAR,J.
6622 DEWAR,J.
6628 DEWAR,J.
47321 DIAZ PENA,M. LOMBARDERO,M. (INSTITUTO DE QUIMICA
7278 DICIO,A.
6323 DICKINS,B.G.
23821 DICKSON,S.A. MEYER,H.
24955 DICKSON,S.A.,JR.
29574 DICKSON,S.A. MEYER,H. (DUKE UNIV., DURHAM, N. CAROLINA)
37844 DICKSON,S.A. MEYER,H. (DUKE UNIV., DURHAM, N. C., PHYSICS
78217 DIJKEMA,K.M. STOUTHART,J.C. DE VRIES,D.A. (EIDGENOESSISCHE
21022 DILLER,D.E.
27674 DILLER,D.E. (NBS, BOULDER, COLO.)
33233 DILLER,D.E. (CRYOGENICS DIV., NATIONAL BUREAU OF STANDARDS,
35559 DILLER,D.E. MASON,E.A. (MARYLAND UNIV., COLLEGE PARK)
54546 DILLER,D.E. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.)
57801 DILLER,D.E. RODER,H.M. (NATIONAL BUREAU OF STANDARDS,
67006 DILLER,D.E. HANLEY,H.J.M. RODER,H.M. (NATIONAL BUREAU OF
73359 DILLER,D.E. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
10839 DILLEY,J.R.
62540 DITZ,J.M. HILL,C.G.,JR. REID,R.C. (MASSACHUSETTS INST. OF
62628 DITZ,J.M. HILL,C.G.,JR. REID,R.C. (GULF RESEARCH AND
21132 DODGE,B.F. (YALE UNIV., NEW HAVEN, CONN.)
12637 DOKOUPIL,Z.
13735 DOMB,C.
82771 DONDI,M.G. VALBUSA,V. SCOLES,G. (GENOA UNIV., ITALY. ISTITUTO
11940 DOUGLAS,T.B.
39547 DOUGLAS AIRCRAFT COMPANY, INC.
7142 DUBOIS,E.
7146 DUCLAUX,J.
1488 DUGDALE,J.S. MACDONALD,D.K.C.
3142 DULONG,M.
28251 DUMARTIN,S. OKSENGORN,B. VODAR,B.
82539 DUNCAN,A.G. HIZA,M. (NATIONAL BUREAU OF STANDARDS, BOULDER,
39691 DUPUIS,A. (COMMISSARIAT A L≠ENERGIE ATOMIQUE, SACLAY, FRANCE.
24511 DURIEUX,M. VAN DIJK,H.
24745 DURIEUX,M. VAN DIJK,H. TER HARMSEL,H. ET AL.
45688 DURIEUX,M. MUIJLWIJK,R. VAN DIJK,H. (KAMERLINGH ONNES LAB.,
67569 DURIEUX,M. (KAMERLINGH ONNES LAB., LEIDEN, NETHERLANDS)
5643 DUTTA,A.
19652 DWYER,R.F. COOK,G.A.
21872 DWYER,R.F. COOK,G.A.
25302 DWYER,R.F. COOK,G.A.
25316 DWYER,R.F.
28603 DWYER,R.F. COOK,G.A.
28604 DWYER,R.F. COOK,G.A.
29550 DWYER,R.F. COOK,G.A. BERWALDT,O.E. NEVINS,H.E. (UNION
30327 DWYER,R.F. COOK,G.A. SHIELDS,B.M. ET AL. (UNION CARBIDE
34352 DWYER,R.F. COOK,G.A.
38751 DWYER,R.F. COOK,G.A. BERWALDT,O.E. (LINDE CO., TONAWANDA,

41602 DYMOND,J. HILDEBRAND,J.H. (CALIFORNIA UNIV., BERKELEY)
44776 DYMOND,J.H. (CALIFORNIA UNIV., BERKELEY, DEPT. OF CHEMISTRY)
76172 DYNIN,E.A.
50957 DYSON,N. LITTLEWOOD,A.B. (NEWCASTLE-UPON-TYNE UNIV., ENGLAND)
35766 EBERHART,J.G. (SANDIA CORP., ALBUQUERQUE, N. MEX.)
71358 EBNER,C. SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT.
73609 EBNER,C. SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT OF
79021 EBNER,C. SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT. OF
80829 EBNER,C. SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT. OF
83423 EDELMAN,R.B. ECONOMOS,C. BOCCIO,J.
52504 EDER,F.X. (BAYERISCHE AKADEMIE DER WISSENSCHAFTEN, MUNICH, GER-
41963 EDER,O.J. CHEN,S.H. EGELSTAFF,P.A. (ATOMIC ENERGY RESEARCH
87271 EDESKUTY,F.J. BARTLIT,J.R. TREGO,A.L.
45454 EDMISTER,W.C. (CALIFORNIA RESEARCH CORP., RICHMOND)
45529 EDMISTER,W.C. (OKLAHOMA STATE UNIV., STILLWATER)
84495 EDMISTER,W.C. (OKLAHOMA STATE UNIV., STILLWATER)
85595 EDMISTER,W.C. (OKLAHOMA STATE UNIV., STILLWATER)
22602 EDWARDS,D.G.
29221 EDWARDS,A.E. ROSEVEARE,W.E.
26171 EHRLICH,PERCY
8337 ELBE,G. SIMON,F.
33660 EL-BANBI,H. KENNEDY,H.T.
633 ELLENWOOD,F.O. KULIK,N. GAY,N.R.
43943 ELLIS,C.P.
38702 ELROD,C.W.
57544 EL HADI,Z.E.H.A. DORREPAAL,J.A. DURIEUX,M. (KAMERLINGH
24311 EL NADI,M. ABU ZEID,F.
33810 ELZINGA,D.J. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
39486 ELZINGA,D.J. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
52092 ELZINGA,D.J. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
24422 EMERY,V.J. (UNIV. OF CALIFORNIA, BERKELEY)
77066 ERENTS,K. MCCRACKEN,G.M. (UNITED KINGDOM ATOMIC ENERGY
87470 ERENTS,S.K. MCCRACKEN,G.M. (UKAEA RESEARCH GROUP, ABINGDON,
54506 ESCHER,W.
86903 ESCHER,W.J.D.
80375 ESELSON,B.N. BLAGOI,YU.P. GRIGOREV,V.N. MANZHELII,V.G.
19277 ESSEN,L. (NATIONAL PHYSICAL LAB.)
78389 ESTRIN,E.I.
85046 ESTRIN,B.M. SHNYREV,YU.L.
74466 ETTERS,R.D. RAICH,J.C. CHAND,P. (COLORADO
85664 ETTERS,R.D. KULKARNI,N.M. RAICH,J.C. (COLORADO STATE UNIV.,
1015 EUCKEN,A. FRIED,F.
6112 EUCKEN,A.
6113 EUCKEN,A.
6300 EUCKEN,A.
6362 EUCKEN,A.
6365 EUCKEN,A. HILLER,K.
8698 EUCKEN,A. MUCKE,O.
9244 EUCKEN,A.
10913 EUCKEN,A.
10914 EUCKEN,A.
17074 EUCKEN,A. KROME,H.
25978 EUCKEN,A.
34455 EUCKEN,A.
45032 EUCKEN,A.
65157 EUCKEN,A.
82683 EUROPEAN ATOMIC ENERGY COMMUNITY
71431 EVDOKIMOV,V.V. BAKHMAN,N. BALYAEV,A.
61507 EVERETT,D.H. GAINEY,B.W. YOUNG,C.L. (BRISTOL UNIV.,

67625 EWALD,R.
23052 EWING,G.E. TRAJMAR,S. (JET PROPULSION LAB., PASADENA,
28703 EWING,G.E. TRAJMAR,S. (JET PROPULSION LAB., PASADENA, CALIF.)
57469 EWING,G.E. CHEN,HAO-LIN (INDIANA UNIV., BLOOMINGTON. DEPT.
45592 EYRE,D.V. (AIR LIQUIDE CANADA, LTD., MONTREAL, QUEBEC)
19187 EYRING,H. HENDERSON,D. REE,T. (UNIV. UTAH, SALT LAKE CITY)
22243 EYRING,H. MARCHI,R.P. (UNIV. OF UTAH, SALT LAKE CITY)
520 FAGGIANI,D.
56299 FAGGIANI,D.
52047 FAIRBAIRN,W.M. STEEL,M.R. (LANCASTER UNIV., ENGLAND)
59901 FAIRBAIRN,W.M. LOUNDS,W.S. STEEL,M.R. (LANCASTER UNIV.,
1511 FALK,G. MANN,A.
58326 FALLOU,B. GALAND,J. (LABORATOIRE CENTRAL DES INDUSTRIES
69968 FARAG,N. SHAHIN,F. (CAIRO UNIV., EGYPT. FACULTY OF SCIENCE)
75636 FARAG,N. SALAM,E.A. SHANIN,F. (CAIRO UNIV., GIZA, AFRICA.
16308 FARELL,J.L.
2040 FARKAS,A.
9503 FARKAS,L.
18502 FARMER,O.A.
32224 FARMER,O.A. SPRINGER,T.E. FISHER,B.B.
37427 FARMER,O.A.
48467 FARMER,O.A.
72638 FARMER,O.A. HAFER,J.F.
82819 FARRAR,J.M. LEE,Y.T. (CHICAGO UNIV., ILL. JAMES FRANCK INST.)
86450 FARROW,H.M. (PRESIDENT, EXCALIBUR CORP., WALTHAM, MASS.)
5617 FASTOVSKIY,V.G. GONIKBERG,M.G.
9256 FASTOWSKY,W. GONIKBERG,M.
45253 FEBER,R.C. HERRICK,C.C.
36378 FELSTEINER,J.
58323 FELSTEINER,J. (TECHNION-ISRAEL INST. OF TECH., HAIFA. DEPT.
70472 FELSTEINER,J. LITVIN,D.B. ZAK,J. (TECHNION-ISRAEL INST. OF
84290 FELSTEINER,J. FOX,R. FRIEDMAN,Z. (TECHNION-ISRAEL INST. OF
45494 FERRELL,R.T. HIMMELBLAU,D.M. (TEXAS UNIV., AUSTIN)
11041 FICKETT,W. COWAN,R.D.
40655 FISCHER,S.
35500 FISHER,M.E. (KINGS COLL., LONDON, ENGLAND)
37412 FISHER,B.B.
67677 FLAX,L. (NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
41241 FLETCHER,J. HAYDON,S.C. (NEW ENGLAND UNIV., ARMIDALE, N.S.W.,
48370 FLORANT,L.F. SNIDER,H.F.
8044 FLYNN,T.M.
24721 FLYNN,T.M.
44430 FORBES,F.S. (AIR FORCE ROCKET PROPULSION LAB., EDWARDS, CALIF.)
70547 FORG,W.
70762 FORG,W. (LINDE A. G., MUNICH, GERMANY)
26607 FORRO,M.
80017 FORTH,H.J. HOFMANN,A. SCHAFER,P. ET AL
9250 FORTIER,A.
11290 FOSTER,K.W.
30588 FOSTER,P.K. MCNABB,A. PAYNE,C.M.
77414 FOUCHE,D.G. CHANG,R.K. (YALE UNIV., NEW HAVEN, CONN. BECTON
54622 FOUSHEE,B.R.
40882 FOWLE,A.A. (LITTLE (ARTHUR D.) INC., CAMBRIDGE, MASS.)
7206 FOX,G.W. MCCOY,D.O.
64321 FOX,H.W.,JR. BLAHA,R.J.
25355 FOX,T.G.
31692 FRANCIS,A.W.
233 FRANCK,E.U.
6068 FRANCK,E.U.

49484 FRAUENFELDER,R. LANGE,W.J. SINGLETON,J.H.
55265 FREEMAN,M.P. HAGYARD,M.J. (MASSACHUSETTS INST. OF TECH.,
5679 FREETH,F.A. VERSCHOYLE,T.T.H.
7211 FRICKE,H.
439 FRIEDMAN,A.S. HILSENRATH,J.
634 FRIEDMAN,A.
5676 FRIEDMAN,H.L.
5677 FRIEDMAN,A.S. WHITE,D. JOHNSTON,H.L.
6162 FRIEDMAN,A.S.
6231 FRIEDMAN,A.S. OPPENHEIM,I.
5675 FRITTS,E.C.
14224 FRITTS,E.C.
7213 FROLICH,K. TAUCH,E.J. HOGAN,J.J. PEER,A.A.
52177 FROMMHOLD,L. (TEXAS UNIV., AUSTIN)
47639 FUKUDA,A.
82377 FULTON,D.L. LAUFFER,J.R. ZACHARY,A.T. (ROCKETDYNE/NORTH
42075 FUNG,SUI-AN
87652 FURUKAWA,G.T. RIDDLE,J.L. BIGGE,W.R. (NATIONAL BUREAU OF
70946 GACHECHILADZE,N.A. KESHISHEV,K.O. SHALNIKOV,A.I.
21803 GAINES,J.R. DE CASTRO,E.M. DAUNT,J.G. (OHIO STATE UNIV.,
22240 GAINES,J.R. DE CASTRO,E.M. DAUNT,J.G.
29394 GAINES,J.R. DE CASTRO,E.M. DAUNT,J.G.
7223 GALKIN,A.A. MATYASH,I.V.
6161 GALT,J.K.
48521 GAMBILL,W.R. (CARBIDE AND CARBON CHEMICALS CO., CHARLESTON,
27390 GAREIS,P.J. HAGENBACH,G.F.
79769 GEDANKEN,A. RAZ,B. JORTNER,J. (TEL-AVIV UNIV., ISRAEL. DEPT.
9819 GEISELER,G.
48965 GELMAN,L.I. SMOLKIN,YU.V.
43668 GELPERIN,I.I. BOLSHAKOV,P.E. OSTRONOV,M.G.
74349 GENERAL DYNAMICS/CONVAIR, SAN DIEGO, CALIF.
75122 GENERAL DYNAMICS/CONVAIR, SAN DIEGO, CALIF.
75736 GENERAL DYNAMICS/CONVAIR
20486 GEN. DYNAMICS/ASTRONAUTICS
24782 GEORGE,HARRY
25952 GEORGE,HARRY
69552 GEORGE,R.L.
48307 GERSHMAN,R. SHERMAN,A.L.
61674 GERZHIN,A.G. ARKHIPOV,V.T. PERSHIN,N.P. KLIPACH,L.C.
45862 GHOSH,A.K. BATABYAL,A.K. BARUA,A.K. (INDIAN ASSOCIATION FOR
46691 GHOSH,A.K. BARUA,A.K. (INDIAN ASSOCIATION FOR THE CULTIVATION
48202 GHOSH,A.K. BATABYAL,A.K. BARUA,A.K. (INDIAN ASSOCIATION FOR
52001 GHOSH,A.K. BARUA,A.K. (INDIAN ASSOCIATION FOR THE CULTIVA-
40276 GHOSH,M.K. CHATTERJI,A. (INDIAN INST. OF TECH., BOMBAY,
6029 GIACOMINI,F.A.
6292 GIAUQUE,W.F. JOHNSTON,H.L.
6617 GIAUQUE,W.F.
8366 GIAUQUE,W.F. JOHNSTON,H.L.
52172 GIBBONS,R.M. (AIR PRODUCTS AND CHEMICALS, INC., ALLENTOWN, PA.)
63560 GIBBONS,R.M. KUEBLER,G.P.
76630 GIBBONS,R.M. (GAS COUNCIL, LONDON, ENGLAND)
43174 GIBSON,L.A. WILKINSON,W.K. TAMUSAITIS,J.
54294 GIBSON,T.E.
75788 GIBSON,D.K. (AUSTRALIAN NATIONAL UNIV., CANBERRA)
72793 GILLAN,M. HALLEY,J.W. (MINNESOTA UNIV., MINNEAPOLIS. SCHOOL
26609 GILLE,A.
27182 GILLE,A.
69744 GILMAN,J.J. (ALLIED CHEMICAL CORP., MORRISTOWN, N. J.
80120 GINZBURG,V.L. SOBYANIN,A.A.

35430 GLADUN,A. (DEUTSCHEN AKADEMIE DER WISSENSCHAFTEN, FOR-
77508 GLADUN,A.
28646 GLASER,F. GEBHARDT,F.
32735 GLOERSEN,P. DIEKE,G.H. (JOHNS HOPKINS UNIV., BALTIMORE, MD.)
56401 GODNEV,I.N. SVERDLIN,A.S.
6011 GODRIDGE,A.M.
6257 GOFF,J.A. GRATCH,S. VAN VOORHIS,S.W.
29150 GOIG,S.
11555 GOLDANSKII,V.I.
50479 GOLDBERG,F.N. HAFERD,A.M.
29078 GOLDEN,D.E. NAKANO,H. FISHER,L.H. (LOCKHEED MISSILES AND
23598 GOLUBEV,I.F. DOBROVOL≠SKII,O.A.
23787 GOLUBEV,I.F. KAL/SINA,M.V.
41135 GOLUBEV,I.F. SHEPELEVA,R.I.
5657 GONIKBERG,M.G. FASTOWSKII,W.G. GURWITSCH,J.G.
6262 GONIKBERG,M.G.
11346 GOODWIN,R.D.
11625 GOODWIN,R.D. DILLER,D.E. RODER,H.M. WEBER,L.A.
12817 GOODWIN,R.D.
14130 GOODWIN,R.D.
15121 GOODWIN,R.D. DILLER,D.E. RODER,H.M. WEBER,L.A.
15358 GOODWIN,R.D. RODER,H.M.
15403 GOODWIN,R.D.
18567 GOODWIN,R.D. WEBER,L.A.
18707 GOODWIN,R.D.
19646 GOODWIN,R.D.
19896 GOODWIN,R.D.
19898 GOODWIN,R.D.
19899 GOODWIN,R.D.
19900 GOODWIN,R.D.
20182 GOODWIN,R.D.
20183 GOODWIN,R.D.
20255 GOODWIN,R.D.
20547 GOODWIN,R.D. DILLER,D.E. RODER,H.M. WEBER,L.A.
20900 GOODWIN,R.D. DILLER,D.E. HALL,W.J. RODER,H.M.
22174 GOODWIN,R.D.
24724 GOODWIN,R.D.
25536 GOODWIN,R.D.
27199 GOODWIN,R.D.
29396 GOODWIN,R.D.
30889 GOODWIN,R.D.
31188 GOODWIN,R.D.
35138 GOODWIN,R.D.
40017 GOODWIN,R.D.
41005 GOODWIN,R.D. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
42233 GOODWIN,R.D.
44622 GOODWIN,R.D. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.,
51027 GOODWIN,R.D.
53409 GOODWIN,R.D.
54736 GOODWIN,R.E.
56460 GOODWIN,R.D.
62901 GOODWIN,R.D.
63091 GOODWIN,R.D. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
65711 GOODWIN,R.D. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
21177 GOOD,R.J. FERRY,G.V. (GENERAL DYNAMICS/ASTRONAUTICS,
61114 GOOD,R.J.
72452 GOOD,R.U. HOPE,C.J. (STATE UNIV. OF NEW YORK, BUFFALO.
54804 GOPAL,E.S.R. VAIDYA,S.N. GAMBHIR,R.D. GOVINDARAJAN,K.
77224 GORBANESCU,G.

34419 GORDON,R.G. CASHION,J.K. (HARVARD UNIV., CAMBRIDGE, MASS.)
42117 GORDON,A.R. BARNES,C. (TORONTO UNIV., ONTARIO, CANADA)
52004 GORDON,R.G. ARMSTRONG,R.L. TWARD,E. (HARVARD UNIV., CAM-
31282 GORELIK,L.I. REDKOBORODYI,Y.M. SINITSYN,V.V.
57537 GORELIK,L.L. SINITSYN,V.V. (KURCHATOV INST. OF
84687 GOTO,R.
62589 GOWLLAND,R.W.
34510 GOZZINI,A. (ISTITUTO DI FISICA DELL UNIVERSITA, PISA, ITALY)
63368 GRACKI,J.A. FLYNN,G.P. ROSS,J. (BROWN UNIV., PROVIDENCE,
64318 GRACKI,J.A. FLYNN,G.P. ROSS,J.
5952 GRANET,I.
442 GRATCH,S.
59453 GRAY,P. HOLLAND,S. MACZEK,A.O.S. (LEEDS UNIV., ENGLAND)
56376 GRAY,R.D. RENT,N.H. ZUDKEVITCH,D. (ESSO RESEARCH AND
64887 GREENBERG,J.M. DE JONG,T.
52666 GREENE,N.E.
9435 GREGORY,H.
26930 GREGORY,H.S.
86468 GREGORY,D. (INSTITUTE OF GAS TECHNOLOGY, CHICAGO, ILL.
86483 GREGORY,D.P. (INSTITUTE OF GAS TECHNOLOGY, CHICAGO, ILL.)
38572 GREW,K.E.
40966 GREW,K.E. HUMPHREYS,A.E. (EXETER UNIV., DEVON, ENGLAND)
41359 GREW,K.E. JOHNSON,F.A. NEAL,W.E.J. (UNIVERSITY COLL. OF THE
44818 GRIER,N.T.
9399 GRIEVES,R.B. THODOS,G.
56768 GRIGGS,E.I. WINTER,E.R.F. SCHOENHALS,R.J.
27064 GRIGOREV,V.N. (ACAD. SCI., UKR. SSR)
34471 GRIGOREV,V.N.
82898 GRIGOREV,F.V. KORMER,S.B. MIKHAILOVA,O.L. ET AL
23183 GRIGORIEV,V.N. RUDENKO,N.S.
444 GRILLY,E.R.
446 GRILLY,E.R.
87236 GROLMES,M.A. FAUSKE,H.K.
55044 GROSS,U.E.,JR. MANDAL,R.P. LAWSON,T.W.
56203 GRUMER,J. STRASSER,A. VAN METER,R.A.
7262 GRUNEISEN,E. MERKEL,E.
6063 GUELPERINE,N.I. NAIDITCH,I.M.
42114 GUERECA,R.A. RICHARDSON,H.P. GORDON,J.L. ET AL
47684 GUERRERI,G. (SNAM PROGETTI, MILAN, ITALY)
32861 GUEVARA,F.A. WAGEMAN,W.E.
67939 GUEVARA,F.A. MCINTEER,B.B. WAGEMAN,W.E. (LOS
6718 GUGGENHEIM,E.A. MCGLASHAN,M.L.
635 GUILLIEN,R.
11233 GUILLIEN,R.J.
39379 GUNN,R.D. CHUEH,P.L. PRAUSNITZ,J.M. (CALIFORNIA UNIV.,
41511 GUNN,R.D. CHUEH,P.L. PRAUSNITZ,J.M. (CALIFORNIA UNIV.,
11006 GUNTHER,P.
43534 GUPTA,G.P. SAXENA,S.C. (RAJASTAN UNIV., JAIPUR, INDIA)
64932 GUSEWELL,D. SCHMEISSNER,F. SCHMID,J. (EUROPEAN
7268 GUSH,H.P. HARE,W.F.J. ALLIN,E.J. WELSH,H.L.
5990 GUTSCHE,H.
20645 GUYE,P.A. BATUECAS,T.
20646 GUYE,P.A. BATUECAS,T.
11271 HAAR,L. FRIEDMAN,A.S. BECKETT,C.W.
63755 HACKAM,R. (ENGLISH ELECTRIC CO., LTD., STAFFORD, ENGLAND)
49593 HAHNEMANN,H.W.
24323 HALFERDAHL,A.C.
81186 HALLMAN,N.M. (UNIVERSAL OIL PRODUCTS CO., DES PLAINES, ILL.)
45682 HALL,J.A.

46053 HALL,J.A. BARBER,C.R. (BUREAU INTERNATIONAL DES POIDS ET
15502 HALL,L.A.
30103 HALL,L.A.
46118 HALL,W.J. MCCARTY,R.D. RODER,H.M.
61485 HALPERN,B. GOMER,R. (CHICAGO UNIV., ILL. DEPT. OF
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18851 HAMANN,S.D.
68850 HAMA,J. NAKAMURA,T. (OSAKA UNIV., JAPAN. FACULTY OF
42140 HAMMEL,E.F. WILLIAMSON,K.D. EDESKUTY,F.J. BRICKWEDDE,F.G.
16361 HAMMICK,D.L.
30752 HAMRIN,C.E.,JR.
37940 HAMRIN,C.E.,JR. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
38756 HAMRIN,C.E.,JR. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
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57473 HANLEY,H.J.M. MCCARTY,R.D. SENGERS,J.V. (NATIONAL BUREAU
66267 HANLEY,H.J.M. MCCARTY,R.D. INTEMANN,H. (NATIONAL BUREAU
5928 HARASIMA,A.
16834 HARASIMA,A.
19704 HARASIMA,A.
42678 HARASIMA,A. (INTERNATIONAL CHRISTIAN UNIV., TOKYO, JAPAN)
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79998 HARA,E.H. MAY,A.D. (COMMUNICATIONS RESEARCH CENTRE, OTTAWA,
33181 HARDY,W.N. (BRITISH COLUMBIA UNIV., VANCOUVER, CANADA)
52018 HARDY,W.N. SILVERA,I.F. KLUMP,K.N. SCHNEPP,O. (NORTH
57265 HARDY,W.N. SILVERA,I.F. MCTAGUE,J.P. (NORTH AMERICAN
69752 HARDY,W.N. SILVERA,I.F. MCTAGUE,J.P. (NORTH AMERICAN
5924 HARE,W.F.J. ALLIN,E.J. WELSH,H.L.
48380 HARIGEL,G. HORLITZ,G. WOLFF,S.
63407 HARIGEL,G. HILKE,H.J. ROGERS,A. ET AL (EUROPEAN
8379 HARKNESS,R.W. DEMING,W.E.
1603 HARMAN,S.D.
87577 HARMSEL,H.TER
13770 HARRISON,H. FITE,W.L. GUTHRIE,G.L.
22446 HARRISON,D.J.
76325 HARRISON,H.R. SPRINGETT,B.E. (MICHIGAN UNIV., ANN ARBOR.
36009 HARRIS,A.B. HUNT,E. (PENNSYLVANIA UNIV., PHILADELPHIA, DEPT.
50616 HARRIS,A.B. (PENNSYLVANIA UNIV., PHILADELPHIA)
52862 HARRIS,L.B. (XEROX CORP., ROCHESTER, N. Y.)
55003 HARRIS,A.B. AMSTUTZ,L.I. MEYER,H. MYERS,S.M. (PENNSYL-
58632 HARRIS,L.B. (XEROX CORP., ROCHESTER, N. Y.)
61660 HARRIS,A.B. (PENNSYLVANIA UNIV., PHILADELPHIA. DEPT. OF
65178 HARRIS,A.B. (PENNSYLVANIA UNIV., PHILADELPHIA. DEPT. OF
70167 HARRIS,A.B. (PENNSYLVANIA UNIV., PHILADELPHIA. DEPT.
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85687 HARRIS,F.E. KUMAR,L. MONKHORST,H.J. (UTAH UNIV., SALT LAKE
86758 HARRIS,A.B. BERLINSKY,A.J. MEYER,H. (PENNSYLVANIA UNIV.,
16213 HARRY,D.P.,III
8382 HARTECK,P. SCHMIDT,H.W.
24423 HARTLAND,A. LIPSICAS,M. (RUTGERS UNIV., NEW BRUNSWICK,
54498 HARTMANN,B.
63481 HARTMANN,H. MANN,R. NEUMANN,A. (FRANKFURT UNIV., WEST
8754 HASS,W.P.A. SEIDEL,G. POULIS,N.J.
11610 HASS,W.P.A. POULIS,N.J. BORLEFFS,J.J.W.
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76332 HAUFE,S. TANNEBERGER,K.
66432 HAUL,R. PUTTBACH,E. (HANOVER TECHNISCHE HOCHSCHULE, WEST
6164 HAWKINS,G.A.
69085 HAYDUK,W. CHENG,S.C. (OTTAWA UNIV., ONTARIO. DEPT. OF

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32705 HECHT,G. HOLSTE,C.
5921 HECK,R.C.H.
219 HECTOR,G.L. WOERNLEY,D.L.
23736 HEHS,W.A. MILLER,G.E.
30950 HEINRICHS,J. (LIEGE UNIV., BELGIUM)
10795 HEINZINGER,K.
13645 HEINZINGER,K. KLEMM,A. WALDMANN,L.
45177 HELLEMANS,R. VAN ITTERBEEK,A. VAN DAEL,W. (INSTITUUT
48912 HELLER,P. (BRANDEIS UNIV., WALTHAM, MASS.)
40982 HELLWARTH,R.W. (HUGHES RESEARCH LABS., MALIBU, CALIF.)
19694 HENAULT,P.B. FENNEMA,P.J. BUFFHAM,B.A.
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17833 HENDERSON,D. KIM,S. EYRING,H.
21016 HENDERSON,D.
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71222 HENGSTEBECK,R.J.
1617 HENNING,F. HEUSE,W.
2169 HENNING,F.
2928 HENNING,F.
8699 HENNING,M.F. OTTO,J.
10916 HENNING,M.F. OTTO,J.
20896 HENNING,F. HEUSE,W.
27995 HENNING,F. OTTO,J.
69429 HENRY,R.J.W. (KITT PEAK NATIONAL OBSERVATORY, TUCSON, ARIZ.)
25963 HERCUS,E.O. LABY,T.H.
36387 HERCUS,E.O. LABY,T.H.
32363 HERMANS,L.J.F. DE GROOT,J.J. KNAAP,H.F.P. BEENAKKER,J.J.M.
64075 HERMANS,L.J.F. KOKS,J.M. KNAAP,H.F.P. BEENAKKER,J.J.M.
69685 HERMANS,L.J.F. KOKS,J.M. HENGEVELD,A.F. KNAAP,H.F.P.
70538 HERMANS,L.J.F. SCHUTTE,A. KNAAP,H.F.P. BEENAKKER,J.J.M.
64200 HERZBERG,G. (NATIONAL RESEARCH COUNCIL OF CANADA, OTTAWA,
5967 HERZ,W.
18167 HERZ,W.
87569 HESS,R.
11291 HEUMANN,F.K.
3754 HEUSE,W. OTTO,J.
16701 HEUSE,W. OTTO,J.
47612 HEYLEN,A.E.D. DARGAN,C.L.
35294 HEYMANN,D. KISTEMAKER,J. (LABORATORIUM VOOR
54089 HIBBARD,R.R. EVANS,A.,JR.
49645 HIGGINS,R.G. MCCONARTY,W.A. ANTHONY,F.M.
330 HILDEBRAND,J.H.
30925 HILDEBRAND,J.H. (CALIFORNIA UNIV., BERKELEY)
46220 HILDEBRAND,J.H. (CALIFORNIA UNIV., BERKELEY)
19697 HILLIER,I. WALKLEY,J.
28008 HILLIER,I.H. WALKLEY,J. (IMP. COLL. SCI. TECHNOL.,
30694 HILLIER,I.H. JENKINS,W.I. WALKLEY,J. (IMPERIAL COLLEGE OF
32400 HILLIER,I.H. ISLAM,M.S. WALKLEY,J. (IMPERIAL COLL. OF.
5962 HILL,R.W. RICKETSON,B.W.A. SIMON,F.
6354 HILL,R.W. RICKETSON,B.W.A.
6416 HILL,R.W. LOUNASMAA,O.V.
8384 HILL,R.W. SCHNEIDMESSER,B.
9988 HILL,R.W. SCHNEIDMESSER,B.
453 HILSENRATH,J. BECKETT,C.W. BENEDICT,W.S. ET AL
5959 HILSENRATH,J. TOULOUKIAN,Y.S.

7314 HIMSTEDT,F. WIDDER,R.
46880 HIRATA,M. HAKUTA,T.
71281 HIROSAWA,H. TANIMOTO,M. SEKIGUCHI,T. (TOKYO UNIV., JAPAN)
3284 HIRSCHFELDER,J.O. BIRD,B.R. SPOTZ,E.L.
27840 HIRSCHFELDER,J. STEVENSON,D. EYRING,H.
16135 HIZA,M.J. HERRING,R.N.
45223 HIZA,M.J. HECK,C.K. KIDNAY,A.J. (NATIONAL BUREAU OF
52743 HIZA,M.J. HECK,C.K. KIDNAY,A.J. (NATIONAL BUREAU OF STAN-
64924 HIZA,M.J. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO. INST.
67015 HIZA,M.J. DUNCAN,A.G. (NATIONAL BUREAU OF STANDARDS, BOULDER,
77791 HIZA,M.J. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
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66423 HOEPFNER,A. (HEIDELBERG UNIV., WEST GERMANY)
79875 HOFFMAN,M.L. (MCDONNELL DOUGLAS CORP., SANTA MONICA, CALIF.)
79877 HOFFMAN,M.L. (MCDONNELL DOUGLAS CORP., SANTA MONICA, CALIF.)
30030 HOFMANN,A.
43294 HOFMANN,A.
454 HOGE,H.J. ARNOLD,R.D.
6084 HOGE,H.J. LASSITER,J.W.
6507 HOGE,H.J. MEYER,C.H. MCCOSKEY,R.E.
40177 HOIBERG,J.A.
801 HOLBORN,L. OTTO,J.
6328 HOLBORN,L. OTTO,J.
6713 HOLBORN,L. OTTO,J.
8715 HOLBORN,L.
84285 HOLCOMB,W.K. HALLEY,J.W. (MINNESOTA UNIV., MINNEAPOLIS. SCHOOL
63976 HOLLECK,G.L. (TYCO LAB., INC., WALTHAM, MASS.)
45871 HOLLEMAN,G.W. EWING,G.E. (INDIANA UNIV., BLOOMINGTON)
55734 HOLLEMAN,G.W.
66099 HOLLENBACH,D. SALPETER,E.E. (HARVARD COLL. OBSERVATORY,
49092 HOLLERAN,E.M. (ST. JOHNS UNIV., JAMAICA, N. Y.)
10647 HOLLEY,C.E. WORLTON,W.J. ZEIGLER,R.K.
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58986 HOMMA,S. MATSUDA,H. (KYOTO UNIV., JAPAN. DEPT. OF CHEMISTRY)
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79715 HOMMA,S. MATSUDA,H.
13161 HONIG,R.E. HOOK,H.O.
24274 HOOD,C.B.,JR. VOGELHUBER,W.W. ET AL.
39306 HOOD,J.H.
87572 HOOVER,W.G. KEELER,R.N. VAN THIEL,M. ET AL
58491 HOPFINGER,E.J. ALTMAN,M. (PENNSYLVANIA UNIV., PHILADELPHIA.
25271 HORD,JESSE
70439 HORD,J. VOTH,R.O.
87446 HORD,J.
58956 HORLITZ,G. WOLFF,S. HARIGEL,G.
57827 HORTON,T.R.
15679 HOUSLEY,R.M.
8695 HOVI,V.
32868 HOYLAD,J.R.
54819 HOYLE,F. WICKRAMASINGHE,N.C. REDDISH,V.C. (CAMBRIDGE UNIV.,
83572 HUBBARD,W.B. SLATTERY,W.L.
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86503 HUEBLER,J. ANDERSON,P.J.
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22841 HUNT,J.L. WELSH,H.L. (MCLENNAN LABORATORY,
80571 HUPPLER,D.
22175 HUST,J.G. GERMANN,F.E.E. STEWART,R.B.
28223 HUST,J.G. STEWART,R.B.
30756 HUST,J.G. HALL,L.A.

49620 HUST,J.G.
55972 IIT RESEARCH INSTITUTE
87662 IORDANSKII,S.V. LOKUTSIEVSKII,O.V. VUL,E.B. ET AL
29524 ISENBERG,L.
17964 ISHIDA,Y.
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87648 ISHIMOTO,H. NAGAMINE,K. KIMURA,Y. (TOKYO UNIV., JAPAN. DEPT.
37443 ISRAEL,S.L. HAWKINS,T.D. HYMAN,S.C.
42530 ISRAEL,S.L. HAWKINS,T.D. SALTER,R.T. HYMAN,S.C.
43058 ISRAEL,S.L. HAWKINS,T.D. SALTER,R.F. HYMAN,S.C.
66569 IVAKIN,B.A. SUETIN,P.E. VAKHLOV,A.S. (URAL POLYTECHNIC
24322 IWASAKI,H.
81115 JACOBI,N. SCHNEPP,O. (UNIVERSITY OF SOUTHERN CALIFORNIA, LOS
18526 JACOB,M.
7355 JACYNA,W.
41326 JAIN,D.C. SAHNI,R.C. (NEW YORK UNIV., N. Y.)
87272 JALILI,M. KIDNAY,A.J.
48233 JAMES,H.M. RAICH,J.C. (PURDUE UNIV., LAFAYETTE, IND.)
48526 JAMES,H.M. VAN KRANENDONK,J. (PURDUE UNIV., LAFAYETTE, IND.)
49910 JAMES,H.M. (PURDUE UNIV., LAFAYETTE, IND.)
65299 JAMES,H.M. (PURDUE UNIV., LAFAYETTE, IND. DEPT. OF PHYSICS)
68388 JAMES,H.M. (PURDUE UNIV., LAFAYETTE, IND. DEPT. OF PHYSICS)
33474 JANES,G.S.
85126 JANICEK,P.
15639 JANSEN,L. MAZUR,P.
7362 JAQUEROD,A. SCHEUER,O.
41159 JAQUEROD,A. SCHEUER,O.
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47821 JARVIS,J.F. RAMM,D. MEYER,H. MILLS,R.L. (DUKE UNIV.,
58403 JARVIS,J.F. MEYER,H. RAMM,D. (DUKE UNIV., DURHAM, N. C.
72099 JARVIS,J.F.
83444 JASPER,J.J. (WAYNE STATE UNIV., DETROIT, MICH.)
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60994 JEAN-LOUIS,M. BAHREINI,M. VU,H. (LABORATOIRE DES HAUTES
60995 JEAN-LOUIS,M. BAHREINI,M. VU,H. (LABORATOIRE DES HAUTES
73720 JEAN-LOUIS,M. THIERY,M.M. VU,H. VODAR,B. (CENTRE
81589 JEAN-LOUIS,M. VU,H. (CENTRE NATIONAL DE LA RECHERCHE
68981 JEFFERIES,M.J. MATHES,K.N. (GENERAL ELECTRIC CO.,
73081 JEFFERIES,M.J. MATHES,K.N.
64468 JELLISON,J.C. COLLIER,R.S. MULLEN,L.O. RICHARDS,R.J.
32402 JENKINS,W.I. WALKLEY,J. (IMPERIAL COLL. OF SCIENCE AND
72036 JENSEN,H.L. NAST,T.C. GLASSFORD,R.M. ET AL (LOCKHEED
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46953 JEWETT,D. MAKRIDES,A.C.
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12681 JOHNSON,V.J. (EDITOR)
424 JOHNSTON,H.L. SWANSON,C.A. WIRTH,H.E.
463 JOHNSTON,H.L. BEZMAN,I.I. HOOD,C.B.
464 JOHNSTON,H.L. WHITE,D.
575 JOHNSTON,H.L. WHITE,D. WIRTH,H. ET AL
2952 JOHNSTON,H.L. POWERS,R.W. ALTMAN,H.W.
5522 JOHNSTON,H.L. WHITE,D.
5523 JOHNSTON,H.L. KELLER,W.E. FRIEDMAN,A.S.
5888 JOHNSTON,H.L. MCCLOSKEY,K.E.
5889 JOHNSTON,H.L. GRILLY,E.R.
8199 JOHNSTON,H.L.
9219 JOHNSTON,H. CLARKE,J.B. RIFKIN,E.B. KERR,E.C.

46119 JOHNSTON,H.L.
46128 JOHNSTON,H.L.
5892 JOHNS,H.E.
23393 JOHNS,H.E. WILHELM,J.O. (UNIV. OF TORONTO, CAN.)
40801 JOLLEY,J.E. HILDEBRAND,J.H.
73296 JONAH,D.A. KING,M.B. (SIERRA LEONE UNIV., FOURAH BAY)
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40915 JONES,I.W.
45050 JONES,I.W. (EXPLOSIVES RESEARCH AND DEVELOPMENT ESTABLISHMENT,
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63093 JONES,M.C. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
65842 JONES,M.C. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO. INST.
45255 JONES,P.M.S. GIBSON,R.
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10827 JOSEPHY,E.
62372 JOUANIN,C.
26635 JOULE,J.P. THOMSON,W.
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6393 JUSTI,E.
26636 JUSTI,E.
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39337 KAMINISHI,G. TORIUMI,T.
62447 KAMINISHI,G. TORIUMI,T. (TOHOKU UNIV., SENDAI, JAPAN)
5911 KANNULUIK,W.G. MARTIN,L.H.
41557 KAPLAN,R. (YALE UNIV., NEW HAVEN, CONN.)
23253 KARPLUS,M. (COLUMBIA UNIV., N.Y., N.Y.)
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40328 KASKE,G. (HULS AG, MARL, GERMANY)
28870 KATORSKI,A. EBERHART,J.G. WHITE,D.
85276 KAVTARADZE,N.N. PROVOTOROV,B.I.
7387 KAYE,G.W.C. SHERROTT,G.G.
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5511 KEESOM,W.H. SCHMIDT,G.
5512 KEESOM,W.H. HOUTHOFF,D.J.
6235 KEESOM,W.H. BIJL,A. VAN DER HORST,H.
6276 KEESOM,W.H. HOUTHOFF,D.J.
6326 KEESOM,W.H.
6413 KEESOM,W.H. SCHMIDT,G.
10620 KEESOM,W.H. MACWOOD,G.E.
10623 KEESOM,W.H. MACWOOD,G.E.
10625 KEESOM,W.H. KEESOM,P.H.
13911 KEESOM,W.H. ONNES,H.K.
13978 KEESOM,W.M.
15709 KEESOM,W.H. DE SMEDT,J. MOOY,H.H.
16284 KEESOM,W.H. LISMAN,J.H.C.
16286 KEESOM,W.H. LISMAN,J.H.C.
26637 KEESOM,W.H. TUYN,W.
27127 KEESOM,W.H. ONNES,H.K.
31739 KEESOM,W.H.
43407 KEESOM,W.H. KEESOM,P.H.
31903 KEIL,T.H. GOLD,A. (UNIV. ROCHESTER, N. Y.)
12357 KELLER,W.E. FRIEDMAN,A.S. JOHNSTON,H.L.
81837 KELLER,C.W.
224 KELLEY,K.K.
3867 KELLEY,K.K.

7396 KELLEY,K.K.
62895 KELLEY,J.H. WEINER,R.L. COMPITELLO,F.E.
69541 KELLY,H.P. (VIRGINIA UNIV., CHARLOTTESVILLE. DEPT. OF PHYSICS)
27464 KEMBLE,E.C. VAN VLECK,J.H.
17393 KERRISK,J.F. ROGERS,J.D. HAMMEL,E.F.
475 KERR,E.C.
41212 KESSELMAN,P.M. (LOMONOSOV (M.V.) ODESSA TECHNOLOGICAL INST.,
45982 KESSELMAN,P.M. RABINOVICH,V.A.
5507 KESTIN,J. PILARCZYK,K.
6154 KESTIN,J. WANG,H.E.
11832 KESTIN,J. LEIDENFROST,W.
22249 KESTIN,J. NAGASHIMA,A.
25055 KESTIN,J. WANG,H.E.
77045 KESTIN,J. RO,S.T. WAKEHAM,W.A. (BROWN UNIV., PROVIDENCE, R.
5504 KEYES,F.G.
5573 KEYES,F.G.
10548 KEYES,F.C.
11114 KEYES,F.G. TOWNSHEND,B. YOUNG,L.H.
18850 KEYES,F.G. ONCLEY,J.L.
19286 KEYES,F.G. (MIT, CAMBRIDGE)
28650 KEYES,F.G.
5501 KEYES,R.W.
9752 KHARITON,YU
12855 KIELICH,S.
16832 KIHARA,TARO
34506 KIHARA,T.
85203 KIHARA,T.
26247 KIM,S.K. ROSS,J. (BROWN UNIV., PROVIDENCE, R. I.)
31280 KIM,S.K. ROSS,J.
32674 KIM,S.K. FLYNN,G.P. ROSS,J. (BROWN UNIV., PROVIDENCE, R.I.)
55626 KIM,S. HENDERSON,D. BARKER,J.A. (WATERLOO UNIV., ONTARIO)
10218 KING,C.R.
75126 KING,J.A. (ROCKETDYNE, CANOGA PARK, CALIF. ADVANCED
8917 KINNEY,G.R.
6765 KINOSHITA,M. OISHI,J.
19365 KIRN,MAX
75067 KIRSHENBAUM,A.D. (ICATINNY ARSENAL, DOVER, N. J.)
35528 KISELEV,YU.V. MALEV,M.D.
27443 KISS,Z.J. GUSH,H.P. WELSH,H.L.
27956 KISS,Z.J. WELSH,H.L.
52468 KISS,Z.J.
38556 KITAGAWA,H.
45504 KITAGAWA,H. INOUE,A.
12150 KLEIN,R. SCHEER,M.D. WALLER,J.G.
54120 KLEIN,W.M. HOFFMAN,D.K. DAHLER,J.S. (MINNESOTA UNIV.,
5495 KLEMENCIC,I.
14541 KLEMENCIC,I.
30447 KLING,G.
33635 KLIPPING,G. SCHMIDT,F. (FRITZ-HABER-INSTITUT DER MAX-PLANCK-
33636 KLIPPING,G. SCHMIDT,F.
38220 KLIPPING,G. SCHMIDT,F.
57689 KLIPPING,G. (FRITZ-HABER-INSTITUT DE MAX-PLANCK-GESELLSCHAFT,
65536 KLUMP,K.N. SCHNEPP,O. NOSANOW,K.H. (UNIVERSITY OF SOUTHERN
8760 KNAAP,H.F.P. KNOESTER,M. VAREKAMP,F.H. BEENAKKER,J.J.M.
11574 KNAAP,H.F.P. BEENAKKER,J.J.M.
12194 KNAAP,H.F.P. KNOESTER,M. BEENAKKER,J.J.M.
12424 KNAAP,H.F.P. KNOESTER,M. KNOBLER,C.M. BEENAKKER,J.J.M.
27831 KNAAP,H.F.P. (UNIV. LEIDEN, NETH.)
37872 KNAAP,H.F.P. SLUIJTER,C.G. BEENAKKER,J.J.M. (KAMERLINGH

37873 KNAAP,H.F.P. HERMANS,L.J.F. BEENAKKER,J.J.M. (KAMERLINGH
41438 KNAAP,H.F.P. HERMANS,L.J.F. JONKMAN,R.M. BEENAKKER,J.J.M.
59906 KNAAP,H.F.P. HERMANS,L.J.F. SCHUTTE,A. BEENAKKER,J.J.M.
52512 KNIGHT,J.A.,JR.
8395 KNOBLER,C.M. BEENAKKER,J.J.M. KNAAP,H.F.P.
43194 KNOESTER,M. TACONIS,K.W. BEENAKKER,J.J.M. (KAMERLINGH ONNES
42101 KNOX,B.P. EBERLE,H.R.
42103 KNOX,B.P. EBERLE,H.R.
5494 KNUDSEN,M.
68026 KOBELT,G.
5493 KOBE,K.A. LONG,E.G.
21134 KOBE,K.A. LYNN,R.E.,JR. (B.F. GOODRICH RES. CENTER,
61017 KOCHER,R.M. BROWN,A.E.
19291 KOCH,JOHN
6253 KOEHLER,W.F.
40564 KOEHL,B.G. HODGE,W. WILLIAMS,D.N.
6288 KOEPPE,W.
6813 KOEPPE,W.
10793 KOEPPE,W.
13737 KOEPPE,W. EDER,F.X.
14232 KOEPPE,W.
15255 KOEPPE,W.
18026 KOEPPE,W.
30452 KOEPPE,W.
52066 KOEPPE,W. (KERNFORSCHUNGSANLAGE, JUELICH, WEST GERMANY.
13272 KOGAN,V.S. LAZAREV,B.G. BULATOVA,R.F.
13743 KOGAN,V.S. LAZAREV,B.G. BULATOVA,R.F.
24558 KOGAN,V.S. BULTATOV,A.S. IAKIMENKO,L.F.
29055 KOGAN,V.S. LAZAREV,B.G. BULATOVA,R.F.
29056 KOGAN,V.S. LAZAREV,B.G. OZEROV,R.P. ET AL.
66761 KOGAN,V.S. MILENKO,U.A.
72574 KOGAN,V.S. MILENKO,YU.YA. GRIGOROVA,T.K. (ACADEMY OF
81988 KOGAN,V.S. BULATOV,A.S. YAKIMENKO,L.F. (ACADEMY OF
5366 KOHNSTAMM,P. WALSTRA,K.W.
7425 KOHNSTAMM,P.H. WALSTRA,K.W.
42989 KOLOS,W. WOLNIEWICZ,L. (CHICAGO UNIV., ILL.)
10682 KOLSKY,H.G.
56334 KOMPANEETS,V.YA.
47292 KONAREVA,V.G. RUDENKO,N.S.
649 KORDES,E.
5491 KORDES,E.
47815 KORVING,J. HULSMAN,H. SCOLES,G. ET AL (KAMERLINGH ONNES
38133 KOSOV,N.D. KURLAPOV,L.I. (KIROV (S.M.) KAZAKH STATE UNIV.,
72326 KOTOUSOV,L.S. (LENINGRAD POLYTECHNIC INST., USSR)
67028 KRAMER,H.L. HERSCHBACH,D.R. (HARVARD UNIV., CAMBRIDGE, MASS.
67029 KRAMER,H.L. (HARVARD UNIV., CAMBRIDGE, MASS. DEPT. OF
40191 KRASCELLA,N.L.
29053 KRAUSS,M. MIES,F.H.
23478 KRAUS,TH.
56338 KRECHEVSKII,I.R. KAZARNOVSKII,YA.S.
69424 KRICHESVSKII,I.R. KAZARNOVSKIY,YA.S.
52109 KRIEGLER,R.J. WELSH,H.L. (TORONTO UNIV., ONTARIO, CANADA.
57553 KRIEGLER,R.J.
37603 KRINBERG,I.A.
67667 KRISHNA SWAMY,K.S. WICKRAMASINGHE,N.C. (NATIONAL AERONAUTICS
67747 KRISHNA SWAMY,K.S. DONN,B. (NATIONAL AERONAUTICS AND SPACE
84705 KRIVORUCHKO,O.P. BUYANOV,R.A.
58589 KRUMHANSL,J.A. WU,S.Y. (CORNELL UNIV., ITHACA, N. Y. LAB.
79036 KRUMHANSL,J.A. WU,S.Y. (CORNELL UNIV., ITHACA, N. Y. LAB. OF

24116 KUBIN,R.F. PRESLEY,L.L. (AMES RESEARCH CENTER)
32407 KUDIAN,A. WELSH,H.L. WATANABE,A. (UNIV. TORONTO, CAN.)
46407 KUDIAN,A. WELSH,H.L. WATANABE,A. (TORONTO UNIV., ONTARIO,
69695 KUDIAN,A.K. WELSH,H.L. (TORONTO UNIV., ONTARIO. DEPT. OF
66249 KUNKLE,J.S. WILSON,S.D. COTA,R.A. (EDITORS)
63220 KUNZ,R.G. KAPNER,R.S. (ESSO RESEARCH AND ENGINEERING,
79853 KURATA,F. SWIFT,G.W. (KANSAS UNIVERSITY ENDOWMENT ASSOCIATION,
26030 KUSS,E.
5484 LACHOWICZ,S.K.
7150 LACHOWICZ,S.K.
60151 LALITA,K. BLOOM,M. NOBLE,J.D. (BRITISH COLUMBIA UNIV.,
55726 LALLEMAND,P. SIMOVA,P. (HARVARD UNIV., CAMBRIDGE, MASS. DIV.
30359 LANDER,H.R. DWYER,R.F. COOK,G.A. (WRIGHT-PATTERSON AIR
47303 LANGEMEYER,A.
73446 LANGHOFF,P.W. GORDON,R.G. KARPLUS,M. (HARVARD UNIV.,
81468 LANGHOFF,P.W. (HARVARD UNIV., CAMBRIDGE, MASS. DEPT. OF
74375 LAPWORTH,K.C. (NATIONAL PHYSICAL LAB., TEDDINGTON, ENGLAND.
75572 LARANJEIRA,M.F. CUNHA,M.A. FRONTEIRA,E. SILVA,M.E.
84258 LARIMORE,D.B. CHRISTENSEN,R.T. (CHEVRON RESEARCH CO., SAN
68172 LARSSON,K.E. DAHLBORG,U. SKOELD,K. (ROYAL INST. OF TECH.,
54541 LASAREV,B.G. SCHUBNIKOV,L.W.
63219 LATIMER,R.E. (AEROJET-GENERAL CORP., EL MONTE, CALIF.)
87759 LATIMER,R.E. (ENVIROGENICS CO., EL MONTE, CALIF.)
59401 LAZAREV,YU.A. BAZHULIN,P.A.
7460 LEDUC,A.
16877 LEDUC,A.
22251 LEDUC,M.A.
84490 LEE,B.-I. ERBAR,J.H. EDMISTER,W.C. (OKLAHOMA STATE UNIV.,
74575 LEE,BYUNG-IK EDMISTER,W.C. (OKLAHOMA STATE UNIV., STILLWATER)
65424 LEE,R.J. RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV.,
71562 LEE,R.J. RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV.,
73665 LEE,R.J. RAICH,J.C. (PURDUE UNIV., FORT WAYNE, IND. DEPT.
76127 LEE,R.J. RAICH,J.C. (PURDUE UNIV., FORT WAYNE, IND. DEPT. OF
72918 LEE,T.J. (ROYAL OBSERVATORY, EDINBURGH, SCOTLAND)
78981 LEE,T.J. (UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ABINGDON,
50675 LEE,W.B.
74078 LEHMANN,J.P. (SOCIETE ALSTHOM, PARIS, FRANCE)
450 LEIPUNSKY,O.
44063 LEITES,I.L. ADLIVANKINA,M.A.
8399 LELAND,T.W. KOBAYASHI,R. MJELLER,W.H.
52153 LELAND,T.W.,JR. CHAPPELEAR,P.S. (RICE UNIV., HOUSTON, TEX.)
6334 LENNARD-JONES,J.E. COOK,W.R.
17965 LENNARD-JONES,J.E. DEVONSHIRE,A.F.
26033 LENNARD-JONES,J.E.
27838 LENNARD-JONES,J.E.
6031 LENOIR,J.M. COMINGS,E.W.
25237 LENOIR,J.M.
31645 LENOIR,J.M.
57014 LENOIR,J.M. (BRAUN(C.F.) AND CO., ALHAMBRA, CALIF.)
72334 LEONTEVA,A.V. STROILOV,YU.S. LAKIN,E.E. BOLSHUTKIN,D.N.
56863 LE MOUNIER,J. (SOCIETE L AIR LIQUIDE, SASSENAGE, FRANCE)
76063 LE NEINDRE,B. (CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE,
77618 LE NEINDRE,B.
16063 LEWIS,B. VON ELBE,G.
7048 LIANG,S.C.
35293 LIANG,S.C. (NATIONAL RESEARCH COUNCIL, OTTAWA, CANADA)
59322 LIBBY,L.M. THOMAS,F.J. (COLORADO UNIV., BOULDER)
10747 LICHT,W. STECHERT,D.G.
45843 LIELMEZS,J. (BRITISH COLUMBIA UNIV., VANCOUVER, CANADA)

58501 LIGI,J.J. (TEXAS ALKYLS INC., DEER PARK)
6738 LILEY,P.E.
10731 LILEY,P.E.
57884 LILEY,P.E. (PURDUE UNIV., LAFAYETTE, IND.)
71553 LIM,T.K. LINDER,B. (FLORIDA STATE UNIV., TALLAHASSEE. DEPT.
78291 LINDER,F. SCHMIDT,H. (TRIER-KAISERSLAUTERN UNIV., GERMANY.
81997 LINDE,H. (LINDE A.G., WIESBADEN, GERMANY)
67053 LINDSTROM,K. KJELLANDER,H. JONSSON,C. (LUND INST. OF TECH.,
62811 LINFORD,R.G. HILDEBRAND,J.H. (CALIFORNIA UNIV., BERKELEY.
61003 LIN,S.T. HSU,H.W. (TENNESSEE UNIV., KNOXVILLE. DEPT. OF
14272 LIPSICAS,M.
27292 LIPSICAS,M. BLOOM,M.
37745 LIPSICAS,M. HARTLAND,A. (RUTGERS UNIV., NEW BRUNSWICK, N. J.,
27876 LITCHFIELD,E.L. PERLEE,H.E.
21181 LITTLE,A.D., INC.
47574 LIU,F.F. (QUANTUM DYNAMICS, INC., TARZANA, CALIF)
50164 LIU,F.F. (QUANTUM DYNAMICS INC., TARZANA, CALIF.)
62792 LIU,KER FAH
16502 LOCHTERMANN,E.
48376 LOCKHEED MISSILES AND SPACE COMPANY
60657 LOCKHEED MISSILES AND SPACE COMPANY
51145 LOEB,M.B.
74545 LOEB,M.B. (COMMONWEALTH ASSOCIATES INC., JACKSON,
59402 LOFTUS,T.A.
10748 LOHRISCH,F.W.
5339 LONDON,F.
27110 LONDON,F.
69300 LONGSQUEUE,A.M. LALLEMAND,P. (FACULTE DES SCIENCES, PARIS,
8401 LONG,E.A. BROWN,O.L.I.
67122 LONG,H.M. (UNION CARBIDE CORP., TONAWANDA, N. Y. LINDE DIV.)
40787 LORENZ,L.
17994 LOSENICKY,Z.
31624 LOS,J. SLIEKER,C.J.G.
32686 LOS,J. SLIEKER,C.J.G.
43582 LOTZ,W.
24318 LOURIE,H.
24332 LOURIE,H.
60141 LOWKE,J.J. PARKER,J.H.,JR. (WESTINGHOUSE RESEARCH LABS.,
28168 LOW,J.W.
77610 LUCAS,K. (TECHNISCHE UNIVERSITAET, BERLIN, WEST GERMANY.
83762 LUCAS,K. (TECHNISCHE RUHR-UNIV., BOCHUM, WEST GERMANY. INST.
82534 LUDTKE,P.R.
60980 LUDWIG,B.M. VOITLANDER,J. (MUNICH UNIV., WEST GERMANY)
78093 LUKASIK,J. DUCUING,J. (PARIS UNIV., ORSAY, FRANCE. LAB. DE
9486 LUMMER,O. PRINGSHEIM,E.
6046 LUNDBERG,H.A.
37961 LUND,L.M. BERMAN,A.S. (UNION CARBIDE NUCLEAR CO., OAK RIDGE,
6799 LUNT,R.W.
43261 LUSSANA,S.
658 LUTZ,O.
82018 LU,P.L. DABORA,E.K. NICHOLLS,J.A. (PICATINNY ARSENAL,
31310 LYCKMAN,E.W. ECKERT,C.A. PRAUSNITZ,J.M.
10677 LYDERSEN,A.L. GREENKORN,R.A. HOUGEN,O.A.
81203 LYNNWORTH,L.C. CARNEVALE,E.H. (PANAMETRICS, INC., WALTHAM,
27514 LYON,R.N.
63772 LYUSTERNIK,V.E.
18846 MACLEOD,D.B.
27208 MACLEOD,J.A. GILLETTE,P.R.
61502 MACRURY,T.B. SAMS,J.R. (BRITISH COLUMBIA UNIV., VANCOUVER.

55629 MACTAGGART,J.W. HUNT,J.L.
84024 MACTAGGART,J.W. WELSH,H.L. (TORONTO UNIV., CANADA. DEPT. OF
68381 MAITLAND,G.C. SMITH,E.B. (OXFORD UNIV., ENGLAND. PHYSICAL
78072 MAITLAND,G.C. SMITH,E.B. (OXFORD UNIV., ENGLAND. PHYSICAL
207 MAJMUDAR,V.D. OKA,V.S.
51208 MAJUMDAR,D.K. (KALYANI UNIV., WEST BENGAL, INDIA)
16490 MAKITA,TADASHI
28129 MAKITA,T.
78382 MALISHENKO,S.P. SHVALB,V.G.
81975 MALYSHENKI,S.P.
55604 MAMONOV,JU.V. ULYBIN,S.A.
27957 MANGEOT,B. GUY,J. CABARET,F.
57017 MANN,D.B.
41593 MANN,J.B. BLAIS,N.C.
18839 MARGENAU,HENRY
1106 MARKHAM,J.J. BEYER,R.T. LINDSEY,R.B.
29937 MARKOV,V.P.
10436 MARKOWSKI,H.
542 MARON,S.H. TURNBULL,D.
20642 MARON,S.H. TURNBULL,D.
26756 MARON,S.H. TURNBULL,D.
26766 MARON,S.H. TURNBULL,D.
50685 MARTEAU,P. GRANIER,F. VU,H. VODAR,B.
5904 MARTINEZ,J.P. ONNES,H.K.
16291 MARTINEZ,J.P. ONNES,H.K.
87219 MARTYNOVSKY,V.S. ALECKSEEV,V.P. BONDARENKO,L.F.
4403 MARYOTT,A.A. BUCKLEY,F.
12019 MARYOTT,A.A. BUCKLEY,F.
16867 MARYOTT,A. SMITH,E.R.
51604 MASALOV,Y.F.
40226 MASH,D.I. MOROZOV,V.V. STARUNOV,V.S. FABELINSKII,I.L.
485 MASI,J.E.
5567 MASLAN,F.D. LITTMAN,T.M.
27837 MASON,E.A. ISLAM,M. WEISSMAN,S. (UNIV. OF MARYLAND,
32823 MASON,E.A. AMDUR,I. OPPENHEIM,I. (MARYLAND UNIV., COLLEGE
34551 MASON,E.A. WEISSMAN,S. (MARYLAND UNIV., COLLEGE PARK)
41365 MASON,E.A. RICE,W.E. (WISCONSIN UNIV., MADISON)
41790 MASON,E.A. MONCHICK,L.
54463 MASON,E.A. KRONSTADT,B. (MARYLAND UNIV., COLLEGE PARK)
71868 MASON,E.A. SANDER,S.I. (BROWN UNIV., PROVIDENCE, R. I.)
7896 MASSON,M.A.
47930 MASSON,A.
19687 MATHES,K.N.
40617 MATHES,K.N. (GENERAL ELECTRIC CO., SCHENECTADY, N.Y.)
48582 MATHES,K.N. (GENERAL ELECTRIC CO., SCHENECTADY, N. Y.,
61589 MATHES,K.N. (GENERAL ELECTRIC CO., SCHENECTADY, N. Y.
486 MATHIAS,E. CROMMELIN,C.A. ONNES,H.K.
737 MATHIAS,E.
5564 MATHIAS,E. CROMMELIN,C.A.
13380 MATHIAS,E. CROMMELIN,C.A. ONNES,H.K.
14794 MATHIAS,E. CROMMELIN,C.A. ONNES,H.K.
21079 MATHIAS,E. CROMMELIN,C.A. ONNES,H.K.
21305 MATHUR,G.P. THODOS,G. (NORTHWESTERN UNIV., EVANSTON,
31498 MATHUR,G.P. THODOS,G.
41284 MATHUR,S. SAXENA,S.C. (RAJASTHAN UNIV., JAIPUR, INDIA)
55588 MATHUR,B.P. WATSON,W.W. (YALE UNIV., NEW HAVEN, CONN.)
70753 MATSUO,T. (OSAKA UNIV., JAPAN. DEPT. OF CHEMISTRY)
61379 MATVEENKO,A.A.
39627 MATYASH,I.V. MANK,V.V. STARKOV,M.G.

47030 MATYASH,I.V. MANK,V.V. TORYANIK,A.I. ET AL
47031 MATYASH,I.V. MANK,V.V. STARKOV,M.G. PITSYUGA,V.G.
69624 MAT,P. MASSIBEI,P. THOMAES,G. (BRUSSELS UNIV., BELGIUM.
43156 MAXWELL,J.C.
29214 MAYER,S.W.
6221 MAYHEW,Y.R. ROGERS,G.F.C.
27288 MAY,K.D. (MIDWEST RES. INST., KANSAS CITY, MO.)
26672 MCAFEE,K.B.,JR.
17166 MCBRIDE,B.J. HEIMEL,S. EHLERS,J.G. GORDON,S.
6800 MCCALLUM,S.P. FOCKEN,C.M.
87101 MCCALLUM,J. FAUST,C.L.
12842 MCCALL,D.M. PAIN,H.J.
12843 MCCALL,D.M. PAIN,H.J.
30888 MCCARTY,R.D.
35645 MCCARTY,K.P. MASON,E.A. (MARYLAND UNIV., COLLEGE PARK)
40029 MCCARTY,R.D. RODER,H.M.
80777 MCCARTY,R.D. WEBER,L.A. (NATIONAL BUREAU OF STANDARDS,
6015 MCCORMICK,N.R. CRAGGS,J.D.
24484 MCGEE,H.A.,JR.
42071 MCGEE,H.A.,JR.
72594 MCKELLAR,A.R.W. WELSH,H.L. (TORONTO UNIV., ONTARIO. DEPT.
49669 MCKINNEY,C.D. TARPLEY,W.B.
38593 MCLAUGHLIN,E. (IMPERIAL COLL. OF SCIENCE AND TECHNOLOGY, LON-
57491 MCLAUGHLIN,E. (LOUISIANA STATE UNIV., BATON ROUGE. DEPT. OF
81838 MCLAUGHLIN,E. (IMPERIAL COLL. OF SCIENCE AND TECHNOLOGY,
26654 MCLENNAN,J.C. MCLEOD,J.H.
26753 MCLENNAN,J.C. MCLEOD,J.H.
70584 MCMAHON,H.O. GOLDEN,G.H. (LITTLE (ARTHUR D.) INC.,
65201 MCMILLAN,W.D. CARTER,H.G. LIGHTFOOT,R.P.
11959 MCNABNEY,R. MOULTON,W. BEUSCHLEIN,W.L.
78803 MC COURT,F.R. MORAAL,H. (WATERLOO UNIV., CANADA. DEPT. OF
80265 MC KELLAR,A.R.W. (TORONTO UNIV., CANADA. DEPT. OF PHYSICS)
71082 MECKSTROTH,W.K. WHITE,D. (PENNSYLVANIA UNIV., PHILADELPHIA.
80372 MEDANI,M.S. HASAN,M.A. AGRAWAL,G.M. THODOS,G.
49335 MEDVEDEV,V.A. DEDIKOV,YU.A. ASTROV,D.N.
71063 MEDVEDEV,V.A. DEDIKOV,YU.A. ORLOVA,M.P.
78418 MEDVEDEV,V.A. DEDIKOV,YU.A. ORLOVA,M.P. (ACADEMY OF SCIENCES
487 MEGAW,H.D.
6768 MEGAW,H.D. SIMON,F.
16876 MEISSNER,H.P. SEFERIAN,K.
18178 MEISSNER,WALTHER
26608 MEISSNER,W.
19410 MEL≠NICHENKO,N.I. (AUTOMECH. INST., MOSCOW)
43964 MENABDE,N.E.
6322 MENDELSSOHN,K. RUHEMANN,M. SIMON,F.
32835 MENON,P.G.
54512 MERCER,H.N. (IMPERIAL COLL. OF SCIENCE AND TECHNOLOGY, LONDON,
59902 MERTENS,F.G. BIEM,W. HAHN,H. (INSTITUT FUER THEORETISCHE
60356 MERTENS,F.G. BIEM,W. HAHN,H. (AACHEN TECHNISCHE
62949 MERTENS,F.G.
77691 MERTENS,F.G. (GIESSEN UNIV., GERMANY. INST. FOR THEORETICAL
627 MESNAGE,P.
22923 MESSERLY,G.H.
38271 METZGER,D.S. GAINES,J.R. (OHIO STATE UNIV., COLUMBUS)
41671 METZGER,D.S.
86148 METZ,W.D.
38646 MEYER,H.
64028 MEYER,H. (DUKE UNIV., DURHAM, N. C. DEPT. OF PHYSICS)
68675 MICHAELS,S. GREEN,M.S. LARSEN,S.Y. (NATIONAL BUREAU OF

546 MICHELS,A. SCHIPPER,A.C.J. RINTOUL,W.H.
6838 MICHELS,A. DE GRAAFF,W. WOLKERS,G.J.
6840 MICHELS,A. DEGRAAFF,W. WASSENAAR,T. ET AL
7558 MICHELS,A. NIJHOFF,G.P. GERVER,A.J.J.
8762 MICHELS,A. DE GRAAFF,W. TEN SELDAM,C.A.
9410 MICHELS,A. SANDERS,P. SCHIPPER,A.
12791 MICHELS,A. GOUDEKET,M.
16378 MICHELS,A. GERVER,A.J.J.
21853 MICHELS,A. DE GRAAFF,W. WOLKERS,G.J.
29216 MICHELS,A. WASSENAAR,T.
42282 MICHELS,A. GOUDEKET,M. (VAN DER WAALS LABORATORIUM, UNIV. OF
54885 MICHELS,A.
50149 MIKHALCHENKO,R.S. GERZHIN,A.G. PERSHIN,N.P. KLIPACH,L.B.
53959 MIKHALCHENKO,R.S. GERZHIN,A.G. ARKHIPOV,V.T. ET AL (AKA-
80682 MILENKO,YU.YA. KARNATSEVICH,L.V. KOGAN,V.S. (ACADEMY OF
6165 MILLER,J.G.
14718 MILLER,D.G.
18925 MILLER,G.A.
25290 MILLER,C.E. UNLAND,H.D. BURGESON,D.A. ET AL
26502 MILLER,C.E. UNLAND,H.D. BURGESON,D.A. ET AL
35756 MILLER,L. MASON,E.A. (INSTITUTE FOR MOLECULAR PHYSICS,
36023 MILLER,C.E. FLYNN,T.M. GRADY,T.K. WAUGH,J.S. (NATIONAL
55032 MILLER,C.E. LIPSICAS,M. (NATIONAL BUREAU OF STANDARDS,
55393 MILLER,K.W. HILDEBRAND,J.H. (CALIFORNIA UNIV., BERKELEY.
60861 MILLER,R.C. PRAUSNITZ,J.M. (CALIFORNIA UNIV., BERKELEY.
5449 MILLS,R.L. GRILLY,E.R.
32872 MILLS,R.L. SCHUCH,A.F. (LOS ALAMOS SCIENTIFIC LAB., N. MEX.)
40399 MILLS,R.L. SCHUCH,A.F. DEPATIE,D.A. (LOS ALAMOS
60071 MINNICH,S.H. FOX,G.R. (GENERAL ELECTRIC CO., SCHENECTADY,
60953 MINNICH,S.H. FOX,G.R. (GENERAL ELECTRIC CO., SCHENECTADY,
83529 MINONES TRILLO,J. VILCHEZ,J.C. GONZALEZ GARCIA,F.
12489 MINTER,C.C. SCHULDINER,S.
20431 MISIC,D. THODOS,G. (NORTHWESTERN UNIV.,
13271 MISRA,S.C.
41893 MISRA,S.C. (FAKIR MOHAN COLL., BALASORE, INDIA)
63467 MISRA,S.C. (SAMANTA CHANDRA SEKHAR COLL., PURI, INDIA)
80309 MISRA,S.C. PARIDA,K.N. (RAVENSHAW COLL., CUTTACK, INDIA. DEPT.
40751 MISSENARD,F.A.
86161 MITCHELL,D.N. LE ROY,D.J. (TORONTO UNIV., CANADA. LASH MILLER
77356 MITIN,M.B. (KRUPSKAYA MOSCOW REGIONAL PEDAGOGICAL INST., USSR)
32140 MITTLEHAUSER,H.M. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
47421 MIYAGI,H. NAKAMURA,T. (OSAKA UNIV., JAPAN)
8435 MIYAKO,R.
1845 MIZUSHIMA,M. OHNO,K. OHNO,A.
5447 MOESSEN,G.W. ASTON,J.G. ASCAH,R.G.
12901 MOESSEN,G.W. ASTON,J.G. ASCAH,R.G.
28620 MONCHICK,L. PIEREIRA,A.N.G. MASON,E.A. (MARYLAND UNIV.,
39828 MONCHICK,L. MUNN,R.J. MASON,E.A. (APPL. PHYS. LAB., JOHNS
54131 MONCHICK,L. SANDLER,S.I. MASON,E.A. (JOHNS HOPKINS UNIV.,
85702 MONCHICK,L. BROWN,N.J. MUNN,R.J. (JOHNS HOPKINS UNIV., SILVER
27264 MONFILS,A. (INST. ASTROPHYS., COINTE-SCLESSIN, BELGIUM)
85544 MONKHORST,H.J. ODDERSHEDE,J. (UTAH UNIV., SALT LAKE CITY.
55859 MONSON,P.R.,JR. CHEN,HAO-LIN EWING,G.E. (INDIANA UNIV.,
82142 MOORE,R.G. OTTO,F.D. (ALBERTA UNIV., EDMONTON. DEPT. OF
78177 MORAAL,H. (WATERLOO UNIV., CANADA. DEPT. OF STATISTICS)
80681 MORAAL,H. MC COURT,F.R. (WATERLOO UNIV., CANADA. DEPT. OF
6194 MORI,Y.
67713 MORRIS,J.C. RUDIS,R.P. YOS,J.M. (AVCO CORP., WILMINGTON,
74314 MORRIS,E.C. (QUEENSLAND UNIV., BRISBANE, AUSTRALIA.

47200 MORSY,T.E.
66748 MOUND LABORATORY
14535 MUELLER,W.H. LELAND,T.W.JR. KOBAYASHI,R.
84887 MUELLER,R.P. KLEMM,A. (MAX PLANCK INST. FUER CHEMIE, MAINZ,
79503 MUENGER,J.R. ALEXANDER,D.L. (TEXACO, INC., NEW YORK, N. Y.)
53150 MUIJLWIJK,R.
46423 MUKHOPADHYAY,P. DAS GUPTA,A. BARUA,A.K. (INDIAN ASSOCIATION
63121 MULLEN,L.O. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
68346 MULLER,K.H. EICHENAUER,W. HEINZINGER,K. KLEMM,A. (MAX-
12596 MULLINS,J.C. ZIEGLER,W.T. KIRK,B.S.
12830 MULLINS,J.C. ZIEGLER,W.T. KIRK,B.S.
59330 MULLIN,W.J. SARIN,H.K. (MASSACHUSETTS UNIV., AMHERST)
74342 MULLIN,W.J. SARIN,H.K. (MASSACHUSETTS UNIV., AMHERST.
60357 MULSER,P. WITKOWSKI,S. (INSTITUT FUER PLASMAPHYSIK, G.M.B.
85727 MURAKAMI,Y. (TOKYO SHIBAURA ELECTRIC CO., LTD., KAWASAKI, JAPAN.
35653 MURPHEY,B.F. (MINNESOTA UNIV., MINNEAPOLIS)
21750 MURPHY, G.M. (YALE UNIV., NEW HAVEN, CONN.)
78674 MURRAY,J.R. JAVAN,A. (ARMY MISSLE COMMAND, REDSTONE ARSENAL,
25559 MYALL,JOHN
66856 NAFIKOV,E.M. USMANOV,A.G.
5437 NAGAMIYA,T. URANO,K.
60702 NAGANO,H. ISHII,J. (TOKYO UNIV., JAPAN. INST. FOR SOLID
45598 NAIN,V.P.S. SAXENA,S.C. (RAJASTHAN, JAIPUR, INDIA)
48758 NAIN,V.P.S. SAXENA,S.C. (RAJASTHAN UNIV., JAIPUR, INDIA)
61492 NAIN,V.P.S. SAXENA,S.C. (RAJASTHAN UNIV., JAIPUR, INDIA.
68624 NAKAHARA,T. HIRATA,M. (TOKYO METROPOLITAN UNIV., JAPAN.
26750 NAKAMURA,T.
62749 NAKAMURA,T. (OSAKA UNIV., JAPAN)
73855 NAKAMURA,T. MIYAGI,H. (OSAKA UNIV., JAPAN. FACULTY
76956 NAKAMURA,T. (OSAKA UNIV., JAPAN. FACULTY OF ENGINEERING
79714 NAKAMURA,T. MIYAGI,H. FUJIO,M.
22359 NAMIOKA,T. (AFCRL, BEDFORD, MASS.)
63892 NARAYANA,H. WOODS,S.B. (ALBERTA UNIV., EDMONTON. DEPT. OF
700 NASON,W.C.,JR.
6610 NATANSON
6611 NATANSON
20841 NATIONAL BUREAU OF STANDARDS CRYOGENIC ENGINEERING
27513 NATIONAL BUREAU OF STANDARDS
28193 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
33223 NATIONAL BUREAU OF STANDARDS
41169 NATIONAL BUREAU OF STANDARDS
49619 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
80763 NATIONAL BUREAU OF STANDARDS, BOULDER, COLO., CRYOGENICS DIV.
42129 NATURAL GAS PROCESSORS SUPPLIERS ASSOCIATION
52352 NEAL,S. (GENERAL ELECTRIC CO., SCHENECTADY, N. Y. RESEARCH
19328 NEAL,W.E.J.
59079 NEAL,W.E.J. (ASTON UNIV., BIRMINGHAM, ENGLAND)
59567 NEDOSTUP,V.I. (ODESSA TECHNOLOGICAL INST., USSR)
74178 NEECE,G.A. ROGERS,F.J. HOOVER,W.G. (CALIFORNIA UNIV.,
60663 NELISSEN,L. REUSS,J. DYMANUS,A. (KATHOLIEKE UNIV.,
5542 NELSON,L.C. OBERT,E.F.
30143 NELSON,E.E. BONNELL,W.S.
45966 NELSON,L.C.
50971 NELSON,L.C. OBERT,E.F. (NORTHWESTERN TECH. INST., EVANSTON,
54596 NEUMANN,B.
45268 NEUSEL,R.H. SILVER,M. (TRW SPACE TECHNOLOGY LABS., INC.,
55969 NEVELLI,B.A. SCHULTZ,H.D. GUARD,F.L. ET AL
10893 NEWMAN,R.B.
11247 NEWMAN,R.B. JAACKSON,L.C.

10194 NEWTON,R.H. DODGE,B.F.
11037 NIBLETT,P.D. TAKAYANAGI,K.
25815 NICHOLS,W. REAMER,H. SAGE,B.H.
5432 NICKLIN,A.W.
84305 NIELSEN,M. (DANISH ATOMIC ENERGY COMMISSION, ROSKILDE, DENMARK.
7589 NIJHOFF,G.P. KEESOM,W.H.
11245 NIJHOFF,G.P.
26749 NIJHOFF,G.P. KEESOM,W.H.
2208 NOEGGERATH,W.C.
11102 NOEGGERATH,W.C.
85814 NOHKA,J. SARASHINA,E. ARAI,Y. SAITO,S. (TOHOKU UNIV., SENDAI,
9501 NOMOTO,O. KISHIMOTO,T.
64394 NOOLANDI,J. VAN KRANENDONK,J. (TORONTO UNIV., ONTARIO.
64724 NOOLANDI,J. VAN KRANENDONK,J. (TORONTO UNIV., ONTARIO. DEPT.
67043 NOOLANDI,J. (TORONTO UNIV., ONTARIO. DEPT. OF PHYSICS)
75493 NOOLANDI,J. (OXFORD UNIV., ENGLAND. DEPT. OF THEORETICAL
82828 NORTHRUP,C.J.,JR. WEMPLE,R.P. BAUDOIN,L.P.
66011 NORTHWESTERN UNIVERSITY
37299 NOSANOW,L.H. (CALIFORNIA UNIV., SAN DIEGO)
6271 NOTHDURFT,W.
26051 NOVAK,J.
52342 NOVAK,J.
33491 NYLIN,M.
5541 OCCHIALINI,A.
14219 OCCHIALINI,A.
53664 OCONNELL,J.P. PRAUSNITZ,J.M. (FLORIDA UNIV., GAINESVILLE)
75732 OCONNELL,J.P. (FLORIDA UNIV., GAINESVILLE)
43965 ODEN,L. HENDERSON,D. (WATERLOO UNIV., ONTARIO, CANADA)
38567 OFFERHAUS,M.J. DE BOER,J.
6193 OISHI,J.
26027 OISHI,J.
33791 OISHI,J.
36822 OKSENGORN,B. VU,H. VODAR,B. (CENTRE NATIONAL DE LA
81992 OLIVI,L.
16826 OLSZEWSKI,K.
26748 OLSZEWSKI,K.
34512 OLSZEWSKI,K.
34514 OLSZEWSKI,K.
6607 OLZEWSKI,K.
64553 OMAROV,T.G.
12381 OMAR,M.H.
12977 ONEAL,C.,JR. BROKAW,R.S.
493 ONNES,H.K. CROMMELIN,C.A. CATH,P.G.
494 ONNES,H.K. DE HAAS,W.J.
5429 ONNES,H.K. PENNING,F.M.
6802 ONNES,H.K. CROMMELIN,C.A. SMOD,E.I.
7611 ONNES,H.K.
11242 ONNES,H.K. BRAAK,C.
12252 ONNES,H.K. DORSMAN,C. WEBER,S.
13914 ONNES,H.K. MARTINEZ,P.
14799 ONNES,H.K. KEESOM,W.H.
14800 ONNES,H.K. CROMMELIN,C.A.
16097 ONNES,H.K. BRAAK,C.
16098 ONNES,H.K. BRAAK,C.
16107 ONNES,H.K. DORSMAN,C. HOLST,G.
16289 ONNES,H.K. VAN GULIK,W.
18947 ONNES,H.K. BRAAK,C.
22920 ONNES,H. KAMERLINGH BRAAK,C.
42115 ONNES,H.K. KEESON,W.H.

43099 ONNES,H.K. KUYPERS,H.A.
57535 OOST,W.A. DE VRIES,A.E. (STICHTING VOOR FUNDAMENTEEL
83448 OOST,W.A. LOS,J. CAUWENBERGH,H. VAN DAEL,W. (FOM-INST. VOOR
23817 OPPENHEIM,I. FRIEDMAN,A.S.
18917 ORCUTT,R.H.
43369 ORCUTT,R.H. COLE,R.H. (BROWN UNIV., PROVIDENCE, R.I.)
24256 ORENTLICHER,M. PRAUSNITZ,J.M.
50804 ORENTLICHER,M.
5536 ORLICEK,A.F.
50155 ORLOVA,M.P. ASTROV,D.N. MEDVEDEV,V.A. DEDIKOV,Y.A. (INSTITUT
12197 ORTTUNG,W.H.
62504 ORYE,R.V. (SHELL DEVELOPMENT CO., EMERYVILL, CALIF.)
36007 OSBORNE,A. (KELLOGG (M. W.) CO., NEW MARKET, N. J.)
20893 OSHCHERIN,B.N. (LENSOVET TECHNOL. INST., LENINGRAD)
80213 OSTGAARD,E. (INSTITUT MAX VON LAUE/PAUL LANGEVIN, GARCHING,
81210 OSTGAARD,E. (INSTITUT MAX VON LAUE-PAUL LANGEVIN, GARCHING,
51323 OSTRONOV,M.G. BOLSHAKOV,P.E. GELPERIN,I.I. ORLOVA,A.A.
86715 OSTRONOV,M.G. ORLOVA,A.A. GELPERIN,I.I. ET AL.
39201 OTHMER,D.F. CHEN,HUNG TSUNG (POLYTECHNIC INST. OF BROOKLYN,
52752 OTHMER,D.F. CHEN,HUNG-TSUNG (POLYTECHNIC INST. OF BROOKLYN,
17960 OTTO,J.
68411 OTT,W.R. FITE,W.L. (PITTSBURGH UNIV., PA.)
20010 OVCHINNIKOVA,E.N. KOBUS,G.L.
70412 OYARZUN,R. VAN KRANENDONK,J. (TORONTO UNIV., ONTARIO.
80267 OYARZUN,R. VAN KRANEDONK,J. (TORONTO UNIV., CANADA. DEPT. OF
28630 OZEROV,R.P. KOGAN,V.S. ZHDANOV,G.S. ET AL
28632 OZEROV,R.P. COGAN,V.S. ZHDANOV,G.S. ET AL
6114 PACE,N.
45065 PADDI REDDY,S. CHO,C.W. (MEMORIAL UNIV. OF NEWFOUNDLAND,
40811 PAI,M.U. SASTRI,S.R.S. (NATIONAL CHEMICAL LAB., POONA, INDIA)
27420 PAN AMERICAN WORLD AIRWAYS
29141 PAOLUZI,G.
41819 PAOLUZI,G.
50968 PARLANGE,J.Y. (YALE UNIV., NEW HAVEN, CONN. DEPT. OF
25911 PARTINGTON,J.R. SHILLING,W.G.
26767 PARTINGTON,J.R. HOWE,A.B.
73677 PATCH,R.W. (NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
27055 PAULING,L.
18878 PAUL,B.
48653 PAUL,E. WITTENBERG,M. FREYSCHMIDT,E.
68177 PAUL,F.W. BURROWBRIDGE,D.
30309 PAUL,R. HOWARD,A.J. WATSON,W.W. (YALE UNIV., NEW HAVEN, CONN.)
68627 PEARSON,J.S. HARRISON,J.A. (LIVERPOOL UNIV., ENGLAND. DEPT.
83690 PEBLER,A. HICKAM,W.M. (WESTINGHOUSE RESEARCH LABS., PITTSBURGH,
16099 PENNING,F.M.
40786 PERREAU,M.F.
35516 PERRETT,R.H. (COLL. ADVANCED TECH., BIRMINGHAM, ENGLAND)
52712 PETERSON,N.M. (AUTONETICS, ANAHEIM, CALIF.)
64319 PETERSON,N.M.
87392 PETZINGER,K.G. SCALAPINO,D.J. (CALIFORNIA UNIV., SANTA BARBARA.
6049 PICKERING,S.F.
8703 PICKERING,S.F.
18042 PICKERING,S.F.
83588 PIENTKA,J.
44439 PIERCE,B.L.
10872 PIER,M.
56464 PILARCZYK,K.
14625 PISER,R.
66566 PITSIUGA,V.G. MATYASH,I.V. LUKYANENKO,L.V.

53420 PITSYUGA,V.G. MATYASH,I.V. LUKYANENKO,L.V.
3709 PITT,A. JACKSON,W.J.
3405 PLANK,R. RIEDEL,R.
21408 PLANK,R. RIEDEL,L. (INST. OF TECHNOLOGY, KARLSRUHE,
27949 PLANTEVIN,J.P. VEYRIE,P. GERVAT,A.
6640 PODGURSKI,H.H. DAVIS,F.N.
79038 POLLOCK,E.L. BRUCE,T.A. CHESTER,G.V. KRUMHANSL,J.A. (CORNELL
28629 POLL,J.D. VAN KRANENDONK,J.
70738 POLL,J.D. MILLER,M.S. (GUELPH UNIV., ONTARIO. DEPT. OF
24780 POPEL,S.I. PAVLOV,V.V. ESIN,O.A.
13614 POPOVICI,S. POP,M.
84542 POPOV,I.L.
55712 POSEJPAL,V.
66518 POVARNIN,P.I.
5528 POWERS,R.W. MATTOX,R.W. JOHNSTON,H.L.
14422 POWERS,R.W. MATTOX,R.W. JOHNSTON,H.L.
83309 PRANGSMA,G.J. BORSBOOM,L.J.M. KNAAP,H.F.P. ET AL (LEIDEN
87200 PRAST,G. HARGREAVES,C.M. MIJNHEER,A. VAN MAL,H.H.
6733 PRAUSNITZ,J.M. BENSON,P.R.
14766 PRAUSNITZ,J.M. MYERS,A.L.
26157 PRAUSNITZ,J.M. KEELER,R.N.
67942 PRAUSNITZ,J.M. (CALIFORNIA UNIV., BERKELEY. DEPT. OF CHEMICAL
47034 PRESNALL,D.C. (CARNEGIE INSTITUTION OF WASHINGTON D. C.)
57893 PRESNALL,D.C. (GEOPHYSICAL LAB. CARNEGIE INSTITUTION OF
66514 PRESNALL,D.C. (CARNEGIE INSTITUTION OF WASHINGTON, D.C.)
72712 PRESTON,G.T. PRAUSNITZ,J.M. (CALIFORNIA UNIV., BERKELEY.
6270 PRIGOGINE,I. WAELBROCK,F.
19179 PRIGOGINE,I. WAELBROECK,F.
33077 PRIGOGINE,I. BINGEN,R.
34025 PRIGOGINE,I. BELLEMANS,A. MATHOT,V. (LIBRE UNIV., BRUSSELS
80266 PRIOR,W.R.C. ALLIN,E.J. (TORONTO UNIV., CANADA. DEPT. OF
84181 *PRIOR,W.R.C. ALLIN,E.J. (TORONTO UNIV., CANADA. DEPT. OF
63889 PROOST-THODEN VAN VELZENS,J.C.
69652 PROOST-THODEN VAN VELZEN,J.C.
45449 PRUSAK,J. (CZECHOSLOVAK ACADEMY OF SCIENCES, PRAGUE,
16200 RABINOVICH,V.A.
38176 RABINOVICH,V.A.
19764 RAHMAN,A. (OSMANIA UNIV., HYDERABAD DECCAN, INDIA)
34381 RAICH,J.C. JAMES,H.M. (PURDUE UNIV., LAFAYETTE, IND.)
46604 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FORT COLLINS)
49352 RAICH,J.C. ETTERS,R.D.
57081 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FORT COLLINS)
58857 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FORT COLLINS.
59944 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FORT COLLINS)
63042 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FT. COLLINS)
65211 RAICH,J.C. ETTERS,R.D.
75218 RAICH,J.C. ETTERS,R.D. (COLORADO STATE UNIV., FORT COLLINS.
39250 RAJA GOPAL,E.S. (INDIAN INST. OF SCIENCE, BANGALORE)
49334 RAJA GOPAL,E.S. VAIDYA,S.N. GAMBHIR,R.D. GOVINDARAJAN,K.
73660 RAKSHIT,A.B. CHOWDHURY,S. (INDIAN ASSOCIATION FOR THE
52506 RAMAKRISHNA,V. SURI,S.K. (INDIAN INST. OF TECH., NEW DELHI)
68305 RAMAMURTHY,A.V. NARSIMHAN,G. (MONASH UNIV., CLAYTON,
80310 RAMANADHAM,M. (OSMANIA UNIV., HYDERABAD, INDIA)
48909 RAMMLER,E. BREITLING,K.
65524 RAMM,D. MEYER,H. MILLS,R.L. (DUKE UNIV., DURHAM, N. C.
77252 RAMM,D.
62567 RAO,B.K. DAS,T.P. (CALIFORNIA UNIV., RIVERSIDE. DEPT. OF
68480 RAO,B.K. IKENBERRY,D. DAS,T.P. (UTAH UNIV., SALT LAKE
31503 RAO,R.V.G.

77506 RAO,R.V.G. GOPALAKRISHNAN,R. (SRI VENKATESUARA UNIV., TIRUPATI,
80223 RAO,R.V.G. SESHAIAH,V.V. (SRI VENKATESWARA UNIV., TIRUPATI,
83992 RAO,R.V.G. SESHAIAH,V.V.
57826 RAPIAL,A.S. DANEY,D.E.
42455 RASTOGI,R.P. MADAN,G.L. (GORAKHPUR UNIV., INDIA)
61549 RAUH,M. (EIDGENOESSISCHE TECHNISCHE HOCHSCHULE, ZURICH,
36045 RAWUKA,A.C. YUNDT,C.G. (DOUGLAS AIRCRAFT CO., INC., SANTA
16883 RAYLEIGH,L.
27932 RAYLEIGH,F.R.S.
67641 RAZUMOV,V.A. (LENINGRAD POLYTECHNIC INST., USSR)
26603 RECHENBERG,C.V.
7681 REDLICH,O. KWONG,J.N.S.
71300 REDLICH,O. NGO,V.B.T. (CALIFORNIA UNIV., BERKELEY.
22318 REED,R.D. HENDERSON,D. (UNIV. OF WATERLOO, ONTARIO,
25096 REED,R.D. HENDERSON,D.
27752 REED,R.D. HENDERSON,D. CHEN,R-Y. (RES. CENTER, LING-
29558 REED,R.D. (LTV RESEARCH CENTER, DALLAS, TEX.)
30313 REED,R.D. HENDERSON,D. CHEN,RU-YONG (LTV RESEARCH
23186 REE,T.S. REE,T. EYRING,H. (UNIV. OF UTAH, SALT LAKE
27933 REGNAULT,M.V.
37587 REICHENBACHER,W. KLEMM,A.
915 REIF,F. PURCELL,E.M.
68243 REITER,F.W. (EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY)
13463 REYNES,E.G. THODOS,G.
16142 REYNOLDS,T.W.
57050 REYNOLDS,R.W.
552 RHODES,E.J.,JR.
6347 RHODES,J.E.,JR.
6105 RIBAUD,M.G.
44677 RICCI,F.P. (ROME UNIV., ITALY)
25732 RICHARDSON,H.P. GORDON,J.L. ET AL
27054 RICHARDSON,O.W. DAVIDSON,P.M.
77232 RICHARD,C.E. WALTERS,F.M. (AIRESEARCH MFG., CO., LOS
52527 RICHTEROVA,V.
3498 RIEDEL,L.
13465 RIEDEL,L.
13466 RIEDEL,L.
6383 RIEGGER,H.
86609 RIEHL,J.W. FISHER,C.J. BALOGA,J.D. KINSEY,J.L. (PENNSYLVANIA
3948 RIETVELD,A.O. VAN ITTERBECK,A.
53551 RIMPEL,G. MEFFERT,A.
45439 ROBACK,R.
75211 ROBERTS,R.J. DAUNT,J.G. (STEVENS INST. OF TECH., HOBOKEN, N. J.
76274 ROBERTSON,A.G. (AUSTRALIAN NATIONAL UNIV., CANBERRA. RESEARCH
83822 ROBERTS,R.E. BERNSTEIN,R.B.
54213 ROBSON,J.H. CANNON,W.A. ENGLISH,W.D.
669 ROCARD,Y.
6224 RODEBUSH,W.H.
27120 RODEBUSH,W.H.
12540 RODER,H.M. GOODWIN,R.D.
15359 RODER,H.M. DILLER,D.E. WEBER,L.A. GOODWIN,R.D.
17442 RODER,H.M. WEBER,L.A. GOODWIN,R.D.
19003 RODER,H.M.
19403 RODER,H.M. WEBER,L.A. GOODWIN,R.D.
24823 RODER,H.M.
29210 RODER,H.M. WEBER,L.A. GOODWIN,R.D.
50791 RODER,H.M. MCCARTY,R.D. JOHNSON,V.J.
65729 RODER,H.M. DILLER,D.E. (NATIONAL BUREAU OF STANDARDS,
70317 RODER,H.M.

80165 RODER,H.M. MCCARTY,R.D. JOHNSON,V.J. (NATIONAL BUREAU
80837 RODER,H.M. MCCARTY,R.D. HALL,W.J. (NATIONAL BUREAU OF
11789 ROGERS,J.D. ZEIGLER,R.K. MCWILLIAMS,P.
13476 ROGERS,J.D. ZEIGLER,R.K. MCWILLIAMS,P.
13492 ROGERS,J.D. ZEIGLER,K. MCWILLIAMS,P.
29130 ROGERS,J.D. BRICKWEDDE,F.G.
38388 ROGERS,J.D. BRICKWEDDE,F.G. (LOS ALAMOS SCIENTIFIC LAB.,
78271 ROGERS,F.J. NEECE,G.A. HOOVER,W.G. ROSS,M.
27935 ROHMANN,H.
54414 RONCIN,J-Y. DAMANY,N. ROMAND,J. (CENTRE NATIONAL DE LA
41771 RONTGEN,W.C.
17398 ROSENBAUM,B.M. LEVITT,L.
41560 ROSENBAUM,B.M. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
47688 ROSEVEAR,A.H.M. WHITING,G. ALLIN,E.J. (TORONTO UNIV.,
5740 ROSSINI,F.D.
25332 ROSS,M. HILDEBRAND,J.H. (UNIV. CALIFORNIA, BERKELEY)
78655 ROSS,M. (CALIFORNIA UNIV., LIVERMORE. LAWRENCE LIVERMORE LAB.)
17625 ROTT,L.A.
36396 ROY,A.S. ROSE,M.E.
50937 ROY,D. THODOS,G. (NORTHWESTERN UNIV., EVANSTON, ILL.)
3402 ROZEN,A.M.
6064 RUDENKO,N.S.
22496 RUDENKO,N.S. KONAREVA,V.G.
27241 RUDENKO,N.S. KONAREVA,V.G.
53020 RUDENKO,N.S. SLYUSAR,V.P. (AKADEMIYA NAUK UKRAINSKOI SSR,
53624 RUDENKO,N.S. SLYUSAR,V.P.
57829 RUDENKO,N.S. SLYUSAR,V.P. (AKADEMIYA NAUK UKRAINSKOI SSR,
59955 RUDENKO,N.S. SLYUSAR,V.P.
81996 RUHEMANN,M.S.W. MERCER,S. (PETROCARBON DEVELOPMENTS LTD.,
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87570 RUOFF,A.L.
33139 RUSSELL,J.L.,JR. BEYSTER,J.R. BROWN,J.R. ET AL
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74574 SABNIS,S.T. WENZEL,L.A. (LEHIGH UNIV., BETHLEHEM, PA. DEPT.
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27937 SACKUR,O.
28149 SACKUR,O.
78056 SAIKA,A. MUSHER,J.I. MIYABE,N. (YESHIVA UNIV., NEW YORK, N. Y.
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57472 SALZMAN,P.K. COLLINGS,A.F. PINGS,C.J. (CALIFORNIA INST.
73212 SAMUYLOV,YE.V. TSITELAURI,N.N.
61495 SANCIER,K.M. WISE,H. (STANFORD RESEARCH INST., MENLO PARK,
63572 SANCIER,K.M. WISE,H. (STANFORD RESEARCH INST., MENLO PARK,
41358 SARAN,A. BARUA,A.K. (INDIAN ASSOCIATION FOR CULTIVATION OF
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63137 SATO,K. ISHIDA,K. (SHIZUOKA UNIV., HAMAMATSU, JAPAN)
43872 SATTAR,A.
8107 SAUREL,J.R.
32276 SAXENA,S.C. MATHUR,B.P.
35646 SAXENA,S.C. AGRAWAL,J.P. (ATOMIC ENERGY ESTABLISHMENT,
36011 SAXENA,S.C. MATHUR,B.P. (RAJASTHAN UNIV., JAIPUR, INDIA,
36384 SAXENA,S.C. PARDESHI,P.A.
40686 SAXENA,S.C. SAKSENA,M.P. GAMBHIR,R.S. (RAJASTHAN UNIV.,
40737 SAXENA,S.C. DAVE,S.M.
42113 SAXENA,S.C. MASON,E.A. (MARYLAND UNIV., COLLEGE PARK)
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64381 SAXENA,S.C. GUPTA,G.P. (ILLINOIS UNIV., CHICAGO. DEPT. OF
68370 SAXENA,S.C. SAXENA,V.K. (ILLINOIS UNIV., CHICAGO. DEPT.
70829 SAXENA,S.C. TONDON,P.K. (ILLINOIS UNIV., CHICAGO. DEPT. OF

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5727 SCHAEFER,C.A. THODOS,G.
6415 SCHAEFER,C.A. THODOS,G.
10799 SCHAEFER,C.A. THODOS,G.
15651 SCHAEFER,C.A.
8732 SCHAFER,K.
16232 SCHAFER,K.
26733 SCHAFER,K.
26604 SCHALKWIJK,J.C.
8645 SCHAMES,L.
24756 SCHAMES,LEON
54159 SCHAMES,L.
54507 SCHAMES,L.
5726 SCHEEL,K. HEUSE,W.
6097 SCHEEL,K.
56677 SCHEIWE,J.P. CHO,B.Y. (INDUSTRIAL NUCLEONICS CORP., COLUMBUS,
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39994 SCHLUNDER,E.U. ZEMLIN,H. (MAX-PLANCK-INSTITUT FUR
23482 SCHMAUCH,G.E. SINGLETON,A.H.
8712 SCHMIDT,W.
24316 SCHMIDT,F. SCHNELL,H.
70750 SCHMIDT,C. SCHIFF,H.I. (YORK UNIV., TORONTO, ONTARIO.
6110 SCHMID,C.
17999 SCHMITT,KARL
19448 SCHMOLKE
26734 SCHNEIDER,E.
62125 SCHNEIDER,T. (SWISS FEDERAL INST. OF TECH., ZURICH)
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81697 SCHOEPPEL,R.J.
60925 SCHOLZ,W.H. (LINDE A.G., MUNICH, GERMANY)
52737 SCHOTT,W. RIETSCHEL,H. GLASER,W. (MUNICH TECHNISCHE HOCH-
67271 SCHOTT,W. (MUNICH TECHNISCHE HOCHSCHULE, WEST GERMANY.
71488 SCHOTT,W. (KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY.
47572 SCHUCH,A.F. MILLS,L. DEPATIE,D. (LOS ALAMOS SCIENTIFIC
49178 SCHUCH,A.F. MILLS,R.L. DEPATIE,D.A. (LOS ALAMOS SCIENTIFIC
43092 SCHUIL,A.E.
28699 SCHULZ,W.R. LE ROY,D.J. (TORONTO UNIV., ONTARIO, CANADA)
7747 SCHWEIKERT,G.
7748 SCOTT,G.A.
68784 SCOTT,G.G. SMITH,G.W. FRY,D.L. (GENERAL MOTORS RESEARCH
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6378 SCOTT,R.B. BRICKWEDDE,F.G. UREY,H.C. WAHL,M.H.
8118 SCOTT,R.B. BRICKWEDDE,F.O.
30020 SEADER,J.D. MILLER,W.S. KALVINSKAS,L.A.
64033 SEAGRAVE,J.D. (LOS ALAMOS SCIENTIFIC LAB., N. MEX.)
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77171 SEIFFERT,W.D.
884 SELLERS,E.S. AUGOOD,D.R.
57690 SELLMAIER,A. (LINDE A. G., MUNICH, GERMANY)
27386 SENGERS,J.V. (NBS, WASHINGTON, D. C.)
34442 SENGERS,J.V. (NATIONAL BUREAJ OF STANDARDS, WASHINGTON, D.C.)
70041 SENGERS,J.V. (NATIONAL BUREAU OF STANDARDS, WASHINGTON, D.C.)
60339 SERDYUK,L.S.
60340 SERDYUK,L.S.

64082 SERDYUK,L.S.
24362 SESSLER,G. (UNIV. GOETTINGEN, GER.)
10930 SHAFFER,A. ROUSSEAU,J.
26016 SHAW,H.R. WONES,D.R.
86555 SHEREVSKII,B.A. SHVETS,A.D.
6266 SHERIF,I.I.
31492 SHERIF,I.I.
561 SHERMAN,R.H. GIAUQUE,W.F.
10437 SHERMAN,R.H. VOGEL,R.E. MOORE,R.H. ET AL
34303 SHERMAN,R.H. HAMMEL,E.F. (LOS ALAMOS SCIENTIFIC LAB.,
54594 SHIELDS,M.C. (CHICAGO UNIV., ILL.)
562 SHIMOKAWA,J.
83554 SIELANKO,J. SOWA,M.
739 SIEVERTS,A. ZAPF,G. MORITZ,H.
25041 SIEV,R. YODER,S.K.
57828 SIGEL,R. KRAUSE,H. WITKOWSKI,S. (INSTITUT FUR PLASMAPHYSIK
73611 SILVERA,I.F. HARDY,W.N. MCTAGUE,J.P. (NORTH AMERICAN
76125 SILVERA,I.F. HARDY,W.N. MC TAGUE,J.P. (NORTH AMERICAN ROCKWELL
32373 SILVERBERG,P.M. WENZEL,L.A. (LEHIGH UNIV., BETHELEHEM, PA.)
15740 SILVERN,D.H.
68410 SIMMLER,W.
38807 SIMMONS,J.A. GIFT,R.D. MARKELS,M.,JR.
5170 SIMON,F.E.
5722 SIMON,F.E. MENDELSSON,K. RUHEMANN,M.
6375 SIMON,F.E. LANGE,F.
6376 SIMON,F.E.
14989 SIMON,F. RUHEMANN,M. EDWARDS,W.A.M.
16364 SIMON,F. RUHEMANN,M. EDWARDS,W.A.M.
22315 SIMON,M.
38237 SINDT,C.F. MANN,D.B.
67874 SINDT,C.F. LUDTKE,P.R. RODER,H.M.
87445 SINDT,C.F.
35529 SINELNIKOVA,L.G. EIG,L.S.
82567 SINGH,S.P. MUKHOPADHYAY,P.K. (ENGINEERS INDIA LTD., NEW DELHI)
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40173 SKRIPKA,V.G.
49784 SLATER,J.C. KIRKWOOD,J.G. (MASSACHUSETTS INST. OF TECH.,
32355 SLIEKER,C.J.G.
38564 SLIEKER,C.J.G.
22882 SLUIJTER,C.G. KNAAP,H.F.P. BEENAKKER,J.J.M.
24483 SLUIJTER,C.G. JONKMAN,R.M.
27016 SLUIJTER,C.G. (KAMERLINGH ONNES LAB., LEIDEN, NETH.)
71064 SLYUSAR,V.P.
740 SMITH,A.L. HALLETT,N.C. JOHNSTON,H.L.
6013 SMITH,A.L. HALLETT,N.C. JOHNSTON,H.L.
11100 SMITH,G.W. HOUSLEY,R.M.
11115 SMITH,G.W. SQUIRE,C.F.
15481 SMITH,G.W. SQUIRE,C.F.
15567 SMITH,G.W.
12099 SMITH,I.E.
27162 SMITS,A.
58201 SNEED,C.M.,JR.
79792 SOAVE,G. (SNAM PROGETTI, MILAN, ITALY)
18001 SODDY,F. BERRY,A.J.
19613 SOLBRIG,C.W. ELLINGTON,R.T.
68175 SONNTAG,R.E. (MICHIGAN UNIV., ANN ARBOR)
24953 SOOTS,VELLO

34406 SOOTS,V. ALLIN,E.J. WELSH,H.L.
24314 SOUDERS,M.,JR. MATTHEWS,C.S. HURD,C.O.
86727 SPAIN,I.L. ISHIZAKI,K. (MARYLAND UNIV., COLLEGE PARK. DEPT. OF
87571 SPAIN,I.L. ISHIZAKI,K. MARCHELLO,J.M. PAAUWE,J.
27105 SPENCER,H.M. JUSTICE,J.L.
36234 SPENCER-GREGORY,H. DOCK,E.H.
35296 SRIVASTAVA,B.N. MADAN,M.P. (LUCKNOW UNIV., INDIA)
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81577 STARKSCHALL,G. GORDON,R.G. (HARVARD UNIV., CAMBRIDGE, MASS.
79330 STARLING,K.E. HAN,M.S. (OKLAHOMA UNIV., NORMAN. SCHOOL OF
26339 STAUF,F.W.
67343 STAVELEY,L.A.K. (NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.
35926 STECKEL,F.A. TSIN,N.M.
54528 STEFAN,J.
27160 STEINER,K.
80514 STEIN,H. STILLER,H. STOCKMEYER,R. (KERNFORSCHUNGSANLAGE
60684 STEIN,W.A. (BRAUNSCHWEIG TECHNISCHE HOCHSCHULE, GERMANY)
70624 STEIN,W.A. (BRUNSWICK TECHNISCHE UNIVERSITAET, WEST GERMANY.
73618 STEIN,W.A. (BRUNSWICK TECHNISCHE HOCHSCHULE, WEST GERMANY.
75153 STEIN,W.A.
79962 STEIN,W.A. (TECHNISCHE HOCHSCHULE BRUNSWICK, GERMANY. INST.
55510 STEISEL,N. FOSTER,R.N. BUTT,J.B. (YALE UNIV., NEW HAVEN,
31708 STEPHENSON,M.E.
42507 STEPHENS,J.R. GARLICK,R.G.
78545 STETSENKO,YU.E. BOLSHUTKIN,D.N. INDAN,L.A.
81248 STETSENKO,YU.E. BOLSHUTKIN,D.N. INDAN,L.A. KHUDOTEPLAYA,A.A.
595 STEWART,S.
596 STEWART,E.S. STEWART,J.L. HUBBARD,J.C.
1174 STEWART,J.W.
2274 STEWART,J.L.
5719 STEWART,J.W.
5879 STEWART,J.W. SWENSON,C.A.
6014 STEWART,J.W. SWENSON,C.A.
6091 STEWART,J.W.
7782 STEWART,E.S. STEWART,J.L.
9008 STEWART,R.B. JOHNSON,V.J.
11238 STEWART,J.W.
12704 STEWART,R.B. JOHNSON,V.J.
15409 STEWART,R.B. GERMANN,F.E.E. MCCARTY,R.D.
17021 STEWART,R.B. TIMMERHAUS,K.D.
22412 STEWART,J.W. (UNIV. VIRGINIA)
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33966 STEWART,J.W. (VIRGINIA UNIV., CHARLOTTESVILLE, DEPT. OF
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17386 STIEL,L.I. THODOS,G.
32709 STIEL,L.I. THODOS,G.
36057 STOICHEFF,B.P.
11669 STOLIAROV,E.A. IPATEV,V.V. TEODROVICH,U.P.
30883 STRAUB,D. SCHABER,A. MORSY,T.E.
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30449 STREICH,M.
36401 STRICKLER,H.S.
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28153 STURM,J.

75844 SUETIN,P.E. AMIROV,N.S. MAKSYUTOV,R.B. (URALS
76175 SUETIN,P.E. SKAKUN,S.G. CHERNYAK,V.G. (URALS POLYTECHNIC
5873 SUGAWARA,T. MAUDA,Y. KANDA,T. KANDA,E.
5874 SUGAWARA,T.
22463 SUGAWARA,T. MASUDA,Y. KANDA,T. KANDA,E.
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78120 SULLIVAN,N.S. POUND,R.V. (HARVARD UNIV., CAMBRIDGE, MASS.
80787 SULLIVAN,N.S. POUND,R.V. (HARVARD UNIV., CAMBRIDGE, MASS.
50001 SUNG,C.C. (OHIO STATE UNIV., COLUMBUS)
55187 SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT. OF PHYSICS)
57518 SUNG,C.C. (OHIO STATE UNIV., COLUMBUS. DEPT. OF PHYSICS)
27104 SURDIN,M.
82990 SUSSMANN,J.A. FRIEDMAN,Z. (SOREQ NUCLEAR RESEARCH CENTRE,
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36399 SUTHERLAND,W.
6228 SU,G.J.
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64978 SWAMY,M.N. HARRISON,J.A. (LIVERPOOL UNIV., ENGLAND. DEPT.
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31927 SWENSON,C.A.
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65057 TAKEZAWA,S. (AIR FORCE CAMBRIDGE RESEARCH LABS., L.G. HANSCOM
65731 TAKEZAWA,S. (AIR FORCE CAMBRIDGE RESEARCH LABS., L. G. HANSCOM
711 TANGL,K.
67620 TANG,K.T.
16891 TANNER,C.C. MASSON,I.
63488 TAPIA,O. BESSIS,G. BRATOZ,S. (CENTRE DE MECANIQUE
44966 TAPPER,R.J.
10740 TAUSZ,J. GORLACHER,H.
19292 TAUSZ,J. GORLACHER,H. (TECHNISCHEN HOCHSCHULE, KARLSRUHE)
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86407 TAYLOR,D.W. DE REMIGIS,J. (MCMASTER UNIV., HAMILTON, CANADA.
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68839 TELINDE,J.C. (MCDONNELL DOUGLAS ASTRONAUTICS CO., HUNTINGTON
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30782 TERRY,J.E.
43074 TER HARMSEL,H. VAN DIJK,H. DURIEUX,M. (KAMERLINGH ONNES
8710 TETZLAFF,W.
18121 THEEUWES,F.
52658 THIBAULT,J.J. ROUSSEL,J. MENTION,J. MENARD,J. (AIR LIQUI-
5839 THOMAS,L.B.
6140 THOMAS,L.B. OLMER,F.
9981 THOMPSON,W.
42751 THOMPSON,W.R. GEERY,E.L.
42644 THURSTON,R.S.
44229 THURSTON,R.S.
70833 TIETZ,T. (WEST VIRGINIA UNIV., MORGANTOWN. DEPT. OF PHYSICS)
54514 TILTON,L.W.
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58893 TIMROT,D.L. LYUSTERNIK,V.E. TETERINA,I.N.
20943 TKACHENKO,E.A. HOLLERAN,E.M. MOSES,R.A.
29436 TODOROV,T.TS. SENDOV,S.KHR.
5831 TOMITA,K. MANNARI,I.

5832 TOMITA,K.
71882 TONDON,P.K. SAXENA,S.C. (RAJASTHAN UNIV., JAIPUR, INDIA.
74741 TONDON,P.K. SAXENA,S.C. (RAJASTHAN UNIV., JAIPUR, INDIA.
19992 TOWLE,L.C.
32738 TOWLE,L.C. (VIRGINIA UNIV., CHARLOTTESVILLE)
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6755 TOWNSEND,J.S.
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17962 TRAUTZ,M. LUDEWIGS,W.
18000 TRAUTZ,M. BINKELE,H.E.
18837 TRAUTZ,M. KAUFMAN,F.
18838 TRAUTZ,M. TRAUTZ,O.
18843 TRAUTZ,M. ZUNDEL,A.
26003 TRAUTZ,M. NARATH,S.
26004 TRAUTZ,M. KURZ,F.
26006 TRAUTZ,M. SORG,K.G.
26007 TRAUTZ,M. WEIZEL,W.
26008 TRAUTZ,M. HEBERLING,R.
26012 TRAUTZ,M. ZIMMERMAN,H.
26745 TRAUTZ,M. STAUF,F.W.
42281 TRAUTZ,M. HUSSEINI,I. (HEIDELBERG UNIV., GERMANY)
43123 TRAUTZ,M. ZUNDEL,A.
50681 TRAUTZ,M. (HEIDELBERG UNIV., WEST GERMANY)
50970 TRAUTZ,M. (HEIDELBERG UNIV., WEST GERMANY.
14959 TRAVERS,M.W. SENTER,G. JAQUEROD,A.
16076 TRAVERS,M.W. JAQUEROD,A.
16078 TRAVERS,M.W. JAQUEROD,A.
16219 TRAVERS,M.W. JAQUEROL,A.
61416 TREFLER,M. CAPPEL,A.M. GUSH,H.P. (TORONTO UNIV., ONTARIO.
13755 TREVINO ARIZPE,R.
45244 TRIMBLE,G.D. HOUGHTON,G.K. PRORIO,A.E.
66575 TRIMBLE,G.D. SELPH,W.E.
38170 TRUBITSYN,V.P. (SHMIDT (O.YU.) INST. OF GEOPHICS, ACADEMY OF
40176 TRUBITSYN,V.P. SCHMIDT,O.YU. (GEOPHYSICS INST., ACADEMY OF
80394 TRUBITSYN,V.P. (AKADEMIYA NAUK SSSR, MOSCOW. O. YU. SHMIDT
30138 TRZECIAK,M.
6275 TSEDERBERG,N.V.
32461 TSEDERBERG,N.V. POPOV,V.N. ANDREEV,I.I.
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47324 TSOIMAN,G.I. KAMENETSKII,V.R.
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62592 TSONOPOULOS,C. PRAUSNITZ,J.M. (BUREAU OF MINES, AMARILLO,
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 5810  VAN ITTERBEEK,A.    VERHAEGEN,L.
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7. SECTION A, DESCRIPTIVE SHEETS

LIST OF DESCRIPTIVE SHEETS

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General Information

Hydrogen is the first element in the periodic table having the atomic number of 1 and therefore the lightest of all gases. On the earth, hydrogen occurs chiefly in combination with oxygen as water. It is the most abundant element in the universe. It is a colorless, tasteless and odorless gas and liquefies at atmospheric pressure at -252.88°C (20.27 K).

Uses: In recent years hydrogen has been used extensively as a rocket fuel in the space effort. It is now being seriously considered as a renewable fuel for purposes where petroleum fuels are being used.

Other uses of hydrogen include a means of a confined high temperature flame for welding and commercially for the hydrogenation of fats and oils.

Preparation: Methods of preparation include, steam on heated carbon, decomposition of certain hydrocarbons by heat, the electrolysis of water and by displacement from acids by certain metals.

Discussion: Exposure of certain metals and alloys to hydrogen cause a reduction in their structural strength. This phenomenon is known as "embrittlement". The subject of hydrogen embrittlement is beyond the scope of this study. The reference of [96890] is suggested to the interested reader.

Compressibility Coefficient

Definition: The compressibility coefficient is defined as $-\frac{P}{V}\left(\frac{\partial V}{\partial P}\right)_T$.

Tables of Values: This quantity is not tabulated here but it may be easily obtained by forming the product of P times the isothermal compressibility (see A-4). The reciprocal of the isothermal compressibility, $V(\partial P/\partial V)_T$ is tabulated in Tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b, C-5c.

Units	Range of Table	Table Location
Dimensionless	13.8 - 3000 K .01 - 100 MPa	C-2, C-2b
Dimensionless	24.845 - 5000 R 1.0 - 15,000 psi	C-2a, C-2c
Dimensionless	saturation boundary	C-5,C-5a,C-5b,C-5c

Note: The tables reflect no differences for this property due to ortho-para modifications.

Graph: None

Equation: See A-11

Range of Values: (Para and Normal)

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
Dimensionless	7.79×10^{-5}	1.02	2.02×10^{-3}	1.12	∞	1.0

Uncertainty: For values derived from tables listed above, the uncertainty varies from 0% in the low density limit to about 3-4% at 5000 psi and 10% at 15,000 psi. In the critical region ($T_c \pm 5\%$ and $\rho_c \pm 20\%$) the uncertainties are greater and very difficult to estimate as the property diverges at the critical point.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tec. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References of Special Interest:

Solid: 487 5719 5879 6014 6768 11238 15481 68779 78548

High Pressure Gas: 6995 13780 26659

Ortho-Para Differences: 13558

Sources reviewed but not used:

442 728 1174 3754 5904 6091 6328 7355 8044 12357
15022 16295 17018 19645 20896 30473 30756 32804 34613 41169
58956 64932 6765 80375 81210 86305

Accommodation Coefficient

Definition: The accommodation coeffieient, a, is defined as the ratio

$$a = (E_i - E_r)/(E_i - E_r')$$

where $(E_i - E_r)$ is the mean energy change of molecules colliding with a wall and $(E_i - E_r')$ is the mean energy change if the molecules come into thermal equilibrium with the wall.

Discussion: The accommodation coefficients of gasses on solids are used to estimate heat conduction by gases at low pressures ($p \leq 0.1$ mm Hg).

The accommodation coefficient is a function of the gas, the temperature, and the characteristics of the solid surface, especially the smoothness and cleanliness. In general, the lighter the gas, the higher the temperature and the smoother and cleaner the surface, the smaller is the value of the accommodation coefficient. The coefficient is independent of the pressure if the pressure is sufficiently high ($p \geq 0.1$ mm Hg) to insure a monomolecular gas film on the solid surface.

Tables of Values: None

Graph: None

Equation: None

Range of Values:

Units	at room temperature, $p \approx .1$ mm Hg
dimensionless	a = .311 on platinum [10845]

Uncertainty: The uncertainty is estimated to be ± 1%.

Sources reviewed but not used:

1293	5494	5511	5839	6140	6217	6323	6413
10845	17074	18878	26930	36234	45041	50149	50666
53959	61674	68411	70750				

Compressibility Factor

Definition: The compressibility factor is defined as Z = PV/RT.

Tables of Values: This quantity is not tabulated but may be simply obtained by forming PV/RT from the tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b, C-5c.

Graph: B-3

Equation: See A-11

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	300 K,1 atm
	liquid	vapor	liquid	vapor		
Dimensionless	.00161	.9852	.01712	.9060	.3024	1.0006

Uncertainty: The uncertainty of Z derived from the tables in section C will correspond to the uncertainty of the PVT in the above tables. McCarty and Weber [80777] estimated these uncertainties to be:

Temperature Range	Pressure Range	Uncertainty in Density
700 - 3000 K	1 - 100 MPa	1 % (extrapolation)
300 - 700 K	1 - 35 MPa	0.5 %
300 - 700 K	35 MPa - 100 MPa	
13 - 300 K	1 - 100 MPa	0.1 % (except critical region)
Critical Region	T_c ± 5%, ρ_c ± 20%	6 %

The uncertainties quoted here are for parahydrogen (see introduction) the tables in section C reflect no difference in Z between the normal and para modifications. To estimate the uncertainties for the normal hydrogen tables, add 0.1% for temperatures above 100 K; 0.2% for temperatures between critical and 100 K and 0.4% for the compressed liquid region.

ORTHO-PARA Differences: There is probably a very small difference in densities (less than 0.1%) between the ortho and para modifications. An exception is the saturated vapor and liquid densities where the difference is larger due to a difference in the vapor pressure curve. See A-48 and B-48.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

References of Special Interest:

High Pressures: 12791, 21853, 76648, 81975, 87705

High Temperatures: 24116, 76648, 87705

Solid: 487, 11238, 29550, 29881

Low Pressure, Low Temperature Gas: 12596

References reviewed but not used:

439, 453, 494, 634, 801, 1603, 3498, 5120, 5122, 5123, 5366, 5429, 5522, 5523, 5567, 5688, 6069, 6162, 6191, 6193, 6326, 6328, 6368, 6507, 6840, 6912, 6914, 7103, 7362, 7425, 7558, 7589, 7748, 7852, 7889, 8703, 8716, 8719, 9008, 9444, 9492, 10647, 10742, 11242, 12704, 13781, 14794, 16097, 16098, 16099, 16106, 16107, 16378, 16876, 16883, 16891, 18502, 19403, 21078, 21794, 25268, 25732, 25952, 27932, 29150, 29229, 30286, 30452, 34613, 37187, 37427, 40767, 42114, 45966, 48307, 48467, 50971, 51145, 54948, 55969, 56804, 61379, 64082, 67641, 68410, 71300, 72638, 74545, 72638, 85126

Isothermal Compressibility

Definition: The isothermal compressibility is defined as $\beta_T = \frac{1}{V}\left(\frac{\partial V}{\partial P}\right)_T$.

Tables of Values: The reciprocal of the isothermal compressibility is given in Tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b, C-5c.

Units	Range of Table		Table Location
MPa^{-1}	13.8 - 3000 K	.01 - 100 MPa	C-2*,C2b*
$psia^{-1}$	24.8 - 5000 R	1 - 15,000 psi	C-2a*,C-2c*
MPa^{-1}	saturation boundary		C-5*,C-5b*
$psia^{-1}$	saturation boundary		C-5a*,C-5c*

*Note: To make the table entries positive, $-1/\beta_T$ is tabulated. The isothermal compressibility is a negative quantity.

Graph: None

Equation: See A-11

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	300 K,1 atm
	liquid	vapor	liquid	vapor		
MPa^{-1}	-1.10×10^{-2}	-145.	-1.99×10^{-2}	-11.1	∞	-10.
psi^{-1}	-7.68×10^{-5}	-1.0	-1.37×10^{-4}	-7.63×10^{-2}	∞	-6.80×10^{-2}

Note: The tables in section C reflect no differences in this property for the normal and para modifications.

Uncertainty: The uncertainty for values obtained from the tables in section C varies from 0% in the low density limit to about 3-4% at 5000 psi and 10% at 15,000 psi. In the critical region ($T_c \pm 5\%$ and $\rho_c \pm 20\%$) the uncertainties are much greater and very difficult to estimate as the property diverges at the critical point.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References of Special Interest:

Solid: 487, 5719, 5879, 6014, 6768, 11238, 15481, 68779, 78548

High Pressure Gas: 6995, 13780, 26659

Ortho-Para Differences: 13558

Sources reviewed but not used:

See A-2

Dielectric Constant

Definition: The dielectric constant of a material may be defined as

$$\varepsilon = C(P,T)/C(0,T)$$

where C(P,T) is the capacitance of a capacitor whose plates are separated by the material at pressure P and temperature T, and C(0,T) refers to the capacitance of the same capacitor in a vacuum. In practical situations corrections are often applied for pressure distortion of the capacitor. The equation assumes no stray capacitances, i.e., the electric field is affected only by the dielectric material.

Note: The dielectric constant is also known as specific inductive capacity.

Tables of Values: This quantity is tabulated in the tables in section C.

Units	Range of Table	Table Location
Dimensionless	0.01 - 100 MPa 13.8 - 3000 K	C-2, C-2b
Dimensionless	1.0 - 15,000 psi - 24.845 - 5000 R	C-2a, C-2c
Dimensionless	saturation boundary	C-5,C-5a,C-5b,C-5c

Graph: B-5, B-5a, B-5b

Equation: The dielectric constant for the fluid parahydrogen may be calculated from

$$\frac{\varepsilon-1}{\varepsilon+2} = A\rho + B\rho^2 + C\rho^3$$

where A = 0.99575, B = -0.09069, C = 1.1227, and ε is the dielectric constant. The density, ρ, must be in the units of g/cm^3. The equation is valid over the range of the tables and may be extrapolated in the fluid phase with reasonable results.

Ortho-Para Modifications

32363 41438 66761

Solid Phase

48376 52135 52149 68779 73601 80376 83866

Range of Values:

Units	Triple Point			Boiling Point		Critical Point	300 K
	liquid	vapor	solid	liquid	vapor		1 atm
	1.252	1.0004	1.285	1.229	1.004	1.0980	1.00025

Uncertainty: The uncertainty of ε-1 is estimated to be no greater than 0.1% for the fluid phase and 0.2% for the solid phase.

References:

[22412] Stewart, J. W., J. Chem. Phys. Vol. 40, No. 11, 3279-3306 (Jun. 1964).

[52135] Younglove, B. A., J. Chem. Phys. Vol. 48, No. 9, 4181-6 (May 1968).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

Sources reviewed but not used:

10 219 638 664 684 711 939 2020 4403
5495 5541 5675 5710 5780 5789 6162 6165 6371
12019 13546 13777 14219 14223 14224 14226 14541 14544
23360 23545 24731 24782 25290 25732 25952 26502 26607
27935 27951 28603 28604 32363 32953 33511 33966 34352
34510 41438 42114 43369 47030 48376 48404 48582 52149
53420 54294 59402 61017 61549 65729 66566 66761 67052
67053 67122 68779 68981 70969 72574 73081 73601 80777
80375

Diffusion Coefficient

Definition: The diffusion coefficient is defined as the coefficient relating the flux of a given species in a mixture to the concentration gradient of the species under isothermal conditions. For a binary mixture of species i and j:

$$\underset{\sim}{J}_i = -D_{ij} \text{ grad } C_i$$

where $\underset{\sim}{J}_i$ is the mass flux of i, and C_i the gradient of concentration, and D_{ij} the diffusion coefficient. Diffusion is usually thought of as a property of mixtures; however the term self diffusion, as the name implies, refers to a diffusion of a single species. There is, of course, no true means of measuring such a quantity so the process is simulated using different isotopes of the same species. A third type of diffusion appears in the literature for hydrogen where the binary mixture is that of molecules with different nuclear spin orientation, i.e., ortho-para mixtures.

Thermal Diffusion

Definition: In a binary system where a temperature gradient exists the above equation should be extended to

$$\underset{\sim}{J}_i = -D_{ij} \nabla c_i - D_{ij}^T \nabla \ell n \, T$$

where D_{ij}^T is the thermal diffusion coefficient. The same extension to isotopic and ortho-para mixtures is made.

The information on the diffusion of hydrogen has been categorized according to the above definitions and the references are listed below.

Equations:

From Kinetic theory; for a dilute gas

$$D_{ij} \alpha T^{3/2}$$

and at room temperature D_{ij} for hydrogen systems is about 1 cm^2/sec; T is temperature.

For liquid or gas disolved in a liquid

$$\frac{D_{ij}\,\eta}{T} = \text{constant}$$

where η is the viscosity of the mixture and T is temperature. D_{ij} for H_2 in a liquid is about 10^{-4} cm^2/sec.

Diffusion

Isothermal

27837(Kr) 28119(12 systems) 38582(N_2,A) 39336(N_2)
41790(SO_2, C_2H_5Cl, H_2O) 47030(He) 54014(Kr) 57748(Kr)

Thermal

Argon 34551 41361 51360 73805

Krypton 27837 34551 51360 54014 57748 73805

Xenon 32276 35294 40737 55189 61492 73805

CO_2 20111 41361 42113 42455 83448

SO_2 41790

H_2O 39828 41790

N_2O 69968 83554

O_2 1187 35656

CO 35656

N_2 745 1187 10682 35656 41361 42455 61492 72326
73805 75636 83448

Ne 962 69624

He^4 1187 10684 31624 32355 32686 35686 35653
35656 39330 41365 44758 45862 51360 52001
55588 61492 66748 70887 73805

He^3 51360

Self Diffusion

Isothermal

8382 8784 28119 31498 35559 37961 38567 39330
39486 41365 47030 50824 54886 66011 67014 84599

High Temps 43735 44818

Solid 79021

Thermal

11899	19328	30309	31624	32355	32686	35653	36011
36384	37587	38556	38564	38572	39330	39691	40724
40966	41359	41361	41365	46150	52420	54131	54886
71868	75572	77424	84887				

Ortho-Para

8754	70887	54131	40285	71868

Thermal Diffusivity

Definition: The thermal diffusivity, α, is defined as

$$\alpha = \frac{\lambda}{\rho\ C_p}$$

where λ is the thermal conductivity, ρ is the density and C_p is the specific heat capacity at constant pressure.

Tables of Values: This quantity is tabulated in the tables in section C.

Units	Range of Table		Table Location
m^2/h	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-2b
ft^2/h	24.5 - 5000 R	1.0 - 15,000 psi	C-2a, C-2c
m^2/h; ft^2/h	saturation boundry		C-5,C-5a,C-5b, C-5c

Graph: None

Equation: None, except above and the equation of state; see A-11.

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	1 atm 300 K
m^2/h	0.00053	0.034	0.00052	0.0038	0	0.52
ft^2/h	0.0057	0.36	0.0056	0.040	0	5.6

Note: Values for normal and para are the same at these state points but do differ at other state points.

Uncertainty: The uncertainty of the values tabulated in section C is estimated to be ±10%, except in the critical region (T_c ±3% and ρ_c ± 30%) and for $T \leq 180$ R and $P > 5000$ psi.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References reviewed but not used:

745	962	1187	10682	10684	11043	11899	19328
20011	27637	28624	30309	31624	32276	32355	32686
34551	35294	35296	35559	35653	35656	36011	36384
37587	38556	38564	38567	38572	36582	36807	39330
39336	39691	39828	40285	40724	40737	40966	41359
41361	41365	41790	42113	42455	43735	44758	44818
45016	45178	45862	45863	46150	48202	50824	51360
52001	52420	54014	54131	55189	55588	56804	57535
57748	61492	64468	66748	66970	67160	69624	69968
70887	71868	72326	73805	75572	75636	75844	77424
83448	83554	84887					

Dielectric Breakdown

Liquid

Below some critical electric field gradient, called the "breakdown voltage", hydrogen is an insulator. In recent years, there have been a few experiments to determine this breakdown voltage for liquid hydrogen. Two things seem evident from these experiments, first there is a fairly large dispersion in the measurements (reproducibility in a single experiment commonly has a 25% scatter) and second the breakdown voltage is quite sensitive to pressure changes, i.e., an increase from 300 KV/cm to 690 KV/cm was observed when the pressure was increased from 1 to 5 atmospheres at 20 K (60954).

General References:

19687 43297 58709 60071 60954 68433 70969 73081
74078 74751 82002 87443

Other References:

13831 48582 52352 60953 67122 68981 71753 72937
73584 84542

Gas

Hydrogen in the gaseous phase is, like the liquid, an insulator below some critical field gradient. When the critical voltage is reached, the gas ionizes and a corona results and the conduction takes place. This breakdown voltage follows Paschen's law which states the breakdown voltage, V, does not change as long as ρd is a constant and is proportional to ρd.

$$V \propto \rho d$$

where ρ is the density and d is the electrode spacing. This relation is surprisingly independent of temperature although some investigators (see for example 29663) claim to have observed temperature dependence at low temperatures. Also a minimum breakdown voltage for hydrogen has been observed at about 250-300 volts at a ρd of 10^{-7} g/cm^2.

General References:

786 6015 6755 6800 7142 7206 7211 13058
18763 19687 29599 29663 33790 35528 35529 43297
44818 45268 47612 58079 58326 60954 61549 63755
68177 68627 69196 74751 82002 84542

High Temperatures:

33790 44818

Electrical Conductivity

Hydrogen is essentially an insulator with a negligible electrical conductance except when voltages in excess of the breakdown voltages are applied. At elevated temperatures where ionization occurs, the gas becomes an electrical conductor and conductivities for hydrogen to 30,000 K and 40,000 K have been calculated (33790 and 44818).

General References:

627 11264 21181 32953 40311 48359 52352 61549
67713 87443

Enthalpy

Definition: Enthalpy is defined by the equation H = U + PV where U is the internal energy, H is the enthalpy and PV the product of pressure and volume. The change in enthalpy is a measure of the heat absorbed by a system in a constant pressure process. The enthalpy of a substance is a derived thermodynamic property and may be calculated by means of thermodynamic relationship which require the PVT surface (see section A-11) and the specific heat capacity (see sections A-15 through 18).

Tables of Values: Tabulated in Tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b and C-5c.

Units	Range of Table		Table Location
J/g	13.8 - 3000 K	.01 - 100 MPa	C-2, C-2b
BTU/lb	25 - 5000 K	1 - 15,000 psia	C-2a, C-2c
J/g, BTU/lb	saturation boundry		C-5, C-5a C-5b, C-5c

Graph:

B-37	T-S Chart
B-37a	T-S Chart
B-37b	H-S Chart
B-37d	T-S Chart

Equation: None (see above)

Range of Values: The reference state for enthalpy is zero for the ideal gas at zero absolute temperature (see A-19).

Units	Triple Point		Boiling Point		300 K, 1 atm
	liquid	vapor	liquid	vapor	
Para					
J/g	-308.8	140.3	-256.3	189.3	4199.4
BTU/lb	-132.9	60.36	-110.2	81.45	1806.6
Normal					
J/g	218.3	667.4	270.9	716.5	4226.9
BTU/lb	93.92	287.1	116.5	308.2	1818.5

Uncertainty: The uncertainties of the enthalpy values tabulated here varies somewhat with pressure and temperature. In the region of $T < 300$ K the uncertainty is estimated to range from 1.2 J/g at low densities to about 5.0 J/g in the liquid., For all densities at $300 < T < 500$ K the uncertainty is

estimated to vary from 1 J/g at low pressures to about 15 J/g at the highest pressures. For temperatures above 500 K the uncertainty of the enthalpy at the lower densities could be much greater especially for temperatures above about 1800 K where disassociation is a large factor.

References:

[29210] Roder, H. M., Weber, L. A. Goodwin, R. D., Natl. Bur. Stds. Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Stds. Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press)

References of Special Interest:

Solid: 12596 12830 28604 37208 38237 71082

Ortho-Para Differences: 10930 25952 16163 23482 28223 71082

Equilibrium: 80837

Normal: 14023 6368

High Pressure and/or High Temp; 17398

References review but not used:

419 473 463 508 520 616 658 3867 5493
5512 5921 6063 6063 6069 6257 6276 6393 6838
8130 10218 10742 10882 11102 11271 11283 11940 12540
15740 16447 17166 18502 21750 21794 21853 24314 25355
34613 40191 42282 45529 46118 47303 48307 48467 48572
53551 54004 57689 59747 62625 69556 70584 73677 74375
12830 37208 38237 55972 12596 12161 12018 23790 24782
19403 24823 29484 30350 30659 31708 37427 42644 44229
44439 48376 49619 50479 52676 66011 69647 70317 81975
72638

Entropy

Definition: Entropy is defined by the equation $dS = dQ/T$, or in words: In any reversible process the change in entropy of a system is equal to the heat which it absorbs, divided by the absolute temperature. The entropy of a substance is a derived thermodynamic quantity and many thermodynamic equations exist which relate the PVT surface of a substance to the changes in entropy. In addition to the PVT surface, or an equation of state, the specific heat capacity of a substance is needed to complete the calculation.

Tables of Values: This quantity is tabulated in tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b, C-5c.

Units	Range of Table		Table Location
J/g-K	13.8 - 3000 K	0 - 100 MPa	C-2, C-2b
BTU/lb°R	25 - 5000 R	1 - 15,000 psi	C-2a, C-2c
J/g-K, BTU/lb°R	saturation boundry		C-5, C-5a,

Graph:

B-37	T-S chart
B-37a	T-S chart
B-37b	T-S chart
B-37c	H-S chart
B-37d	T-S chart

Equation: None (see definition).

Range of Values: The reference state for entropy is the ideal gas at one atmosphere pressure and zero absolute temperature (see A-19).

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	300 K 1 atm
Para					
J/g-K	4.964	37.52	7.977	29.97	64.77
BTU/lb-°R	1.186	8.966	1.907	7.162	15.48
Normal					
J/g-K	14.08	46.64	17.09	39.08	70.58
BTU/lb-°R	3.365	11.15	4.085	9.341	16.87

Uncertainty: The uncertainty of the entropy values tabulated here varies somewhat with pressure and temperature. In the region $T < 300$ K, the uncertainty is estimated to range from 0.04 J/g-K at low pressures to 0.17

J/g-K at the higher pressures. For all P at 300 < T < 500 K the uncertainty is estimated to vary from 0.05 J/g-K at low pressures to about 1.0 J/g-K at the highest pressures. For temperatures above 500 K the region is again one of extrapolation and the uncertainties are greater especially for the low pressures at temperatures above 1800 K where dissociation becomes significant.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Stds. Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Stds. Tech. Note 617 (Apr 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press)

References of special interest:

Solid: 9219 12830 12896 27055 34352 37208 38237 50962 71082

Ortho-Para References: 16163 23482 28223 71082 10930 23790 25952

Equilibrium: 80837

Normal: 14023 6368

High pressure or high temperature: 17398

References reviewed but not used:

224 275 453 520 561 658 5512 6063 6069
6224 6257 6276 6281 6292 6617 6838 9219 9444
9819 10742 10882 11102 11283 11940 12018 12161 12540
12596 12830 13537 15386 15740 16447 17166 17833 18502
19403 21016 21750 21794 21853 23790 24314 24782 24823
25096 27055 27120 29438 29931 30350 30659 31708 34613
35467 37028 37427 41373 42117 42282 45529 46118 47303
48307 48376 48467 48572 49619 50479 53551 53803 54004
59747 62625 64320 66011 69556 70317 70584 72638 73677
81975

Equation of State

Definition: The relationship between the pressure, temperature and density of a substance is called the equation of state. This section will be concerned with the mathematical model of the equation of state. Because of the speed and availability of today's digital computers, the mathematical equation of state is an extremely useful tool. There are literally hundreds of these "equations of state" to be found in the literature. To recommend an equation of state, the detailed requirements must be known, or, to put it another way, there is no single mathematical model of the equation of state which will be the best choice for every purpose.

Equations: For the equations used to generate the tables C-2, C-5, C-2a, C-5a, C-2b, C-5b, C-2C, C-5b see [29210], [80777] and[96351]. For a more versatile but not quite as accurate equation of state see [91653]. For an equation of state with realistic critical point behavior see [63091]. For an equation of state designed for extremely high speed computation but less accuracy see [80837]. See also the main text on computer programs and section A-12.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[63091] Goodwin, R. D., J. Res. Natl. Bur. Standards, Sec. A. Vol. 73, No. 6 (Dec. 1969).

[80837] Roder, H. M., McCarty, R. D., Hall, W. J., Natl. Bur. Standards Tech. Note 625 (Oct. 72).

[91653] McCarty, R. D., Natl. Bur. Standards Internal Report, 74-357.

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press)

[98426] Roder, H. M., McCarty, R. D., Natl. Bur. Standards, Internal Report 1975 - In press.

Sources reviewed but not used:

Solid: 18852 40176 41169 43872 56702 71335 79037 79038 79779 80394 82990 80829 8

High temperature and/or high pressure: 20897 25537 33026 38176 41212 41373 76648 78271 79036 81975

Ortho-Para Differences: 8776 43074

General:

442	494	517	542	565	575	634
669	727	801	995	1845	3276	3541
5139	5542	5808	5967	6177	6191	9194
6230	6231	6323	6326	6328	6334	6368
6376	6415	6718	6733	6776	6852	6926
6927	6928	6929	6995	7355	7589	7611
7681	7748	7852	8314	8331	8395	8399
8401	8435	8645	8732	8762	9533	9545
10437	10647	10677	10846	10989	11005	11037
11136	11242	11245	11346	11574	11899	12231
12250	12424	12617	12725	12791	12817	12855
14487	14621	14625	14766	15359	16098	16200
16308	16378	16832	17960	17965	18178	18707
18839	18917	19613	19646	19697	19709	19896
19898	19899	19900	20182	20183	20255	20547
20642	20900	20943	21078	21132	21794	22174
22666	22920	23817	24724	24756	24914	25268
25536	26051	26316	26648	26733	26756	27053
27098	27199	27831	27838	27840	27937	27949
28008	28149	28237	28650	28653	28722	29141
29216	29396	29882	30138	30141	30350	30694
31188	31739	32705	33660	33967	34481	34613
35809	37435	38567	39335	39993	40017	40173
41365	41645	41837	43270	43413	44622	45598
47321	47563	47795	48290	48758	49784	50164
50804	50838	51027	52153	52527	53409	53998
54736	54885	54948	54964	55628	56374	56376
56460	59349	59746	59747	60339	61379	61502
62504	63082	63091	63710	64082	64321	64383
64482	66093	66247	73618	78382	79792	80223
80309	80358	80742	82417	80375	86089	

Virial Coefficients

Definition: The virial coefficients are commonly defined in two ways as follows

$$P = RT\rho[1 + B(T)\rho + C(T)\rho^2 + ...] \text{ and}$$

$$PV = RT + B'(T)P + C'(T)P^2.$$

The first two terms of these series may be inverted by the following

$$B(T) = B'(T) \qquad C'(T) = \frac{C(T) - B(T)^2}{RT}$$

where P is pressure, T is temperature, ρ is density, V is $1/\rho$, R is the gas constant and the B(T), B' (T) and C(T), C' (T) are virial coefficients of a power series expansion in density and pressure, respectfully. Both series are theoretically infinite in length however the coefficients beyond the first two [B(T) and C(T)] are of less interest because of their complexity. The temperature at which B(T) = 0 is called the Boyle temperature. Either of the above two equations is adequate to describe the PVT surface for densities up to about one-half critical. The coefficients B(T) and C(T) for hydrogen for the density expansion are given in table C-12. Most equations of state may be algebraically arranged such that they are in a virial expansion form and therefore these equations of state may be used to calculate the virial coefficients (see section A-11 for equations of state).

Tables of Values:

Units	Range of Table	Table Location
$B(cm^3)/mol), C(cm^3/mol)^2$	13 - 500 K	C-12

Graph: None

Equation: The values in table C-12 have been calculated from the following expressions:

For temperatures below 100 K

$$B(T) = (b_1T + b_2 + b_3/T + b_4/T^2)/RT$$

where $b_1 = 1.9397741 \times 10^3$; $b_2 = -1.9279522 \times 10^5$; $b_3 = -2.2890051 \times 10^6$

$b_4 = 1.1094088 \times 10^7$.

for $T < 55$ K; $C(T) = (C_1T^2 + C_2T + C_3 + C_4/T + C_5/T^2 + C_6/T^3)/RT$

There are two sets of the C_i coefficients. One for temperatures below $T_c = 32.957$,

$$C_1 = 1.0541776 \times 10^5$$
$$C_2 = -1.6597141 \times 10^7$$
$$C_3 = 1.0431411 \times 10^9$$
$$C_4 = -3.2538718 \times 10^{10}$$
$$C_5 = 5.1405848 \times 10^{11}$$
$$C_6 = -3.3123453 \times 10^{12},$$

and a second set for temperatures between T_c and 55 K,

$$C_1 = 1.6971294 \times 10^3$$
$$C_2 = -5.0854223 \times 10^5$$
$$C_3 = 6.7284118 \times 10^7$$
$$C_4 = -3.8045171 \times 10^9$$
$$C_5 = 1.0789413 \times 10^{11}$$
$$C_6 = -1.1515642 \times 10^{12}$$

for $55 < T < 100$ $C(T) = a_1 e^{a_2/T} [1 - e^{a_3\{1-(T/a_4)^{a_5}\}}]$.

$a_1 = 388.682$ $a_2 = 45.5$ $a_3 = 0.6$

$a_4 = 20.0$ $a_5 = 4.0$.

For temperatures above 100 K

$$B(T) = \sum_{i=1}^{4} b_i x_1^{(2i-4)/4}$$

and

$$C(T) = C_o x_2^{1/2} [1 + C x_2^3] [1 - \exp(1 - x_2^{-3})]$$

$b_1 = 42.464$ $\quad x_1 = 109.781$ K/T

$b_2 = -37.1172$ $\quad C_o = 1310.5$

$b_3 = -2.2982$ $\quad C = 2.1486$

$b_4 = -3.0484$ $\quad x_2 = 20.615$ K/T

Range of Values:

Units	14 K	20 K	100 K	200 K	300 K
$B(T)$ cm^3/mol	-237.2	146.7	-2.51	10.73	14.38
$C(T)$ (cm^3/mol)^2		-1503	608.6	421.7	343.8

Boyle Point (B = 0): 112.4 K

Uncertainty: The uncertainty of B is probably a maximum of 5% at the highest and lowest temperatures. The uncertainty of C is a minimum of 5% between 55 and 100 K and as much as 20% for temperatures below critical temperature.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 72).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References reviewed but not used:

494	565	575	634	669	727	801	995
1845	5139	6191	6326	6328	6334	6368	6718
6733	6776	6929	7589	7852	8399	8401	8435
8732	8762	9533	10846	10989	11005	11242	11245
12855	11899	12231	12250	12424	12725	12817	14625
14766	16098	16378	16832	17960	18178	18707	18839
20183	20547	20900	21078	21794	22920	24756	24914
26051	26733	27831	28237	29216	30141	31739	32363
32705	33026	33967	34506	34613	37435	38176	38567
39993	40173	41212	41365	41837	43413	43872	45598
47563	48758	50804	53998	54885	54964	59349	61502
73618	73660	78382	80742	80375	86089		

Ortho-Para Differences 8776 28223 43074

Intermolecular Potential Function

Definition: The intermolecular potential function is the potential energy of interaction that exists between pairs of molecules. Mathematical models of this function are used to calculate macroscopic properties with kinetic theory and statistical mechanics.

General Comments: The potential energy of interaction between unlike molecules, i.e., hydrogen and some other fluid, has not been considered here. Only those papers which had some relevance to H_2 - H_2 interactions have been retained in the index below.

The Lennard-Jones Potential: The most common potential to the literature is the Lennard-Jones or 12-6 potential:

$$\varphi(r) = 4\varepsilon \left[\left(\frac{\sigma}{r}\right)^{12} - \left(\frac{\sigma}{r}\right)^{6}\right].$$

Where $\varphi(r)$ is the potential energy of interaction, r is the intermolecular separation, ε is the maximum energy of attraction, and σ is the intermolecular separation for which $\varphi(r) = 0$. σ is sometimes referred to as the molecular diameter. Typical values for hydrogen are $N\sigma = 15.6$ cm^3/mol and $\varepsilon/K = 36.7$ [8762] where N is Avogadro's number. The above parameters for the Lennard-Jones potential have been shown [49455] to be temperature and property dependent. A new potential model has been developed [70403], [84357] which has shown significant improvement over the Lennard-Jones, unfortunately parameters for hydrogen are not yet available.

References

[8762] Michels, De Graaff, W. and Ten Seldom, C., Physica Vol. 26, No. 6, 393-408 (Jun 1960).

[49455] Hanley, H.J.M., and Klein, Max, NBS, Tech. Note No. 360 (1967).

[70403] Klein, Max, and Hanley, H.J.M., J. Chem. Phys. 53, 4722-3 (1970).

[84357] Hanley, H.J.M., and Klein, Max, NBS, Tech. Note No. 628 (1972).

Sources reviewed but not used:

General

669 727 1845 5542 5832 6131 6194 8331
8435 8762 9545 11037 12617 13614 14040 14621
14766 17398 18851 18917 19764 21794 22249 24007
24300 26650 26750 27053 27110 27174 27523 27838
27957 28117 28652 29931 31280 31624 32356 32400
32674 32686 32692 32823 34025 34419 34506 34518
36047 36399 36792 36819 38170 38176 40731 41212
41358 41365 41837 42678 43965 45177 45253 45254
45547 45562 45598 46406 46691 47798 48466 48758
49784 50686 50804 51604 53018 54885 57472 57911
59647 61003 61502 63220 63488 67028 67029 67620
68243 68686 70095 70726 70833 71266 72452 73446
77118 77436 77506 78186 79356 80309 81220 81577
82819 82771 85203 86609

Lennard-Jones

6334 11574 20011 26033 43413 66569 68343 68602

Solid

26733 33811 43872 52757 71335 73609 75218 76956
74036 81210

Fixed Points

Discussion: Below is a summary of the P-ρ-T data at selected fixed points. To be consistent with the property tables in section C, the temperatures in the para-equilibrium column are on the NBS-55 scale. The temperatures in the column labeled Normal are also on the NBS scale. For relationships between the IPTS-68 scale and the NBS-55 scale see [59932].

Critical Point

Para or Equilibrium	Normal
T = 32.976 ± 0.05 K	33.19 K
P = 12.759 atm (1.2928 MPa)	12.98 atm (1.315 MPa)
ρ = 15.59 mol/ℓ (31.43 kg/m^3)	14.94 mol/ℓ (30.12 kg/m^3)

Normal Boiling Point

T = 20.268 K	20.39 K
P = 1 atm (.101325 MPa)	1 atm (.101325 MPa)
ρ(liquid) = 35.11 mol/ℓ (70.78 kg/m^3)	35.2 mol/ℓ (71.0 kg/m^3)
ρ(vapor) = 0.6636 mol/ℓ (1.338 kg/m^3)	0.6604 mol/ℓ (1.331 kg/m^3)

Triple Point

T = 13.803 K	13.957 K
P = 0.0695 atm (.00704 MPa)	0.0711 atm (.00720 MPa)
ρ(solid) = 42.91 mol/ℓ (86.50 kg/m^3)	43.01 mol/ℓ (86.71 kg/m^3)
ρ(liquid) = 38.21 mol/ℓ (77.03 kg/m^3)	38.3 mol/ℓ (77.2 kg/m^3)
ρ(vapor) = 0.0623 mol/ℓ (0.126 kg/m^3)	0.0644 mol/ℓ (0.130 kg/m^3)

Solid-Solid Transition: Solid hydrogen does undergo such transitions, see for example 29574 30699 35812 38726 43353 47572 45821 83866.

Molecular Weight: 2.01594 on the C^{12} scale [24033].

Other Properties at the Fixed Points: see tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b and C-5c as well as tables 14 and 14a.

References:

[6368] Woolley, H. W., Scott, R. B., Brickwedde, F. G., J. Res. Natl. Bur. Standards Vol. 41, 379 (Nov. 1948).

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[24033] IUPAC Revised Atomic Weights Values, Chem. Engr. News 39, 42 (Nov. 1961).

[59932] The International Practical Temperature Scale of 1968, Metrologia 5, 35 (Apr. 1969).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

Sources reviewed but not used:

Critical Constants Hydrogen

493	542	562	579	619	700	737	740
940	5542	5564	5567	5677	5690	5808	6013
6049	6084	6105	6326	6342	6607	6610	6611
6852	8044	8699	9399	9501	9624	10194	11134
11136	12166	12204	12250	13537	14794	15359	15403
16375	16826	17336	17625	18042	19187	20900	21016
21134	22243	23790	25096	25732	26648	30313	31446
32705	32709	33635	34352	34512	35809	41511	42114
43297	45562	48290	48912	50681	50968	56863	60684
62901	65711	76630	78382				

Boiling Point Hydrogen

740	1617	2040	2169	2839	2840	2928	5447
5643	5677	6013	6235	6259	6326	6334	6378
6607	6621	6622	6628	6893	8118	8699	9490
9503	9624	10916	11001	11247	12204	12830	12901
13161	13779	14423	14799	14800	14959	16076	16376
16701	19187	20893	21754	22243	22936	23435	23790
24498	24502	24504	24506	24511	25302	25732	27098
27995	28653	29230	32104	34352	34514	36346	42101
42114	44085	45682	45688	46053	49620	53150	87118
87119	87126						

Triple Point Hydrogen

454	579	2040	2928	5564	5677	5679	6080
6326	6378	6421	8314	8325	8366	8699	9219
9490	9503	10916	11924	12830	13537	14130	14799
14800	15403	16376	19187	21754	21824	22243	22923
22936	23790	24502	25302	25355	25732	26648	26651
27098	29230	38237	42114	44085	45682	45688	46053
48376	49620	52666	53150	59955	68779	87117	87118
87119	87126	87577					

Heat Capacity (Specific Heat) at Constant Pressure

Definition: The heat capacity at constant pressure is defined as

$$C_p = (\partial H/\partial T)_p$$, where H is enthalpy.

Tables of Values:

Units	Range of Values		Table Location
J/g-K	13.8 - 3000 K	.1-100 MPa	C-2,C-2b,C-5b
BTU/lb-R	25 - 5000 R	1-15,000 psia	C-2a,C-2c,C-5c

Graph: B-15

B-15a

Equation: None

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
(Para) J/g-K	6.36	10.52	9.66	12.15	∞	14.85
BTU/lb-R	1.521	2.513	2.310	2.904	∞	3.548
(Normal) J/g-K	6.36	10.52	9.66	12.15	∞	14.31
BTU/lb-R	1.521	2.513	2.310	2.904	∞	3.420

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to 3% at 5000 psia and 8% at 15,000 psia. In the critical region (T_c ± 5%, ρ_c ± 20%) the uncertainties are greater but difficult to estimate.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press)

References of Special Interest:

Ortho-Para Differences: 2040 6368 6617 16163 16232 17018 28223

High Pressure: 21853 24116 26659 49335 81975 50155
56401 59747

High Temps: 24116 50964 78381

Solid:

426 5119 5962 6322 6354 6368 6378 9219
9503 13911 21136 21806 23394 28604 34352 41169
47659 49910 57081 59944 64494 73217 78052 78548

References reviewed but not used:

204 224 275 453 485 616 622 633
657 700 728 740 2020 3142 3867 5095
5118 5170 5432 5437 5493 5536 5600 5718
5722 5726 5825 5831 5921 5990 6011 6013
6029 6046 6105 6112 6113 6114 6191 6217
6221 6253 6257 6266 6300 6318 6326 6375
6393 6416 6421 6813 6838 7396 7447 7896
8673 8698 8706 8710 9444 9486 9752 10218
10742 10748 10872 10880 10882 10913 11043 11271
11283 11940 12018 12161 12197 12596 13271 13380
13537 13558 14129 15739 15740 16142 16200 16213
16317 16877 17166 17442 17833 18121 18502 18837
18838 19287 19403 19709 20900 21016 21132 21750
21794 22251 22666 23172 23790 24314 24316 24318
24323 24332 24650 24651 24731 24782 24823 25096
25302 25355 25559 25732 25911 25952 25978 26227
26613 26750 26767 27105 27186 27464 27513 28110
28604 29210 29438 30141 30350 30473 31708 33967
34613 36818 37427 38807 39250 40017 40655 41524
41771 41893 42075 42101 42103 42114 42140 42282
42644 42751 43199 43200 43261 44439 44622 45253
45439 45454 45529 46118 48233 48289 48307 48376
48404 48467 48572 48653 48912 49645 50479 50962

52908	53551	53803	54004	54036	54294	54498	54506
54512	54512	54594	54596	54765	55969	55972	59749
60339	62625	63091	64468	65157	66518	66773	67271
69647	71063	72638	73081	73359	76648	77178	77224
77232	78418	79962	80777	80837	84841		

Heat Capacity (Specific Heat) at Constant Volume

Definition: The heat capacity at constant volume is:

$$C_v = (\partial U/\partial T)_v$$

where U is internal energy, T is temperature and v is specific volume.

Tables of Values:

Units	Range of Tables	Table Location
J/g-K	13.8 - K, .01-100 MPa	C-2,C-2b,C-5,C-5b
BTU/lb-°R	25-5000 R, 1-15,000 psia	C-2a,C-2c,C-5a,C-5c

Graph: B-16, B-16a, B-16b, B-16c

Equation: None

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
(Para) J/g-K	4.67	6.21	5.78	6.50	∞	10.72
BTU/lb-R	1.12	1.48	1.38	1.55	∞	2.562
(Normal) J/g-K	4.67	6.21	5.78	6.50	∞	10.18
BTU/lb-R	1.12	1.48	1.38	1.55	∞	2.434

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to 3% at 5000 psia and 8% at 15,000 psia. In the near critical region (T_c ± 5%, ρ_c ± 20%) the uncertainties are greater but difficult to estimate.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards IR 74-374 (In Press).

References of Special Interest: see A-15

References reviewed but not used; see A-15

Heat Capacity (Specific Heat) Ratio

Definition: $\gamma = C_p/C_v$

Tables of Values: The specific heat ratio is not tabulated in tables, however C_p and C_v are tabulated and should be used to form the ratio as defined above.

Graph: None

Equation: None

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
(Para) Dimensionless	1.38	1.69	1.69	1.88	∞	1.38
(Normal) Dimensionless	1.38	1.69	1.69	1.88	∞	1.41

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to 3% at 5000 psia and 8% at 15,000 psia. In the near critical region (T_c ± 5%, ρ_c ± 20%) the uncertainties are greater but difficult to estimate.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References reviewed but not used:

2020 6253 7747 10218 24731 26767 28110 30141

43199 54498 54512 54594

Heat Capacity (Specific Heat) of the Saturated Liquid at Constant Saturation

Definition: $C_\sigma = T(\partial S/\partial T)_\sigma = (dH/dT)_\sigma - V(dP/dT)_\sigma$.

where the subscript σ denotes constant saturation.

Tabulated Values: None

Graph: None

Equation:

$$C_\sigma = \frac{AT}{(T_c - T)^n} + B + CT + DT^2 + ET^3 + FT^4 + GT^5$$

where T is temperature in Kelvins, n = 0.10 and A = 1.6815742, B = -32.80279; C = 6.8169871, D = -0.73194341, E = 0.033574357, F = -0.0007682974, G = 0.0000069029224 and T_c = 32.984. C_σ is cal/mol • K.

Units	Triple Point	Boiling Point	Critical Point
(Para only) J/gK	6.33	9.59	∞
BTU/lb-R	1.51	2.29	∞

References:

[13696] Younglove, B. H., Diller, D. E., Cryogenics 2, No. 5, 283-7 (Sept. 62).

Reference of Special Interest:

Solid: 6368 9219 13911 37846 80375

Uncertainty: The uncertainty is estimated by the author [13696] to be 0.3% except near the critical point.

References reviewed but not used:

740 6013 6378 13271 13380 13696 16142 17442 42140

Ideal Gas Properties, Thermodynamic

Discussion: All thermodynamic properties tabulated here are based on thermodynamic properties of the ideal gas. These ideal gas properties are derived from spectroscopic measurements and statistical mechanics. The ideal gas properties used here are taken from [6368]. The reference state for these properties is the ideal gas at 0 K where the free energy, E_o^o is taken to be zero. By convention the values of S^o and C^o are presented for 1 atmosphere pressure.

Tables of Values: For normal, equilibrium and parahydrogen see reference [6368]

Properties	Units	Range of Table	Table Location
C_p^o, S^o, H^o-E^o,-$(F^o-E_o^o)/T$,	cal mol, K	10-5000 K	[6368]

Graph: None

Equation: None

Uncertainty: The uncertainty for C_p^o is estimated to be 0.2% to 700 K increasing to 0.4% at 5000 K. The uncertainty for S^o and E^o is estimated to be an order of magnitude less.

References:

[6368] Woolley, H. W., Scott, R. B., Brickwedde, F. G., J. Res. Natl. Bur. Standards Vol. 41, 379 (Nov. 1948).

References reviewed but not used:

6292 6617 10882 11271 16163 45454 45529 48572
56804 62625 78381 83588

Index of Refraction

Definition: The index of refraction n_λ of a medium is the ratio of the speed of light in a vacuum to the speed of light in the medium, $n_\lambda = C/C_m$.

Discussion: The refractive index of a non-polar fluid depends on the wavelength of the incident light and on the density of the fluid and to a lesser extent, the temperature. The dependence on temperature is usually small enough to be neglected as it has been here. The graph at location B-20 gives an indication of the temperature dependence. Reference [54546] gives a comparison between the index of refraction for normal and parahydrogen.

Table of Values:

Units	Range of Values	Table Location
Dimensionless	saturated liquid	C-20

Graph: See B-20

Equation:

$$n_\lambda(\rho) = \left(\frac{2\rho r_\lambda(\rho) + 1}{1 - \rho r_\lambda(\rho)} \right)^{1/2}, \text{ where}$$

$$r_\lambda(\rho) = 0.99575 - 0.09069\rho + 1.227\rho^2 + 0.7799569 \times 10^6/\lambda^2 + 0.495126 \times 10^{12}/\lambda^4$$

where the specific refraction $r_\lambda(\rho)$ is in cm^3/g, densities are in g/cm^3 and the wavelengths are in angstroms.

Range of Values:

Units	Boiling Point liquid	300 K 1 atm	λ angstroms
Dimensionless	1.1137	1.0001	4358.

Uncertainty: The uncertainty of the tabulated values is estimated to be less than 0.1%.

References:

[54546] Diller, D. E., J. Chem. Phys., Vol. 49, No. 7, 3096 (Oct. 1968).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr 1972).

References of Special Interest:

Ortho-Para Differences: 54546 28932

References reviewed but not used:

233	6097	10740	13782	19277	19279	19291	19292
19365	23393	25535	25732	26608	26776	30251	33511
34369	40786	40787	40982	42114	45432	46848	54514
54595	55712	58489					

Internal Energy

Definition: Internal energy is defined by the equation $\Delta U = Q - P\Delta V$, where Q is the heat absorbed in a system, ΔU is the change in internal energy, P is the pressure and ΔV is the change in volume. The internal energy of a system is a derived thermodynamic property and may be calculated by means of thermodynamic relationships which require the PVT surface (see section A-11) and the specific heat capacity (see sections A-15 through 18). The most common method of calculating the internal energy is by using $H = U + PV$ where H is the enthalpy (see A-9) and PV is the pressure volume product.

Tables of Values:

Units	Range of Values		Table Location
J/g	13.8 - 3000 K	.1 - 100 MPa	C-2, C-2b
BTU/lb	25 - 5000 R	1 - 15000 psia	C-2a, C-2c
J/g, BTU/lb	saturation boundary		C-5, C-5a, C-5b, C-5c

Graph: None

Equation: None see definition

Range of Values: The reference state for internal energy is zero for the ideal gas at zero absolute temperature (see A-19).

Units	Triple Point		Boiling Point		300 K, 1 atm
	liquid	vapor	liquid	vapor	
Para					
J/g	-309.0	84.2	-257.7	113.6	2961.38
BTU/lb	-132.9	36.2	-110.9	48.9	1274.025
Normal					
J/g	218.2	611.4	269.5	640.7	2989.0
BTU/lb	93.88	263.0	115.9	275.7	1285.9

Uncertainty: The uncertainty of the internal energy values tabulated here is estimated to be the same as the enthalpy (see A-9).

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References of Special Interest:

Solid: 40839 48233 41169 50962 65299

Ortho-Para Differences: 10930 16163

References reviewed but not used:

6063 6069 6617 6838 10742 10882 12540 14023

15386 17833 19403 21750 21794 21853 24314 24823

25096 26227 29931 42282 48376 54294 59747 64320

69647 80837 81975

Joule-Thomson Coefficient

Definition: The Joule-Thomson coefficient, μ, is defined as

$$\mu = - C_p^{-1} (\partial H/\partial P)_T = (\partial T/\partial P)_H .$$

The sign of μ indicates whether a gas expansion will cause an increase or decrease in the temperature. If μ is positive the expanding gas will be cooled. The locus of points where $\mu = 0$ is called the Joule-Thomson Inversion curve. These data are given in table C-22.

Values of the Joule-Thomson coefficient are tabulated by Michels et al. [21853] for pressures up to 2500 atm.

Tables of Values: This quantity is not tabulated here but it may be calculated from the property table in section C.

Graph: B-22 the inversion curve, T vs P.

Equation: None - (may be calculated using an equation of state)

Range of Values:

Units	Pressure	40 K	110 K	180 K
K/atm	100 atm	-4.3×10^{-2}	2.5×10^{-2}	-7.6×10^{-3}
R/psi	1469.6 psi	-0.52×10^{-2}	0.31×10^{-2}	0.93×10^{-3}

Uncertainty: The uncertainty is estimated to be 5%.

References:

[21853] Michels, A., De Graff, W., Wolkers, G. J., Apl. Sci. Res. Vol. A12, No. 1, 9-32 (1963).

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

Sources reviewed but not used;

419	463	464	622	3276	6191	6288	6838
7355	10194	10677	10793	10846	11457	11690	13737
14232	15255	18026	18121	18526	18949	19403	20900
21794	22237	26316	26635	26748	28722	30101	30350
30833	41511	41695	52342	54507	59334	63481	68026
86715							

Latent Heat of Fusion

Definition: The latent heat of fusion is the amount of heat required to melt a unit mass of a substance at constant temperature and pressure at temperatures above the triple point.

Tables of Values: None

Graph: None

Equation: None

Range of Values: This quantity has been measured by several experimenters at the triple point. Reference [9219] was selected for the triple point, the two values listed below at higher temperatures are found in [30327].

Units	Triple Point	15.54 K	21.19 K
Cal/mol	28.08	30.80	40.28
J/g	58.28	63.92	83.60
BTU/lb	25.08	27.50	35.96

(Note: Values are for parahydrogen).

Uncertainty: The estimate of uncertainty based upon the existing data is about 0.25 cal/mol.

References:

[9219] Johnston, H., Clark, J. B., Rifkin, E. B., Keer, E. C., J. Am. Chem. Soc. Vol. 72, 3933-38 (1950).

[30327] Dwyer, R. F., Cook, G. A., Shields, B. M., et al., J. Chem. Phys. Vol. 42, No. 11, (Jun 1965).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

References of Special Interest:

none found

References reviewed but not used:

426	6326	6368	6375	6421	9444	12018	12596
12830	13831	13911	16295	16376	19003	19187	19652
21136	21747	21872	25302	25544	26651	27055	27098
28604	30359	32104	33967	34352	34455	41169	48376
56863	65157	80375					

Latent Heat of Sublimation

Definition: The latent heat of sublimation is the amount of heat per unit mass required to vaporize the solid phase.

Tables of Values: This quantity is tabulated in table C-24.

Graph: None

Equation: None

Range of Values:

Units	0, K	Triple Point
Para		
Cal/mol	181.5	244.5
J/g	376.7	507.4
BTU/lb	162.1	218.3
Normal		
Cal/mol	182.9	-
J/g	379.6	-
BTU/lb	163.3	-

Uncertainty: The uncertainty is estimated to be about 2 Cal/mol.

References:

[12596] Mullins, J. C., Ziegler, W. T., and Kirk, B. S., Georgia Inst. of Teck. Tech. Rpt. # 1 (Nov. 1961).

[16376] Clusius, K., Z. Elektrochem, Vol. 49 (1938).

[83866] Roder, H. M., Childs, G. C., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

References of Special Interest:

Ortho-Para

16232 22428 23790

References reviewed but not used:

6368 6376 12830 19187 19287 21824 25302 27098

27098 28604 34352 41169 64474 65157 70263

Latent Heat of Vaporization

Definition: The latent heat of vaporization is the amount of heat required to convert a unit mass of a substance from the liquid to the vapor state at constant pressure.

Tables of Values: This quantity is not tabulated but values are easily obtained from the tables in section C-5 by subtracting the liquid enthalpy from that of the vapor at the same temperature and pressure.

Graph: B-25 heat of vaporization vs T. B-25a

Equation: None

Range of Values:

Units	Triple Point	Boiling Point	Critical Point
Para			
J/g	448.2	445.5	0
BTU/lb	192.8	191.7	0
Normal			
J/g	449.1	445.6	0
BTU/lb	193.2	191.7	0

Uncertainty: The uncertainty is estimated to be 2.5 Joules/mole for para and 5.0 Joules/mole for normal

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[83866] Roder, H. M., Childs, G. C., McCarty, R. D. Angerhofer, P. B., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References of Special Interest:

Ortho-Para Differences: 6016 6368 9219 10930 23790 28223 29484 43074

References reviewed but not used:

2020	2208	2889	5491	5564	5928	6016	6300
6368	6375	6378	7396	9444	9624	11043	12016
12161	12204	12540	12596	12830	13380	13831	13978
14799	15359	16295	16361	16376	17442	18846	19187
19287	19403	20647	20900	21824	23790	24313	24731
24782	24823	25952	26227	27098	27104	28223	30020
30101	30659	32104	32373	33967	33981	35400	37208
37427	40811	40839	41169	41524	42644	43074	43297
44229	44439	47639	48307	48376	48404	51208	53664
54294	55969	55972	56863	58584	59749	63407	64881
65157	66093	72036	73081	80375	87577		

Melting Curve

Definition: The melting curve is the boundry between the solid and liquid regions in a phase diagram.

Tables of Values: The density of the saturated liquid in coexistence with the solid phase is found on the first line of each isobar in tables C-2 series. The liquid and solid densities of 3 points are given here. For more extensive tabulations the reader is referred to [83866].

Graph: B-27 and B-27a

Equation: See A-38 for vapor pressures.

Range of Values:

Units	Triple Point		100 atm		300 atm	
	liquid	solid	fluid	solid	fluid	solid
kg/m^3	77.0	86.9	81.8	89.9	88.7	96.0
lb/ft^3	4.81	5.42	5.11	5.61	5.54	5.99

Note: These values are for parahydrogen for an estimate of normal-para density differences see A-48, B-48a

Uncertainty: The uncertainty is estimated to be 0.1% for the liquid phase and 0.5% for the solid phase.

References:

[29550] Dwyer, R. F., Cook, G. A., Berwaldt, O. E.,

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References reviewed but not used:

See A-38

Melting Pressure

Definition: The relationship between pressure and temperature along the solid-liquid boundry.

Tables of Values: The melting temperature for a given pressure is found on the first line of each isobar in tables C-2 series.

Units	Range of Table		Table Location
MPa	13.8 - 34.2 K		C-2
psia	25 - 62.4 R	1 - 15,000 psia	C-2a
psia	25.2 - 90 R	86.5 - 32,060 psia	[80777]

Graph: B-27 melting curve (T vs P) for hydrogen, and B-27a

Equation: See [80777]

Range of Values:

Units	Triple Point	20 K 36 R	50 K 90 R
MPa	0.00704	22.71	221.1
psia	1.021	3293.	32060.

Uncertainty: The uncertainty of the pressures is about 0.1%.

References:

[5449] Mills, R. L., Grilly, E. R., Phys. Rev. Vol 101, No. 4, (Feb. 15, 1956).

[14130] Goodwin, R. D., Cryogenics Vol 2, No. 6, (Dec. 1962).

[52135] Younglove, B. A., J. Chem. Phys. Vol 48, No. 9, (May 1968).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

References reviewed but not used:

421	453	475	638	2040	2169	5118	6080
6250	6300	6368	6376	6421	6759	7396	8366
11241	12018	12204	12596	12830	13161	13272	13735
13770	13831	14423	14621	14955	14989	15358	16284

16286	16289	16364	16376	16701	18567	18947	19287
19448	19652	19694	20297	20900	21136	21747	21872
22687	23172	23478	23790	24274	25302	25844	27390
29861	30101	30103	30327	30359	30447	30756	30889
31446	31927	32104	33518	33967	34352	34513	34455
36346	39229	40839	41005	41169	42114	43094	44899
47933	49334	50447	51257	52135	52360	52504	52658
53292	54804	55972	58201	59322	59750	60340	61246
63082	64887	67259	67747	72918	77066	78389	78981
80394	80375	83262	87117	87453			

Phase Diagram

Definition: Phase diagrams indicate the boundries between the solid, liquid and or the gas phases. The diagrams which are referenced here are only those which yield the PVT of the phases. For a diagram of the phases in other coordinates consult the page on the particular property desired.

Graph: B-30 and B-30a

Uncertainty: The uncertainty of values taken from the above (or any other) diagrams is determined by the resolution of the individual chart.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

Prandtl Number

Definition: The Prandtl number, Pr, is defined by the relation

$$Pr = C_p \eta/\lambda$$

where C_p is the specific heat at constant pressure, η is the viscosity and λ the thermal conductivity.

Tables of Values

Units	Range of Table		Table Location
Dimensionless	13.8 - 3000 K	.01 - 100 MPa	C-2, C-2b
Dimensionless	25 - 5000 R	1 - 15,000 psia	C-2a, C-2c
Dimensionless	saturation boundary		C-5, C-5a, C-5b, C-5c

Graph: A-29, and A-29a

Equation: None other than above defining relationship

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	300 K
	liquid	vapor	liquid	vapor		1 atm
Dimensionless	2.24	0.623	1.29	0.804	∞	0.687

Uncertainty: The uncertainty is estimated to be 15% except in the critical region, where it is greater.

References:

[80777] McCarty, R. D. and Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

Sources reviewed but not used:

See A-15, A-39 and A-36

PVT

Definition: The abbreviation of PVT stands for pressure, volume and temperature, the fundamental variables of the state of a pure fluid at equilibrium. Any two of three variables may be specified, but the third is then a unique value for a given fluid, with the exception of the case where two or more phases coexist, in which case the pressure is a unique function of the temperature but the volumes of the phases differ.

Tables of Values: The properties are tabulated in the C-2 and C-5 series tables.

Graph: B-3, B-30, B-30a

Equation: see A-11, A-12, A-27 and A-38

Range of Values:

Property	Units	Range of Tables	Table Location
pressure	MPa	0.01 - 100	C-2, C-2b
pressure	psia	1 - 15,000	C-2a, C-2b
volume,	M^3/Kg	.0097 - 1538.	C-2, C-2b
volume,	ft^3/lb	.156 - 30,400.	C-2a, C-2c
temperature	K	13.8 - 3000	C-2, C-2b
temperature	R	25 - 5000	C-2a, C-2c

Note - (the tables for normal and parahydrogen do not reflect any difference for PVT - see section A-48 for a more detailed discussion of ortho para differences).

Uncertainty: The uncertainty is estimated to be:

Temperature Range	Pressure Range	Uncertainty in Density
700 - 3000 K	0.1 - 100 MPa	1%
300 - 700 K	0.1 - 100 MPa	0.5%
13 - 300 K	50 - 100 MPa	.2%
13 - 300 K	0.1 - 50 MPa	0.1%
Critical Region	$T_c \pm 1\%$, $\rho_c \pm 20\%$	6%
Solid	340 - 700 atm	1%

References:

[6368] Woolley, H. W., Scott, R. B., Brickwedde, F. G., J. Res. Natl. Bur. Standards, Vol. 41, (Nov. 1948).

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References reviewed but not used:

PVT Data - Solid Phase Hydrogen

487	1130	1174	5215	5719	5879	6014	6080
6091	6421	6768	9444	11238	12596	13743	14800
14989	15481	15709	16295	19652	21136	21747	21824
21672	23790	25302	25316	25544	25732	26659	28603
28604	29055	29550	29881	30359	30756	30889	31446
32872	33967	34352	38702	38807	40882	41005	41169
42233	43504	47659	47933	45376	50838	55972	58589
60340	60657	65157	68779	72099	73609	74342	74466
78271	78548	79036	79779	80213	80394	81210	82990
80375	80829	82898	86148				

PVT Data - Liquid Phase Hydrogen

34	439	442	486	493	649	700	728
737	1603	2020	2208	2869	2952	5118	5523
5564	5756	6064	6080	6149	6162	6415	6421
6565	6621	8044	8118	9008	9444	9963	10437
10930	11043	11625	11709	11924	12018	12194	12357
12596	13465	13537	13546	13558	13782	14023	14129
14487	14794	14800	14989	15022	15121	15358	15359
15403	16099	16142	16295	16376	17018	17442	18121
18167	19187	19403	19645	19652	20647	20900	21079
21747	21824	22243	22666	23065	23393	23790	24782
24823	25302	25316	25544	25559	25732	25952	25966
26171	26227	26659	27409	27420	27495	28008	28223
28350	28604	29484	30286	30313	30350	30354	30473
30659	30889	31503	31692	31708	32953	33810	33967
34352	35138	36818	37427	37745	38702	38807	40017
40302	40525	40915	41005	41524	41560	42101	42103
42114	42140	42233	42644	43099	43297	44229	44439
47564	48376	48653	50479	50791	50838	52326	52712
53020	54294	54622	55509	55969	55972	56677	57050
58956	59402	59749	59955	60657	64082	64319	64881
64932	65157	65711	65729	66011	66249	66773	70317
71064	72036	73081	73601	79105	80165	80837	81975
72638	80375	82898	87735				

PVT Data - Gaseous Phase Hydrogen

427	442	453	486	493	494	517	575
619	634	649	700	727	801	2020	3402
3498	3525	3754	4900	5120	5122	5123	5139
5366	5429	5522	5542	5567	5904	6069	6084
6191	6193	6231	6318	6326	6328	6342	6368
6415	6507	6713	6765	6797	6802	6840	6912

6914	6926	6995	7146	7362	7425	7589	7611
7681	7748	8044	8401	8703	8715	8716	8717
8719	8732	8758	8762	9444	9492	10437	10647
10677	10742	10748	10839	10930	11005	11114	11137
11242	11245	11346	12018	12540	12596	12704	12725
12817	13780	13781	14023	14129	14487	14794	14800
15022	15121	15359	15403	16078	16097	16098	16099
16106	16107	16142	16213	16308	16378	16447	16876
16883	16891	17398	17960	17965	18167	18502	19403
19896	20645	20646	20896	20897	20900	20943	21078
21079	21132	21794	21853	22920	23598	23790	23917
24322	24782	24823	25355	25732	25952	26027	26604
26740	26749	27409	27495	27932	28008	28149	28223
28722	29150	29233	29484	30020	30286	30354	30452
31692	31708	32705	32953	33791	33810	34613	35809
36346	37427	39379	40017	40915	41005	41373	41524
41560	42114	42233	43107	43174	44229	44439	45439
45439	45966	46118	46119	46128	47034	48307	48376
48404	48467	48653	49092	50164	50479	50687	50838
50968	51145	51604	54004	54294	54765	54819	54896
55969	55972	56677	57050	57544	57829	57893	58893
59747	60339	63889	64082	65157	65711	65729	66011
66249	66514	66773	69424	70584	74545	76332	76648
80837	82813	72638	87705				

A-31

Radiative Properties

No references to the emissivity of hydrogen were found in the literature see A-42 for spectral absorption.

Saturation Properties

Definition: The term saturation refers to a state condition where two or more phases coexist in equilibrium.

Tables of Values: Saturation properties of the coexisting liquid and vapor phases are tabulated from the triple point to the critical point in C-5 series tables. The individual properties which are tabulated in the C-5 series tables are listed below along with the page on which they are discussed in more detail.

Property	Page	Property	Page
Temperature	A-30	Thermal Conductivity	A-36
Pressure	A-30	Viscosity	A-39
Volume (or density)	A-30	Thermal Diffusivity	A-7
Internal Energy	A-21	Dielectric Constant	A-5
Enthalpy	A-9	Prandtl Number	A-29
Entropy	A-10		
Constant Volume Heat Capacity	A-16		
Constant Pressure Heat Capacity	A-15		
Velocity of Sound	A-33		
Surface tension	A-35		

For tables of PVT below the triple point see [83866].

Graph: see pages listed above.

Sound Velocity

Definition: The thermodynamic sound velocity, W, is defined by

$$W^2 = -V \left(\frac{\partial P}{\partial V}\right)_S$$

where P is pressure, V is specific volume and S is entropy; but since entropy is not usually a variable in the mathematical models for the equation of state, calculations are more easily made using

$$W = \left[\frac{C_p}{C_v} \left(\frac{\partial P}{\partial \rho}\right)_T\right]^{1/2}$$

which is thermodynamically equivalent to the above equation and where C_p and C_v are the specific heat capacity at constant pressure and constant volume respectively; P is again pressure and ρ is the density. Experimentally measured sound velocity is a very precise and accurate measurement and is equivalent to the thermodynamic sound velocity defined above.

Tables of Values:

Units	Range of Table		Table Location
m/s	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-5, C-2b, C-5b
ft/s	25.845 - 5000 R	1 - 15,000 psia	C-2a, C-5a, C-2c, C-5c
m/s	0 - 12 K (para)	sat. solid	[83866]
m/s	4.2 - 13.96 (normal)	sat. solid	[83866]

Graph: B-33 and B-33a

Equation: none

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
Para						
m/s	1264	305.7	1089.	355.	0*	1309.
ft/s	4147.	1003.	3573.	1165.	0*	4297.

* Theoretically the velocity of sound should go to 0 at the critical point. Experimentally only very low velocities have been measured in the critical region.

Uncertainty: The uncertainty of the tabulated values have been estimated by comparing tabulated and experimental sound velocities. These uncertainties vary with pressure from 1% to 2% in the liquid and is about 0.5% in the vapor or above critical temperature. In the critical region ($T_c \pm 5\%$, $\rho_c \pm 20\%$) the uncertainties are larger but not estimatable.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

References of Special Interest:

Solid: 47659 78548 81564 84305 80375

Ortho-Para Differences: 19645 28223 30473

High Pressure and/or high temp: 21853 24116

Dispersion: (not included in A-34) 596 6347 60062 69300 70241 84305

Sources reviewed but not used:

34	453	552	595	720	744	1106	2136
2274	2746	3709	3729	4590	4591	5600	5756
5759	5810	5811	5812	6161	6363	6816	6838
7262	7314	7320	7387	7747	7782	7839	7843
7896	7916	8695	9444	9501	9963	10989	11709
12704	13099	13296	13558	15021	16569	16877	17008
18121	18501	18851	19403	20900	22052	22318	22882
24318	24362	24483	24782	24823	25355	25559	25952
25966	27016	27933	28146	28153	28168	29484	29963
30350	31708	32387	32692	33232	33967	35654	36396
36792	36818	36819	37427	40226	41524	41695	41904
42644	43965	44229	44439	45418	46118	47930	48307
48404	48467	48470	54004	55972	56768	57827	29747
60089	63892	64932	67625	73601	79962	80223	80681
80837	81203	72638	87126				

Sound Absorption

Definition: The attenuation α is defined by the relation

$$P = P_o e^{-\alpha_{exp} x}$$

where x is the distance between the point where the peak pressure due to the sound wave is P_o and the point where it is P. The so called "classical" sound absorption α_{cal} is often calculated from

$$\alpha_{cal} = \frac{2\pi^2}{\gamma V} \left[\frac{4}{3} \eta + \frac{\gamma - 1}{C_p} \lambda \right] f^2/P$$

where $\gamma = \frac{C_p}{C_v}$; V = velocity of sound; f = frequency; P the pressure; η the shear viscosity; and λ = the thermal conductivity.

Papers found in the literature report sound absorption in many different ways, some of these are as follows:

$\alpha_{excess} = \alpha_{exp} - \alpha_{cal}$

nepers $= \ell n \ (P/P_o)$

$\alpha_{exp}/\alpha_{cal}$

α_{exp}/f

$\alpha_{exp}\lambda$ (where λ is wave length).

Liquid: α_{exp} for the saturated liquid [6161] at 17 ± 1 K is reported to be 0.11 cm^{-1} ± 10% for the frequency of 44.4 MHz.

Gas: Values of α_{exp}/f for both normal and parahydrogen at temperatures of 293, 90 and 77 K are given as a function of f/P in ref [22882].

Range of Values

Temp K	f/P MHz/atm	α_{exp}/f (normal) $(cm\ MHz)^{-1}$	α_{exp}/f (para)
293	1.48	0.491	
293	1.53		0.483
77	1.60		.677
77	2.10	.314	

Uncertainty: The uncertainty of α is 10% for the liquid value and 5% for the gaseous data.

References:

[6161] Galt, J. K., J. Chem. Phys. 16, 505 (1948).

[22882] Sluijter, G. G., Knaap, H.F.P., Beenakker, J.J.M., Physica Vol. 30, No. 4, 745-62 (Apr. 1964).

References of Special Interest

Solid: 87453

Ortho-Para Differences: 63892

References reviewed but not used:

34	595	744	1106	2136	4591	5811	5812
6363	7782	7839	7843	7916	10989	24362	24483
27016	28146	35654	48784	49785	50880	55182	64794
67625	80223	80681	83309				

Surface Tension

Definition: Surface tension is defined as the amount of work required to increase the surface area of a liquid by one unit of area. Note that this property is defined only for liquid in coexistence with the vapor phase.

Tables of Values:

Units	Range of Table	Table Location
dyn/cm	13.8 - 32.976 K	C-5, C-5b
lb/in	24.845 - 59.357 R	C-5a, C-5c

Graph: B-35, B-35a

Equation:

$$\gamma = \gamma_o \, (1 - T/T_c)^{1.065} \quad \text{(see discussion below)}$$

where γ is surface tension in dyn/cm; γ_o is 5.328 for parahydrogen and 5.369 for normal hydrogen; T_c is 32.976 K for parahydrogen and 33.18 K for normal hydrogen.

Range of Values:

Units	Triple Point	NBP	Critical Point	300 K
Para				
dyn/cm	2.99	1.93	0	not defined
lb/in	1.71×10^{-5}	1.10×10^{-5}	0	not defined
Normal				
dyn/cm	3.00	1.95	0	not defined
lb/in	1.71×10^{-5}	1.12	0	not defined

Discussion: Since Corruccini [30250] correlated the older experimental data, a new set of experimental data for normal hydrogen [33765] has appeared in the literature. These new data are consistently about 0.07 dyn/cm lower at all temperatures below 31.5 K than those calculated from the above equation. These differences cannot be explained on the basis of differences in temperatures or densities used in the calculations, but the experimental apparatus used by Blogoi and Pashkou [33765] does not inspire confidence

in their data. The capillary rise technique was used which is the most common technique but is beset with difficulties because of the corrections that must be applied. In the older hydrogen surface tension experiments, these corrections amounted to about 10% of the measured capillary rise, but because of the size of the capillaries used by Blagoi and Pashkou [33765]. The measured capillary rise must be corrected by about 40-50%.

Uncertainty: The uncertainty of the tabulated values is estimated to be 1% for temperatures below the normal boiling point and increasing to about 5% for temperatures above 0.8 T_c.

References:

[30250] Corruccini, R. J., Nat. Bur. Standards Tech. Note No. 322 (Aug. 1965).

[33765] Blagoi, Yu. P., Pashkou, V. V., Zh. Eksp. Teor. Fiz. Vol. 49, No. 5, (Nov. 1965).

[80777] McCarty, R. D., Weber, L. A., Nat. Bur. Standards Tech. Note 617 (Apr 1972).

References reviewed but not used:

2020	3541	6162	9444	10893	12018	13537	13824
15409	16295	16834	19704	20647	23183	23186	23790
24731	24780	24782	25058	25952	25966	26548	27064
29214	30020	30101	31503	33967	34228	35400	35766
41524	42678	43099	44439	44771	46406	48307	48376
48404	51188	52506	54294	55969	55972	61035	61114
62372	66902	73081	74349	75736	77506	80310	83444
80375	83866						

Thermal Conductivity

Definition: The thermal conductivity coefficient relates the transfer of heat through a material via molecular interaction due to a temperature gradient across the material.

$$q = - \lambda \text{ grad } T$$

where q is the heat flux, (heat per unit area per unit time) grad T is the temperature gradient, and λ is the thermal conductivity coefficient.

Discussion: The literature search revealed no experimental data outside the P-T range of these tabulations. The tabulations include extrapolations to higher densities and temperatures of experimental data by Roder and Diller [65729]. An alternative method of calculating thermal conductivity is provided by the modified Enskog Theory [81306].

The most popular method of correlating thermal conductivity data is to separate the property into a number of additive parts

$$\lambda = \lambda_o(T) + \lambda_E(\rho,T) + \lambda_c(\rho,T)$$

where $\lambda_o(T)$ is the dilute gas contribution (a function of T only), $\lambda_E(\rho,T)$ is the so called excess function and $\lambda_c(\rho,T)$ gives the enhancement due to the critical point behavior. $\lambda_E(\rho,T)$ and $\lambda_c(\rho,T)$ are taken to be the same for the para and normal modifications but $\lambda_o(T)$ shows marked differences for the para and normal modifications. A survey of the thermal conductivity of the solid is given by [83866] from which the figure on B-36 was taken.

Tables of Values: C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b, C-5c

Units	Range of Table		Table Location
Para and Normal			
mw/cm-K	13.8 - 3000 K	0.01 - 100 MPa	C-2,C-2b,C-5,C-5b
BTU/ft-hr-R	25.845 - 5000 R	1.0 - 15,000 psi	C-2a,C-2c,C-5a,C-5c

Graph: B-36 and B-36a

Equation: None

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
Para						
mw/cm-K	0.7259	.1243	.9892	.1694	∞	1.76
BTU/ ft-hr-R	0.04197	0.00719	0.05719	0.00979	∞	0.102
Normal						
mw/cm-K	0.7259	0.1243	0.9892	0.1694	∞	1.70
BTU/ ft-hr-R	0.04197	0.00719	0.05719	0.00979	∞	0.0983

Uncertainty: The uncertainty of the tabulated data is estimated to be 3% except in the extrapolated regions ($T < 100$ K, $P > 350$ atm; $T > 100$ K, $P > 100$ atm; and $T > 400$ K) where the uncertainty is estimated at 10% and in the critical region where it is undoubtedly larger.

References:

[64729] Roder, H. M., and Diller, D. E., J. Chem. Phys. 52, No. 11, 5928-49 (Jun 1970).

[81306] Hanley, H.J.M., McCarty, R. D., and Cohen, E., Physica 60 (1972).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note No. 617 (Apr. 1972).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards Tech. Note No. 641 (Aug. 1973).

References reviewed but not used:

Thermal Conductivity - Solid Phase Hydrogen

5501 8384 9988 21747 25302 28391 28604 30358

34352 38751 38807 40882 48376 55044 61215 68582

78052 80763 80375

Thermal Conductivity - Liquid Phase Hydrogen

439	2020	5528	5727	6368	10731	10795	11043
11789	12018	12842	12843	13476	13492	14422	15502
15651	16296	16502	17393	21747	23790	24731	24782
25302	25952	28223	28603	28604	29130	30358	31708
33244	33810	33967	34352	37427	37955	38593	38751
38807	39486	40915	41524	42101	42103	42114	42140
42644	44229	44439	45050	48376	48653	50479	52092
54294	55969	55972	56804	59749	64468	64881	66011
66518	66773	67006	69520	73222	74127	80777	80837
72638	80375						

Thermal Conductivity - Gaseous Phase Hydrogen

446	453	592	617	693	695	724	999
2020	5093	5095	5432	5494	5504	5573	5825
5889	5911	5959	6011	6031	6068	6071	6151
6164	6169	6174	6217	6270	6271	6275	6318
6323	6368	6738	7010	8313	9244	9435	9444
10218	10548	10731	10739	10748	10799	10880	10913
10914	11065	11291	11669	11789	12018	12489	12977
13476	13492	13645	14418	15502	15651	16296	16317
17638	17994	18001	18490	18502	18843	19179	20431
23787	23790	24731	24782	25237	25355	25732	25952
25963	25978	26017	26346	26647	26734	26930	27063
27514	28119	28223	29130	29524	30020	30030	30752
31282	31492	31645	31708	32674	33802	33810	34442
35627	35646	36045	36234	36387	36399	36401	37412
37427	37443	37603	37940	37955	38593	39486	40686
40751	40915	41284	41524	41593	42114	42122	42530
42751	43058	43123	43174	43294	43534	43883	44229
44439	44818	45050	45439	46118	46423	48307	48359
48376	48404	48467	48521	48653	49645	50479	50937

52092	52734	52862	54120	54294	54765	55224	55969
55972	56722	56734	57537	57690	57801	57884	58501
58631	58632	59079	29453	59906	60702	64075	64381
65729	66011	66267	66773	67006	67713	68346	68370
69685	70041	70829	71882	74127	74741	76630	77178
77232	77618	78217	80681	80837	82821	83962	85085
72638	76063	82534	83762				

Thermodynamic Diagrams

Discussion: The thermodynamic diagrams listed below are based on the PVT of Roder et al. [29210] and by McCarty and Weber [80777]. These diagrams have been prepared very carefully and are accurate to the precision to which they may be read. For other figures the primary consideration in many cases was availability and in others the range of P-T covered by the chart.

Graph: B-3 Compressibility factor chart

B-37 Temperature Entropy Chart (Para)

B-37a Temperature Entropy Chart (Normal)

B-37b Temperature Entropy Chart (4 - 22 K) (Para)

B-37c Mollier Diagram (Para)

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80772] McCarty, R. D., Weber, L. A., Natl. Bur. Standards Tech. Note 617 (Apr. 1972).

Vapor Pressure

Definition: The vapor pressure is the pressure, as a function of temperature, of a liquid in equilibrium with its own vapor.

Tables of Values:

Units	Range of Table	Table Location
MPa	13.8 - 32.938 K	C-5, C-5b
psia	25.845 - 59.288 R	C-5a, C-5c
mm Hg	1 - 13.8 K	C-24

Graph: B-38, B-38a, B-38b, B-38c

Equation: Parahydrogen [91653]

$$\ell n(P/P_T) = n_1 x + n_2 x^2 + n_3 x^3 + n_4 (1-x)^{n_5}$$

$n_1 = 3.05300134164$, $n_2 = 2.80810925813$

$n_3 = -0.655461216567$, $n_4 = 1.59514439374$

$n_5 = 1.5814454428$, $x = (1-T_t/T)/(1 - T_t/T_c)$

$T_t = 13.8$ K, $T_c = 32.938$ K, $P_t = 0.007\text{-}42$ MPa

Normal hydrogen [23435]

$$\ell nP(kg/cm^2) = A + B/T + C\ell nT$$

$A = -1.55447$, $B = -31.875$, $C = 2.39188$

Sublimation Pressures

Vapor pressures at temperatures below the triple point (13.8 K) are often called sublimation pressures. The available data are summarized in [82866] and a table of values is given in C-24.

References:

[23435] Van Itterbeek, A., Verbeke, O. et al., Physica Vol. 30, No. 6, 1238-44 (Jun. 1964).

[83866] Roder, H. M., Childs, G. E., et al., Natl. Bur. Standards Tech. Note 641 (Aug. 1973).

[91653] McCarty, R. D., Natl. Bur. Standards Internal Report 74-357 (Feb. 1974).

References reviewed but not used:

444	453	454	493	634	700	732	884
2020	2040	2928	3405	3599	5564	5677	6016
6235	6250	6326	6368	6378	7396	8699	10790
10916	11043	11134	12018	12166	12204	12596	12817
12830	13161	13463	13466	13537	13704	13779	13914
13983	14718	14799	14955	15359	15403	16076	16219
16232	16291	16376	18121	18582	18947	19187	19410
19721	20297	21408	21754	22243	22602	23790	24502
24731	24745	24782	25096	25302	25732	25844	25952
26181	26603	27098	27160	27420	28076	28223	28350
28933	29108	29484	30313	30659	32140	33635	33636
33967	33981	34352	34471	36818	38220	39547	41524
42101	42103	42114	42140	43297	43965	44966	45032
48370	48653	52504	53150	54089	54622	55969	55972
59749	59750	61041	62589	66423	66508	67569	68839
69674	70624	77791	78382	80165	80777	82417	83262
80375	87577						

Viscosity (dynamic)

Definition: The viscosity coefficient of a fluid relates the flux of momentum in a fluid to the traceless symmetric part of the velocity gradient:

$$J = - 2\eta D$$

where J is the flux of momentum, D the traceless symmetric part of the velocity gradient, and η is the viscosity coefficient.

Note: The coefficient η as defined is sometimes called the shear or dynamic viscosity.

Discussion: The viscosity of a fluid may be seperated into two additive parts

$$\eta = \eta_o(T) + \eta_E(\rho,T)$$

where $\eta_o(T)$ is the dilute gas contribution and is a function of temperature only and $\eta_E(\rho,T)$ is called the "excess" viscosity and is a strong function of density. When compared on a density basis there does not seem to be a dependence on ortho-para composition.

Tables of Values:

Units	Range of Table		Table Location
kg/m-s	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-2b
lb/ft-s	24.845 - 5000 R	1.0 - 15,000 psia	C-2a, C-2c
kg/m-s	saturation		C-5, C-5b
lb/ft-s	saturation		C-5a, C-5c

Graph: B-39

Equation: Equations are presented in [80777].

A-39

Range of Values:

Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	300 K 1 atm
Para						
kg/m-s	255.1×10^{-7}	7.36×10^{-7}	132.0×10^{-7}	11.28×10^{-7}	35.43×10^{-7}	81.40×10^{-7}
lb/ft-s	1.713×10^{-5}	$0.049 \times .0^{-5}$	0.887×10^{-5}	0.076×10^{-5}	0.241×10^{-5}	0.547×10^{-5}

Uncertainty: The uncertainty of the tabulations is estimated as follows: for $T < 100$ K and $P < 350$ atm the uncertainty is estimated to 1%; for $T < 100$ K and $P > 350$ atm the uncertainty is estimated to be 10%; for $T > 100$ K and $P < 100$ atm the uncertainty is estimated to be 5%; for $T > 100$ K and $P > 100$ atm, the uncertainty is estimated to be 15%.

References:

[27674] Diller, D. E., J. Chem. Phys. Vol. 42, No. 6, 2089-2100 (Mar. 1965).

[80777] McCarty, R. D., Weber, L. A., Natl. Bur. of Standards Tech. Note 617 (Apr. 1972).

References reviewed but not used:

Viscosity - Liquid Phase Hydrogen

700	1106	2020	5643	5706	5892	6064	6162
6274	6368	9444	10539	10620	10731	11789	11806
11924	12018	12166	13476	13492	14978	16296	17386
17393	17999	18951	20010	20841	21022	22446	22496
23790	24313	24731	24782	25041	25302	25844	25952
27241	28223	28603	29130	30659	31708	33244	33810
33967	34333	37427	38388	38807	39486	41524	41560
42101	42103	42114	42140	42644	44223	44229	44439
45374	47292	48376	50479	52326	54294	55969	55972
59749	83772	64881	66011	66773	66970	67006	69684
72714	73081	74127	75050	76374	77610	80372	80837
81306	82149	72638	80375	85702			

Viscosity - Gaseous Phase Hydrogen

207	374	446	450	453	461	546	604
714	700	940	999	1106	1411	2020	3284
3948	5093	5094	5095	5132	5432	5507	5573
5600	5643	5703	5706	5711	5807	5824	5888
5959	6011	6061	6110	6131	6151	6154	6164
6232	6275	6318	6334	6344	6368	6372	6738
7010	8293	8435	8645	8758	9250	9444	9680
10218	10436	10623	10625	10731	10747	10748	10749
10880	10913	11006	11037	11789	11832	11899	12018
12252	12631	12977	13113	13476	13492	14272	16296
16317	17386	17962	17964	17999	18000	18502	18917
19280	19286	20011	21022	21305	21757	22249	22446
23173	23448	23790	24007	24300	24311	24322	24326
24731	24782	24925	25041	25055	25732	25952	25960
25963	25978	25979	26003	26004	26006	26007	26008
26012	26030	26178	26247	26339	26609	26626	26647
26682	26745	27063	27097	27182	27386	27514	28129
28156	28223	28646	29130	29148	29964	30020	31280
31708	31739	32164	32461	32709	32861	33810	33967
34333	34442	34450	35559	35627	37412	37427	38567
39486	40731	41135	41365	41524	41560	41770	42114
42281	42751	43092	43096	43101	43156	43174	43407
43735	43943	43964	44229	44439	44818	45374	45439
46118	47200	47324	47815	48307	48376	48404	48467
48909	49645	50066	50479	50681	50957	50970	51037
53624	54294	54765	55604	55972	56334	56464	56734
57473	57829	58893	59745	63368	63467	63772	64318
66011	66267	66773	66842	66970	67006	67867	67939
68381	69530	70041	74127	76374	76630	77045	77178
77232	77913	78072	80681	80837	81481	72638	83762

Bulk Viscosity

The shear viscosity should not be confused with the bulk viscosity. The bulk viscosity relates the flow of momentum in a fluid to the divergence of the velocity

$$J = 2\eta D - \eta_v \, I \, \text{div} \, u$$

where I is the unit tensor, div u is the divergence of the velocity of the fluid, and η_v the coefficient of bulk viscosity.

Kinematic Viscosity

Definition: The kinematic viscosity, γ, is defined as

$$\gamma = \eta/\rho$$

where η is the shear viscosity and ρ is the density.

Adiabatic Compressibility

Definition: Adiabatic compressibility is defined as

$$\beta_S = -\frac{1}{V}\left(\frac{\partial V}{\partial P}\right)_S . \quad \text{A useful relation is } \beta_S = \frac{C_v}{C_p}\beta_T$$

where β_T is the isothermal compressibility.

Tables of Values: This quantity is not tabulated, but it may be obtained by means of the relationship

$$\beta_S = 1/\rho W^2$$

where ρ is density and W is sound velocity, from the following tables.

Units	Range of Table		Table Location
MPa^{-1}	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-2b
$psia^{-1}$	24.845 - 5000 R	1.0 - 15,000 psi	C-2a, C-2c
MPa^{-1}, $psia^{-1}$	saturation boundary		C-5, C-5a, C-5b, C-5c

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	300 K
	liquid	vapor	liquid	vapor		1 atm
Para						
MPa^{-1}	0.00807	8.56	0.0119	5.93	∞	7.29
$psia^{-1}$	5.6×10^{-5}	0.59	8.18×10^{-5}	0.0408	∞	0.0491

Uncertainty: The uncertainty in the compressed liquid varies between 2% at low pressures to 4% at high pressures; in the gas, well above the critical temperature, it is 1%. In the critical region (T_c ± 5%, ρ_c ± 20%) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

Sources reviewed but not used:

See page A-2.

Mixture Properties

Thermodynamic Properties

A review by Hiza, Kidnay and Miller [c] lists experimental data for fluid mixtures properties of cryogenic interest, included are data for hydrogen systems.

In addition to the above review, two reviews [64924], [d] give experimenal data and some theoretical discussion of solid-vapor equilibria.

For liquid-vapor equilibria a bibliography by Oellrich, Plöcker and Knapp [e] gives references for both experimental and theoretical studies; this review includes all components with normal boiling points below 350 K. Also the liquid-vapor section of the Hiza, et al., review has been published [f] Fig. B-41 can be used to obtain a rough estimate of the solubility of hydrogen in various solvents as a function of temperature and pressure. To estimate hydrogen solubility use

$$X(P,T) = \frac{X(100,T)}{100 - p_o(T)} \times P$$

where X(P,T) is the mole % H_2 in the solvent at the desired pressure P, in atmospheres, and temperature T, in Kelvin; X(100,T) is the mole % hydrogen in the solvent at 100 atmospheres and T which is obtained from Fig. B-41; $p_o(T)$ is the solvent's vapor pressure at T. It is recommended that the above equation be used only for pressures of 100 atmospheres or less and that the curves not be extrapolated to higher temperature; one should refer to the original data for higher temperatures and/or pressures.

To estimate the vapor phase composition one can use

$$y = 100 \times p_o(T)/P$$

where y is the mole % of the solvent in the vapor phase; however, this estimate will always be too low especially if the pressure is more than 10 atm above the vapor pressure.

Listed below are additional references for thermodynamic properties of mixtures. Solubility references differ from liquid-vapor equilibria

references in that they consider only liquid phase compositions whereas the liquid-vapor references consider both phases. The references under "Other phase equilibria" include papers dealing with calorimetric data.

Transport Properties of Mixtures:

This section considers only viscosity and thermal conductivity; section A-26 considers diffusion. For dilute gas mixtures Wilke's correlation can be used to estimate the viscosity [10565] and thermal conductivity [36397]. To our knowledge no reliable technique exists for estimating the effect of hydrogen on the viscosity or thermal conductivity in the liquid phase.

References:

(a) Mullins, J. C., and Ziegler, Int. Adv. in Cryo. Eng. 10, p 171 (ed. K. D. Timmerhaus, Plenum Press 1963).

(b) Suciu, S, W. L., Sikkett, Argonne National Laboratory Report No. ANL-4603 part II p 10 (1951).

(c) Hiza, M. J., A. J. Kidnay and R. C. Miller, NBS-OSRD Special Publication (to be published).

[64924] Hiza, M. J., Cryo 10 (2) 106 (1970).

(d) Robinson, R. L., and M. J. Hiza (to be published in Adv. Cryo. Eng. 20).

(e) Oellrich, L. R., U. J. Plöcker, and H. Knapp, "Vapor-Liquid Equilibria", Instit. of Thermodynamics, Technical Univ. of Berlin (Sept. 1973).

(f) Kidnay, A. J., M. J. Hiza and R. C. Miller, Cryogenics 13 (10) 575 (Oct. 1973).

[10565] Wilke, C. R., J. Chem. Phys. 18 (4) 517-9 (Apr. 1950).

[36397] Mason, E. A. and S. C. Saxena, Phys. Fluids 1 (5) 361 (Sept-Oct 1958).

References reviewed but not used:

Liquid Solid Equilibrium:

5651 6216 12590 13711 23744 52666 80375

Liquid Vapor Equilibrium:

234 318 3728 5100 5651 5657 5723 5884

6233 6241 6251 6348 6369 6428 6572 6670

6733 6842 7195 7490 7559 7942 7960 8000

8044 8905 9518 9587 9789 11157 11343 11583
11759 11848 12381 12438 12587 12590 12704 13145
13472 13475 13539 13711 14286 14385 14386 14536
27336 17652 19413 19914 21933 23794 24288 25053
25304 25815 26720 28079 28238 28623 29228 29962
30257 37447 33663 33980 34469 34524 35926 37214
38443 39337 40149 49177 41172 41631 42141 42313
43094 45223 46018 46029 46880 47684 48306 48338
49040 50157 50609 50699 52666 52743 54119 57014
58201 59440 61346 61420 61976 62196 62447 63137
63710 67158 67282 67942 68175 69774 71222 74575
76557 76576 77791 79330 79359 79792 82567 83279
80375 85046 85588 85590 85814

Solid Vapor Equilibrium:

5651 9789 11345 13385 11900 12587 12590 12854
14385 14386 23793 24862 28076 37214 42233 43094
45223 47563 48290 49040 52743 62592 63219 63560
64924 80374

Solid-Liquid-Vapor Equilibrium:

6216 12590 14385 46018 52666

Other Phase Equilibria:

12243 31310 58726 41557 43194 43196 67282 69647
70762 81977 82539 80375 83756 84490 84495 85595

Solubility:

330 639 5484 5617 6262 7150 7213 8283
9255 9481 13511 13512 13513 13514 24256 30143
39627 40801 41533 44063 44776 46220 52752 54089
54213 62811 69085 73296 74672 75354 76057 82142

Phase Separation:

19914 30257 69647 81977

PVTX Data:

318	634	5120	5122	5123	5139	5665	6718
6914	7010	7395	7448	7852	7889	8044	9497
12438	12587	12590	12704	12725	14385	14386	14535
14766	15710	16891	18512	19613	24322	25815	29141
29216	29219	29229	29236	30111	30138	37184	37214
37218	41819	42101	47332	47563	48290	54250	56338
58104	62063	62592	64383	64932	66405	66970	67015
67028	69424	73131	77444	85590	83756	86305	86439

Thermal Conductivity:

604	628	654	5093	6169	6174	7019	11010
11374	14418	14622	15634	16000	17454	17638	24312
25293	25728	25958	25996	26757	28620	29835	31460
32335	32702	35571	36045	40594	40658	41284	41470
43192	44353	46304	46423	47426	47632	48451	48521
48779	50796	52063	54250	54883	57082	57886	58631
58639	59079	59453	64037	64381	66399	69079	70829
70887	71609	71876	71882	73768	74741	78217	78610
79404	81829	81830	85218	86439	86693		

Viscosity:

530	604	618	962	5807	5986	7010	10753
11036	11487	13270	14622	17538	18000	19617	25312
24322	25293	25728	25960	26002	26003	26004	26005
26006	26007	26008	26009	26012	26019	26339	26438
26609	26624	26626	26702	26745	26809	27182	28129
28161	29148	29835	31668	33113	34281	34475	35571
37417	39866	41790	42281	45044	45258	45722	46282
47426	48297	48909	50710	51605	52787	53961	54250
54883	55585	57082	58631	58639	38683	59745	60578
63123	64770	65616	66970	71876	73754	79404	85218
85245	86439						

Infrared Absorption

Definition: The absorption coefficient, k, of a material is a measure of the loss in intensity, I, of radiation which is passed through a unit length of a homogeneous region of the material, i.e., if Z is the axis of propagation, then

$$dI/I = -kdZ$$

or in integral form

$$I = I(0)e^{(-kZ)}.$$

Absorption bands: k is for most gases a strong function of frequency, being zero over large ranges of frequency and sharply peaked in certain other regions. It is difficult to summarize this subject because so many transitions are possible for hydrogen, i.e., rotational, vibrational, Raman, ultraviolet, infrared and far infrared spectra have all been investigated. As with other gases, the absorption coefficient k is density dependent, varying roughly as the density squared (see B-42c) and in the particular case of hydrogen, k is significantly dependent upon the ortho-para composition (see B-42 and B-42a). For an estimate of importance to heat transfer problems see [33967].

Graphs:

B-42	far infrared (rotational)	[65842]
B-42a	far infrared (translational)	[65842]
B-42b	far infrared (rotational)	[55629]
B-42c	Raman	[a]
B-42d	ultraviolet	[53934].

References:

[65842] Jones, M. C., Natl. Bur. Standards Tech. Note 390 (Apr. 1970).

[55629] Mactaggart, J. W., Hunt, J. L., Can. J. Phys. Vol. 47, No. 1, 65-70 (Jan 1969).

[a] May, A. D., Degen, V., Stryland, J. C., Welsh, H. L., Can. J. Phys. 39, 1769 (1951).

[53934] Belozerova, V. P., Sou. J. Opt. Technol. Vol. 34, No. 2, 184-92 (Mar-Apr 1967).

References reviewed but not used:

585 739 2040 5924 20745 22841 23052 25234
26614 26623 26739 26743 27054 27098 27264 27443
27477 27503 27956 28251 28703 29034 29208 29372
30584 30782 31903 32407 32735 33499 34419 36823
38389 41963 45065 45271 45871 46407 46421 50685
51167 52109 52468 52757 54620 54653 55734 55859
57469 57470 57443 62686 63093 63398 64128 64200
65057 65731 66021 67053 67625 67658 69691 69692
69695 70569 70630 70834 72594 72793 73436 74314
78313 80265 84285 84024 86407 87735

Uncertainty: The uncertainty varies with frequency but a typical conservative estimate is 5%. Note: differences of 30 to 40% for the peak absorption between Jones [63093, 65842] and others have not been explained.

References of special interest:

Solid high pressure: 73720 81589

Solid General:

7268 13748 20891 22748 28629 30699 38864 44913
52018 58986 60993 60994 60995 61416 63895 67043
71488 79715 79769 81315 81479 86758

Neutron scattering:

33139 45244 55977 57176 66576 67271 71488

X-ray absorption: 68948

High temp high pressure: 40191

Ultraviolet absorption: 22359 27169 53934 54414

Raman absorption: 13748 50669

Heat Transfer and Pressurization Parameters

A number of thermodynamic expressions have become convenient for the engineer to use in dealing with the storage and transfer of liquefied gases. Tabulations for four such parameters for oxygen have been included in this Handbook. They are:

Specific Heat input (commonly symbolized by θ)

$$V\left(\frac{\partial H}{\partial V}\right)_P = \rho C_p \left[\left(\frac{\partial P}{\partial \rho}\right)_T \Big/ \left(\frac{\partial P}{\partial T}\right)_V\right]$$

Energy derivative (commonly symbolized by Φ)

$$V\left(\frac{\partial P}{\partial U}\right)_V = \frac{V}{C_v}\left(\frac{\partial P}{\partial T}\right)_V$$

Isothermal bulk modulus (commonly symbolized by α)

$$V\left(\frac{\partial P}{\partial V}\right)_T = -\rho\left(\frac{\partial P}{\partial \rho}\right)_T$$

Volume expansivity (commonly symbolized by β)

$$\frac{1}{V}\left(\frac{\partial V}{\partial T}\right)_P = \frac{1}{\rho}\left(\frac{\partial P}{\partial T}\right)_\rho \Big/ \left(\frac{\partial P}{\partial \rho}\right)_T$$

Discussion: Specific heat input, θ (sometimes referred to as dQ/dM, heat input per increment of mass) is frequently expressed in terms of density instead of specific volume, i.e., $\rho(\partial H/\partial \rho)_p$. It is the amount of heat required to expel a unit mass of fluid from a storage vessel. The units are the same as those for enthalpy: BTU/lb or J/mol.

Energy derivative, Φ, is also frequently expressed in density by substituting $1/\rho$ for V. Typical units are psia-ft^3/BTU or atm-cm^3/J. This parameter is often used in conjunction with the specific heat input, θ, to determine expulsion rates from rigid containers (see reference [37158]).

Isothermal bulk modulus, α, likewise is frequently expressed in density: $-\rho(\partial P/\partial \rho)_T$ with the usual units of psia or atm. It is the reciprocal of isothermal compressibility $-(\partial V/\partial P)_T/V$ and is a convenient factor to use in certain engineering calculations.

Volume expansivity, β, often called simply expansivity or constant pressure expansion, is separately described in data sheet A-47. Units are K^{-1} or $^\circ R^{-1}$. A related expression is the constant pressure expansion coefficient, $T(\partial V/\partial T)_p/V$, but values for this latter expression have not been tabulated and are not as widely used. (See data sheets A-2 and A-4).

Tables of Values: These parameters are tabulated in Tables C-2, C-2a, C-2b, C-2c, C-5, C-5a, C-5b and C-5c as follows:

Parameter	Units	Range of Table		Table Location
$\theta = V(\partial H/\partial V)_P$	J/g BTU/lb			
$\Phi = V(\partial P/\partial U)_V$	MPa-m^3/kJ psia-ft^3/BTU	13.8 - 3000 K 25.845 - 5000 C saturation boundary	0.01 - 70 MPa 1 - 10000 psia	C-2, C-2b C-2a, C-2c C-5b, C-5c
$\alpha = -V(\partial P/\partial V)_T$	MPa psia			
$\beta = (\partial V/\partial T)_P/V$	K^{-1} $°R^{-1}$			

Graphs: B-43

Equations: None except as shown above.

Range of Values:

Parameter	Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	STP
Para							
θ	J/g						4455.
	BTU/lb						1916.
Φ	MPa-m^3/kJ					0*	0.0385
	psia-ft^3/BTU	Note: All the other values are the same as normal table				0*	2.079
α	MPa					0	
	psia					0	
β	K^{-1}					∞	
	$°R^{-1}$					∞	

* Not conclusive; may be finite but small value instead of 0.

Normal							
θ	J/g	622.6	139.8	587.9	189.1	199.0	4295.
	BTU/lb	267.8	60.15	252.9	81.37	85.5	1847.
Φ	MPa-m^3/kJx10	0.2565	0.06684	0.2018	0.0667	0*	.0405
	psia-ft^3/BTU	13.85	3.609	10.9	3.6	0*	2.19
α	MPa	90.34	0.0069	50.21	0.0903	0	0.101
	psia	13098.	1.0	7282.	13.1	0	14.7
β	K^{-1}	0.01022	0.07523	0.0164	0.0642	∞	0.00333
	$°R^{-1}$	0.00568	0.04179	0.00913	00357	∞	0.00185

* Not conclusive; may be finite but small value instead of 0.

Uncertainty: The uncertainties for each parameter are estimated as follows:

Parameter	Compressed Liquid	Gas and Supercritical
θ	3 - 5%	3%
Φ	3%	2%
α	3 - 5%	2%
β	3 - 5%	2%

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug. 1965).

[80777] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr. 1972).

[37158] Forester, C. K., Adv. in Cryo. Engrg., Vol. 12, Paper B-6; 82-91 (1967).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

Sources reviewed but not used:

For Specific Heat Input: See A9 and A10

For Energy Derivative: None

For Isothermal Bulk Modulus: See sheet A-2

For Volume Expansivity: See sheet A-47.

Thermal Transpiration

Definition: Thermal transpiration is the phenomenon of the flow of a gas at very low pressures through a capillary due to a temperature gradient. In a closed system, with a constant temperature gradient, a steady state pressure difference will occur between the ends of the capillary, provided the mean free path of the gas is about equal to, or larger than, the diameter of the tube.

Thermomolecular pressure difference: If, at the steady state, the pressure at the ends of a tube are P_H and P_C, corresponding to temperatures of T_H and T_C, then

$$\frac{P_H}{P_C} = \frac{T_H}{T_C}$$

where the subscripts H and C refer to Hot and Cold respectively. The equation is only valid in the limit of $P \rightarrow 0$. At higher pressures, correction terms must be added, however, it must be remembered that thermal transpiration is an apparatus effect, and therefore, correction terms to the equation should not be added for a particular gas but rather for a particular apparatus.

Reference:

[36386] Bennett, M. J., Tomkins, F. C., Trans. Faraday Soc., 57 185 (1957).

Sources reviewed but not used:

6640 7048 18925 30307 35293 48470 57490 58491 71056

Thermomolecular Pressure Ratio:

None.

Free Energy

Definition: The Gibbs free energy, G, is defined as G = H-TS, where H is enthalpy, T is absolute temperature and S is entropy. Similarly the Helmholtz free energy, F, is F = U-TS, where U is internal energy.

Tables of Values: These quantities are not tabulated but may be simply obtained, using the formulae above, from the following tables.

Units	Range of Table		Table Location
J/g	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-2b
BTU/lb	24.845 - 5000 R	1 - 15,000 psia	C-2a, C-2c
J/g, BTU/lb	saturation boundary		C-5, C-5a, C-5b, C-5c

Graph: None

Equation: None

Range of Values: (Gibbs free energy)

Units	Triple Point		Boiling Point		Critical Point	300 K
	liquid	vapor	liquid	vapor		1 atm
Para						
J/g	-377.	-377.	-420.	-420.	-542.	-15233.
BTU/lb	-162.	-162.	-181.	-181.	-233.	-6553.
Normal						
J/g	-21.9	17.0	-66.5	-80.3	-138.	-16945.
BTU/lb	9.42	7.31	-28.6	-34.5	-59.4	-7290.

Uncertainty: The uncertainty varies from about 0.5 J/g in the low density limit to about 15 J/g in the liquid.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug 1965).

[80777] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr 1972).

Sources reviewed but not used:

See A-9 and A-10.

Heats of Transition

Definition: A heat of transition is the energy associated with a phase change. Besides the solid-liquid and Liquid-gas transition, hydrogen has three known solid-solid transitions [83866]. The energy changes due to these solid transitions are not known but are thought to be small. For values of the latent heats of fusion sublimation and vaporization see sections A-23, A-24 and A-25.

References:

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. H., Natl. Bur. Standards Tech. Note 641 (Aug 1973).

References reviewed but not used:

See A-23, 24 and 25.

Volume Expansivity

Definition: The volume expansivity is defined as

$$\beta = \frac{1}{V}\left(\frac{\partial V}{\partial T}\right)_P .$$

Volume expansivity is often simply called expansivity or coefficient of volume expansion. The property is one of the compressibilities of a gas, where here the path (condition) of the compression is at constant pressure.

Tables of Values: This quantity is tabulated in Tables C-2, C-2a, C-5 and C-5a.

Units	Range of Table		Table Location
K^{-1}	13.8 - 3000 K	0.01 - 100 MPa	C-2, C-2b
$°R^{-1}$	24.845 - 5000 R	1 - 15,000 psia	C-2a, C-2c
K^{-1}, $°R^{-1}$	saturation boundary		C-5b, C-5c

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	300 K
	liquid	vapor	liquid	vapor		1 atm
Para & Normal						
K^{-1}	0.0102	0.0752	0.0164	0.0642	∞	0.00333
R^{-1}	0.00568	0.0418	0.00913	0.0357	∞	0.00185

Uncertainty: The uncertainty in the compressed liquid is 2-3%; in the gas and supercritical fluid, 1-2%. In the critical region (T_c ± 5%, ρ_c ± 20%) the uncertainties are larger; however, they are not experimentally defined since the property diverges at the critical point.

References:

[29210] Roder, H. M., Weber, L. A., Goodwin, R. D., Natl. Bur. Standards Monograph 94 (Aug 1965).

[80777] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 617 (Apr 1972).

[96341] Weber, L. A., Natl. Bur. Standards, IR 74-374 (In Press).

Sources reviewed but not used:

487	728	3754	5215	6149	6191	6193	6765
7355	7460	8118	8717	9492	13465	13558	14800
15679	17018	17401	19687	20896	21136	22666	23172
25355	25955	26227	30101	30473	34613	42140	45265
56203	62898	81837	84841				

Ortho-Para Modifications

Definition: The hydrogen atom is composed of a nucleus of one proton and an electron orbiting around the nucleus. The hydrogen molecule is composed of two hydrogen atoms, however there are two modifications of hydrogen molecules called orthohydrogen and parahydrogen. The differentiating feature of these molecules is the relative orientation of the nuclear spin of the individual atoms. The nuclear spin is a rotational motion of the nucleus about an axis perpendicular to the molecular axis. It is therefore possible to have two relative orientations of these nuclear spins, i.e., the spins may be in the same direction or they may be in opposite directions. These orientations are commonly called parallel and antiparallel, respectively. The nuclear spin is a quantized motion and therefore only certain motions are allowed. Associated with this quantumization are quantum numbers for the spin and the corresponding energy levels. The molecules with antiparallel nuclear spins have even quantum numbers, are in the lowest energy state, and are called parahydrogen. Conversely the molecules with parallel nuclear spins have odd quantum numbers, are in a higher energy level, and are called orthohydrogen.

Discussion: Fluid hydrogen may be thought of as a binary mixture of two different species of molecules differing from each other in physical properties. These differences are easily detectable on a macroscopic scale and in some cases are of great importance in design problems. The percentage of the ortho-para concentrations in the mixture is temperature dependent. The term equilibrium hydrogen is, as the name implies, the equilibrium concentration at a given temperature. For example at a temperature of about 120 K, the equilibrium concentration of ortho and para is 50% for each. Near ambient temperature the composition is 75% ortho and 25% para. This 25-75 composition is called normal hydrogen.

Tables of Values: These tables are from [6368]

Units	Range of table	Location
% Para	0 - 500 K	C-48

Graph: B-48,

Equation: None

Range of Values:

Units	20 K	300 K
% Para	94.821	25.072

Uncertainty: These values are estimated to be uncertain by less than 1%.

References:

[2040] Farkas, A., University Press, Cambridge (1935).

[6368] Woolley, H. W., Scott, R. B., Brickwedde, F. G., J. Res., Natl. Bur. Stds. Vol 41, 379 (May 1948).

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards, Tech. Note 641, (August 1973).

Heat of Conversion

Definition: The conversion of orthohydrogen to parahydrogen is an exothermic process. The amount of heat given off in the conversion is temperature dependent.

Tables: Values taken from [6368]

Units	Range of tables	Location
Calories/mol	10 - 300 K	C-48a

Graph: B-48d

Equation: None

Range of Values:

Units	10 K	300 K
cal/mol	253.9865	13.28

Uncertainty: The uncertainty of the heats of conversion is estimated to be less than 0.1%.

Conversion Rates:

Since the percentage of the ortho-para composition is temperature dependent, the rate of conversion is of interest in a variety of problems. The conversion

of a non equilibrium ortho-para composition to an equilibrium composition is a very slow process in the absence of a catalyst. This mode of conversion (no catalyst present) is called self conversion. In general the self conversion rate is also a function of temperature. For example at liquid air temperatures the half life of the conversion is greater than a year while at 923 K and 50 mm Hg pressure, the half life is on the order of 10 minutes [2030]. The "half life period" is defined as the amount of time required to convert 1/2 of the excess ortho or para composition present at the starting time.

Tables of Values: None

Graph: None

Catalysis Conversion Rates

The ortho-para conversion process is greatly enhanced by catalysis and since many substances as well as magnetic and radiation fields will speed up the conversion only a typical example of conversion will be given here. Weitzel et al., [8139] using one and one half liters of unsupported hydrous ferric oxide granules converted liquid normal hydrogen to 90-95% equilibrium H_2 at an average rate of 235 liters per hour.

Tables of Values: None

Graph: None

Equation: None

References:

[8134] Weitzel, D. H., Loebenstein, W. V., Draper, J. W., Park, D. E., J. Res. Natl. Bur. Stds. Vol 60, 221 (March 1958).

Property Differences

In general the larger differences in the properties of ortho and para-hydrogen will occur in the derived properties where heat is important.

Properties like enthalpy, specific heat capacity and thermal conductivity show large differences. On the other hand the density of ortho-para mixtures will vary very little and the differences in density between normal and pure parahydrogen is probably less than about 0.3% except at the very low temperature liquid where it could be as much as 0.5 - 0.7%. The density of normal hydrogen having the larger density. For differences in a particular property, the reader should consult the A sheet for the property and the B-48 series charts listed below.

Graph:

B-48a Density differences between normal and parahydrogen.

B-48b Specific Heat Capacity differences between normal and parahydrogen.

B-48c Thermal Conductivity differences between normal and parahydrogen.

Isotopes

Definition: An isotope is an atom of an element having a different nuclear mass and atomic weight from other atoms of the same element.

Discussion: Hydrogen has two such isotopes called deuterium with an atomic weight of 2 and tritium with an atomic weight of 3. The three different kinds of hydrogen atoms may combine in six different ways to form a molecule i.e., H_2, D_2, T_2 HD, HT and DT. There are some data in the literature for D_2 but very little for any of the tritium containing molecules. The isotopes are beyond the scope of this work and the reader is referred to [83866] for data for the hydrogen isotopes.

References:

[83866] Roder, H. M., Childs, G. E., McCarty, R. D., Angerhofer, P. E., Natl. Bur. Standards, Tech. Note 641 (Aug. 1973).

Metallic Hydrogen

Definition: Solid hydrogen under extreme pressure, (about 2-3 megabars), is thought to undergo a phase transition to the metallic state, and may be superconducting. The subject of metallic hydrogen is beyond the scope of this work, but a short bibliography will serve as a starting point for those who wish to persue the subject further.

Primary References:

Wigner, E., Huntington, H. B., J. Chem. Phys. 3, 764 (1935).

[41169] Preliminary Report on the Thermodynamic Properties of Selected High-Elements and Some Related Compounds, National Bureau of Standards, Unpublished Report (Jul. 1966).

[82898] Grigorev, F. V., Kormer, S. B., Mikhailov, O. L., et al., Jetp. Lett. Vol. 16, No. 5, 201-4 (Sep. 1972).

Other References:

16708 31008 40176 47933 55479 62125 65872 69744
74178 76172 78271 80394 80692

Slush Hydrogen

Definition:

Slush hydrogen is the name given to a mixture of coexisting solid and liquid phases. Because of the potential application of slush hydrogen as a fuel, its properties were studied by NASA. The slush form of hydrogen as a fuel offers two distinct advantages over the pure liquid. See for example [67354]. First, if the mixture is 0.6 solid by mass, the density will be 16.5% greater than the pure liquid at its normal boiling point and second, the heat capacity will be increased by 86.2 Joules per gramm. The increased density is desireable because of the available energy is increased per unit volume. The increase in heat capacity eases refrigeration requirement.

Preparation:

There are a number of ways to produce slush hydrogen. The method which seems to be the best is the so called freeze-thaw method. To produce slush using this method, the ullage over the liquid is pumped and a solid layer forms at the surface, the pumping is then stopped and the solid layer melts at the edge of the container and settles into the liquid. The cycle is repeated until the desired amount of solid has been formed. The porosity of the solid formed in this manner is a function of the pumping rate. The porosity of the solid is critical for ease of mixing with the liquid. For details see [29395].

Problems:

Although a good deal of experimental work has been done on the properties and preparation of slush, certain problems still exist. More data are needed on the heat transfer in slush and no good method of the measurement of the mass and the mass flow rates has been developed.

[29395] Mann, D. B., Ludtke, P. R., Sindt, C. F., Chelton, D. B., Advances in Cryo. Eng. Vol 11, 207-17, Plenum Press., New York (1966).

[67254] Sindt, C. F., Cryogenics, Vol. 10, No. 5, (Oct. 1970).

Hydrogen Safety

There are many books, articles and pamphlets to be found which deal with the problem of safety where the presence of hydrogen causes a potential hazard. The purpose of this descriptive sheet is to call the attention of the reader to the problem and provide a few important references where more detailed information is available. Three of the best references are [27274] [V-1148] [80774].

Discussion:

Potential hazardous conditions due to the presence of hydrogen.

1. Hydrogen is colorless and odorless and therefore is not detectable by human senses.
2. Hydrogen gas can cause suffocation by dilution of the air. It is not toxic.
3. At temperatures above -418°F hydrogen gas is lighter than air (at stp) and tends to rise. Temperatures of less than -418°F may occur just after evaporation in which case the gas tends to fall.
4. Mixtures of hydrogen with either air or oxygen are highly flammable over a wide range of composition (see below).
5. Detonation of an explosion can occur with very low energy impact. Only 1/10 that of a gasoline-air mixture.
6. At atmospheric pressure a temperature in excess of 1000°F is required for ignition but at pressures of 2/10 to 5/10 of an atmosphere, ignition can occur at a temperature of 650°F.
7. Hydrogen flame is colorless.

Properties of hydrogen gas

Gross heat of combustion BTU/ft^3	325.1
Gross heat of combustion BTU/lb	61.084
BTU/ft^3 of stoichiometric gas/air mixture (F/A ratio, 0.418 vol., 0.029 wt.; or 29.5 H_2 by vol.)	81.3
Ft^3 of air required per ft^3 of combustible	2.382
Lb. air required per lb. combustible	34.226
Maximum flame temperature (F/A ratio 0.462 vol., 0.0313 wt.; or 31.6% H_2 by vol.)	3865°F
Autoignition temperature in air	1065°F
Autoignition temperature in oxygen	1040°
Flammability limits, % vol. H_2 in air	4.0 - 75.
Flammability limits, % vol. H_2 in oxygen	4.5 - 94.
Detonation limits, % vol. H_2 in air	18.3 - 59.
Detonation limits, % vol. H_2 in oxygen	15.0 - 90.
Nonflammable limits, air-hydrogen,	less than 8% H_2
Nonflammable limits, O_2-hydrogen,	less than 5% H_2

References:

[12297] Chelton, D. B., (The Macmillan Co., New York, N.Y., 1964).

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**[a] General Safety Engineering Design Criteria, Vol. 1, CPIA public. 194, (Oct. 1971): also, Liquid Propellant Handling, Storage and Transportation, Vol. 3, CPIA public. 194, (May 1970)---these documents prepared by the JANNAF propulsion committee of the JANNAF Hazards Working Group, and are available only from the Chemical Propulsion Information Agency (CPIA) of the Johns Hopkins University Applied Physics Laboratory, 8621 Georgia Ave., Silver Spring, Maryland 20910.

* Note: numbers prefixed by V are from the NASA Lewis Safety Grid.

** not in either NBS or NASA system.

Miscellaneous Properties

Included in this section are properties which have not been discussed in the preceeding pages. The numbers are Cryogenic Data Center accession numbers.

Birefringence

54556

Bulk Modulus (solid)

74178

Creep

84537

Debye Temperature

74178 84175

Dispersion

13782 19279 19291 19292 19365 20745 23178 25535 30251
33139 40786 58489 69300 69691

Elastic Constant

74178 84839

Electrical Properties (misc)

6973 7735 21181 32953 40311 40617 61549 63701 67713

Electron Diffraction

32949 35812 43557 47822

Electron Drift

52177 76274 76276 76325

Emissivity-Reflectance

57176 67053 87735 76956

Hydrogen Gel

25936

Ionization Potential

61358 61485 63627 63755 64978 67015 67028 76771

Irradiation

23736 26181 29056 39719 60357 65201 67625 68948 71783
84290 83622 84072 84726 91509

Isotopmers

91027

Isotopic Phase Separation

22240 37845

Magneto Optics

81468

Magnetic Susceptibility

23988 27957 32868 41326 54541 78056 89415 91027

Magneto Resistance

82002

Nuclear Magnetic Resonance (NMR)

915 5873 7223 11100 11115 14272 15481 15567 22463

23821 24955 27292 27394 30771 36009 37844 38028 38271

38646 41671 49932 50001 52004 52921 55003 57911 59903

60138 68252 70167 75177 78120 80787 85840 87648 89718

90696

Nuclear Spin Relaxation

19690 20997 22471 33181 36009 37745 47798 52004 55032

55187 57006 57955 60151 63314 65716 68822 68850 70167

70726 74709 77419 78120 80787 81285 87648 89264

Neutron Diffraction

28632 29056 33139 54572

Neutron Scattering

14040 23601 52737 55977 62749 64033 67271 68172 68790

71488 75493 76956 77171 80514 81992 83296 84175 84305

82762 91221 92917 93075

Neutron Spectra

33139 41963 45244 55977 57176 71488 84305 66575

Opacity

40191

Optical Susceptibilities

68392

Ortho-Para Absorption

24953 34406

Plastic Deformation

72334 81248 84537 84839 91869

Relaxation Time (electron spin)

85879 86609

Scattering

40226 41963 50669 51933 55977 69300 71488 81468 81481
86084 88515

Shear Strength (solid)

32738 78545 81248 84217

Specific Impulse

7248 12099

Stress Relaxation

91542 91869 84537

Surface Energy

5928 16834 19704 21177 42678 77506 80310 90618

Tensile Strength

78545 81248 84537

Thermomagnetism (Senftleben effect)

63501 68784 85845

X-ray Diffraction

22673 29055 30351 30782 32872 40399 49178 81988

Youngs Modulus

78545 81248

8. SECTION B, FIGURES

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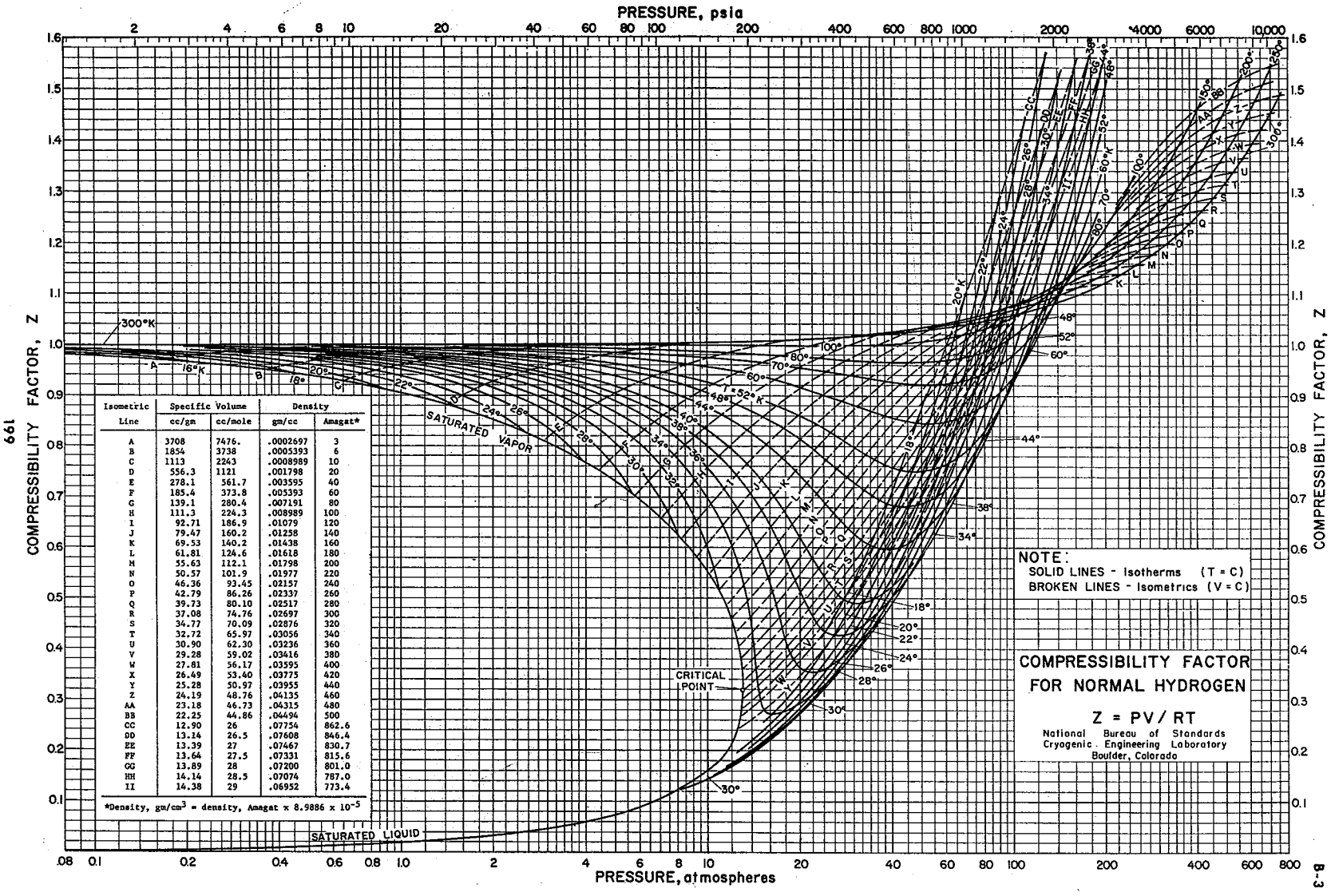
PRESSURE, psia
2
4
6
8
10
20
40
60
80
100
200
400
600
800
1000
2000
4000
6000
10,000
COMPRESSIBILITY FACTOR, Z
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
300°K
A
16°K
B
18°
C
20°
D
22°
E
24°
F
26°
G
28°
H
30°
I
32°
J
34°
K
36°
L
38°
M
40°
N
42°
O
44°
P
46°
Q
48°
R
50°
S
52°
T
54°
U
56°
V
58°
W
60°
X
62°
Y
64°
Z
66°
AA
68°
BB
70°
CC
72°
DD
74°
EE
76°
FF
78°
GG
80°
HH
82°
II
84°
JJ
86°
KK
88°
LL
90°
MM
92°
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94°
OO
96°
PP
98°
QQ
100°
RR
102°
SS
104°
TT
106°
UU
108°
VV
110°
WW
112°
XX
114°
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116°
ZZ
118°
AAA
120°
BBB
122°
CCC
124°
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126°
EEE
128°
FFF
130°
GGG
132°
HHH
134°
III
136°
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138°
KKK
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148°
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156°
TTT
158°
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160°
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162°
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164°
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166°
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168°
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170°
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LLLLL
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RRRRR
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260°
TTTTT
262°
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264°
VVVVV
266°
WWWWW
268°
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270°
YYYYY
272°
ZZZZZ
274°
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278°
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282°
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284°
FFFFFF
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886°
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896°
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918°
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922°
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934°
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938°
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944°
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946°
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948°
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952°
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966°
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968°
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986°
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988°
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990°
UUUUUUUUUUUUUUUUUUU
992°
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994°
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996°
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998°
YYYYYYYYYYYYYYYYYYY
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1042°
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COMPRESSIBILITY FACTOR for NORMAL HYDROGEN

[P=Pressure, (atm); Z=Compressibility Factor]

(The following values are from the report by Woolley, Scott and Brickwedde)

Density Amagat	Volume cc/gram		Temperature, °K 16	18	20	22	24	26	28	30	32	34	36	38	40	44	48	52	60	70	80	100	150	200	250	300	Density Amagat	Volume cc/gram
1	11125.	P	.0580	.0654	.0727	.0800	.0874	.0947	.1020	.1094	.1167	.1240	.1314	.1387	.1460	.1607	.1753	.1900	.2193	.2559	.2926	.3698	.5490	.7321	.9152	1.098	P	1	11125.
		Z	.9909	.9923	.9934	.9942	.9949	.9954	.9960	.9964	.9967	.9970	.9973	.9976	.9978	.9981	.9984	.9987	.9990	.9993	.9996	.9999	1.000	1.000	1.001	1.001	Z		
2	5563.	P	.1150	.1317	.1444	.1591	.1738	.1885	.2032	.2179	.2326	.2473	.2882	.2767	.2914	.3207	.3501	.3795	.4382	.5115	.5849	.7316	1.098	1.465	1.831	2.198	P	2	5563.
		Z	.9819	1.000	.9868	.9885	.9899	.9910	.9920	.9928	.9935	.9941	.9946	.9951	.9955	.9962	.9968	.9973	.9980	.9987	.9992	.9998	1.001	1.001	1.001	1.001	Z		
3	3708.	P	.1708	.1930	.2152	.2373	.2594	.2815	.3036	.3257	.3580	.3699	.3920	.4140	.4361	.4802	.5243	.5684	.6566	.7668	.8770	1.097	1.646	2.198	2.749	3.299	P	3	3708.
		Z	.9728	.9769	.9802	.9827	.9848	.9865	.9880	.9892	1.019	.9912	.9920	.9927	.9933	.9943	.9952	.9959	.9970	.9981	.9988	.9997	1.001	1.001	1.002	1.002	Z		
6	1854.	P		.3720	.4217	.4663	.5109	.5554	.5999	.6444	.6888	.7332	.7776	.8220	.8663	.9550	1.044	1.132	1.309	1.531	1.752	2.194	3.292	4.403	5.507	6.611	P	6	1854.
		Z		.9540	.9604	.9655	.9697	.9731	.9760	.9784	.9806	.9824	.9840	.9854	.9866	.9887	.9904	.9919	.9941	.9961	.9976	.9995	1.002	1.003	1.004	1.004	Z		
10	1125.	P			.6836	.7588	.8338	.9087	.9836	1.058	1.133	1.208	1.282	1.357	1.431	1.580	1.728	1.877	2.174	2.545	2.915	3.656	5.505	7.354	9.201	11.05	P	10	1125.
		Z			.9343	.9427	.9496	.9553	.9601	.9642	.9677	.9708	.9734	.9757	.9778	.9813	.9842	.9865	.9903	.9936	.9960	.9992	1.003	1.005	1.006	1.007	Z		
20	556.3	P					1.581	1.734	1.887	2.040	2.192	2.344	2.496	2.647	2.798	3.101	3.402	3.704	4.306	5.058	5.808	7.307	11.05	14.78	18.51	22.24	P	20	556.3
		Z					.9002	.9115	.9210	.9291	.9361	.9421	.9474	.9520	.9561	.9630	.9687	.9734	.9808	.9875	.9932	.9998	1.006	1.010	1.012	1.013	Z		
40	278.1	P							3.145	3.463	3.781	4.097	4.411	4.725	5.038	5.351	5.974	6.596	7.216	8.455	9.998	13.54	14.61	22.25	29.88	37.49	P	40	278.1
		Z							.8265	.8452	.8611	.8748	.8866	.8969	.9060	.9140	.9278	.9390	.9483	.9569	.9760	.9854	.9961	1.014	1.021	1.025	1.027	Z		
60	185.4	P								4.748	5.241	5.731	6.220	6.707	7.190	7.673	8.637	9.596	10.55	12.46	14.84	17.20	21.92	33.64	45.32	56.96	P	60	185.4
		Z								.7724	.7958	.8159	.8334	.8487	.8620	.8739	.8942	.9108	.9246	.9462	.9656	.9796	.9984	1.022	1.032	1.038	Z		
80	139.1	P									6.440	7.116	7.788	8.456	9.121	9.784	11.11	12.42	13.73	16.34	19.59	22.82	29.26	45.24	61.14	76.97	P	80	139.1
		Z									.7334	.7598	.7826	.8025	.8201	.8357	.8623	.8841	.9022	.9362	.9767	.9996	1.030	1.044	1.052	1.056	Z		
100	112.5	P									7.397	8.268	9.133	9.993	10.85	11.70	13.40	15.09	16.77	20.11	24.28	28.42	36.65	57.08	77.37	97.55	P	100	112.5
		Z									.6739	.7062	.7342	.7587	.7803	.7995	.8321	.8590	.8814	.9163	.9479	.9708	1.002	1.040	1.057	1.066	Z		
120	92.71	P										9.204	10.27	11.33	12.39	13.44	15.53	17.61	19.68	23.79	28.91	34.00	44.11	69.18	94.04	118.7	P	120	92.71
		Z										.6951	.6862	.7171	.7486	.7652	.8037	.8325	.8619	.9032	.9408	.9680	1.005	1.050	1.071	1.082	Z		
140	79.47	P										9.844	11.23	12.50	13.76	15.01	17.51	20.00	22.53	27.40	33.51	39.59	51.67	81.50	111.2	140.6	P	140	79.47
		Z										.6967	.6846	.6777	.7069	.7328	.7770	.8135	.8498	.8914	.9347	.9662	1.009	1.061	1.085	1.098	Z		
160	69.53	P										10.51	12.01	13.50	14.98	16.44	19.37	22.28	25.18	30.94	38.10	45.22	59.35	94.30	128.9	163.1	P	160	69.53
		Z										.6969	.6033	.6404	.6732	.7023	.7580	.7929	.8272	.8808	.9298	.9656	1.014	1.074	1.101	1.115	Z		
180	61.81	P										10.91	12.64	14.35	16.05	17.75	21.12	24.47	27.81	34.44	42.69	50.90	67.17	107.4	147.1	186.4	P	180	61.81
		Z										.5176	.5644	.6054	.6415	.6737	.7287	.7740	.8120	.8715	.9261	.9662	1.020	1.087	1.117	1.132	Z		
200	55.63	P											13.13	15.08	17.01	18.94	22.77	26.58	30.37	37.92	47.31	56.66	75.18	120.9	165.9	210.4	P	200	55.63
		Z											.5279	.5726	.6119	.6470	.7071	.7567	.7982	.8636	.9237	.9680	1.027	1.101	1.134	1.150	Z		
220	50.57	P											13.51	15.70	17.87	20.04	24.34	28.63	32.90	41.40	51.99	62.53	83.38	134.8	185.4	235.3	P	220	50.57
		Z											.4937	.5419	.5844	.6224	.6874	.7410	.7880	.8572	.9228	.9711	1.036	1.116	1.151	1.169	Z		
240	46.36	P											13.79	16.23	18.66	21.07	25.87	30.64	35.40	44.90	56.76	68.53	91.82	149.2	205.5	261.1	P	240	46.36
		Z											.4619	.5135	.5591	.5998	.6695	.7270	.7754	.8522	.9234	.9756	1.046	1.132	1.170	1.189	Z		
260	42.79	P											13.99	16.69	19.38	22.05	27.33	32.64	37.91	48.44	61.62	74.69	100.5	164.1	226.4	287.8	P	260	42.79
		Z											.4387	.4815	.5360	.5794	.6535	.7149	.7665	.8488	.9254	.9815	1.057	1.150	1.190	1.210	Z		
280	39.73	P											14.15	17.11	20.05	22.99	28.82	34.65	40.45	52.06	66.61	81.04	109.5	179.5	248.0	315.5	P	280	39.73
		Z											.4162	.4639	.5151	.5610	.6394	.7046	.7534	.8470	.9289	.9888	1.069	1.168	1.211	1.232	Z		
300	37.08	P											14.27	17.50	20.71	23.91	30.30	36.68	43.06	55.78	71.75	87.60	118.9	195.5	270.5	344.3	P	300	37.08
		Z											.3825	.4428	.4965	.5448	.6274	.6968	.7544	.8470	.9339	.9976	1.083	1.188	1.232	1.255	Z		
320	34.77	P											14.38	17.87	21.35	24.83	31.80	38.78	45.75	59.62	77.08	94.41	128.6	212.2	293.9	374.2	P	320	34.77
		Z											.3613	.4239	.4799	.5302	.6174	.6901	.7515	.8488	.9406	1.008	1.098	1.209	1.255	1.278	Z		
340	32.72	P											14.49	18.23	21.99	25.76	33.35	40.97	48.56	63.63	82.63	101.5	138.7	229.6	318.2	405.2	P	340	32.72
		Z											.3465	.4071	.4632	.5118	.6094	.6861	.7507	.8525	.9489	1.020	1.115	1.231	1.279	1.303	Z		
360	30.90	P											14.59	18.61	22.65	26.73	34.96	43.24	51.49	67.82	88.43	108.9	149.3	247.7	343.5	437.6	P	360	30.90
		Z											.3359	.3924	.4525	.5073	.6033	.6840	.7518	.8582	.9591	1.034	1.133	1.254	1.304	1.329	Z		
380	29.28	P											14.72	19.02	23.36	27.75	36.65	45.63	54.56	72.82	94.52	116.7	160.3	266.7	370.0	471.3	P	380	29.28
		Z											.3115	.3800	.4421	.4990	.5992	.6837	.7547	.8658	.9712	1.050	1.153	1.279	1.331	1.356	Z		
400	27.81	P											14.89	19.49	24.15	28.88	38.48	48.17	57.88	76.87	100.9	124.9	171.9	286.5	397.5	506.4	P	400	27.81
		Z											.2992	.3700	.4343	.4933	.5976	.6857	.7598	.8734	.9852	1.067	1.175	1.305	1.358	1.384	Z		
420	26.49	P												15.10	20.05	25.06	35.15	40.48	50.91	61.30	81.79	107.7	133.5	184.1	307.2	426.3	543.0	P	420	26.49
		Z												.2890	.3624	.4292	.4905	.5987	.6902	.7672	.8871	1.001	1.086	1.198	1.333	1.387	1.413	Z		
440	25.86	P												15.37	20.71	26.11	31.58	42.68	53.86	65.01	87.01	114.9	142.6	197.0	329.0	456.4	581.1	P	440	25.86
		Z												.2808	.3573	.4268	.4904	.6025	.6971	.7766	.9008	1.019	1.108	1.224	1.363	1.417	1.444	Z		
460	24.19	P												15.72	21.49	27.32	33.21	45.10	57.06	68.98	92.57	122.5	152.3	210.6	351.9	487.8	621.0	P	460	24.19
		Z												.2748	.3547	.4272	.4933	.6091	.7064	.7882	.9167	1.040	1.131	1.251	1.394	1.449	1.476	Z		
480	23.18	P												16.22	22.44	28.73	35.07	47.81	60.55	73.26	98.50	130.6	162.5	224.9	375.9	520.8	666.6	P	480	23.18
		Z												.2717	.3550	.4305	.4998	.6187	.7183	.8022	.9348	1.068	1.157	1.281	1.427	1.483	1.509	Z		
500	22.25	P												16.94	23.64	30.41	37.21	50.83	64.37	77.89	104.8	139.2	173.4	240.1	401.1	555.3	706.1	P	500	22.25
		Z												.2724	.3590	.4374	.5085	.6315	.7331	.8188	.9552	1.087	1.185	1.313	1.468	1.518	1.544	Z		
540	20.60	P													19.33	27.09	34.96	42.84									P	540	20.60
		Z													.2878	.3809	.4657	.5421									Z		
580	19.18	P													23.51	32.41	41.66										P	580	19.18
		Z													.3258	.4242	.5167										Z		
620	17.94	P													30.18	40.37											P	620	17.94
		Z													.3913	.4944											Z		
660	16.86	P													40.81	51.70											P	660	16.86
		Z													.4971	.5947											Z		
700	15.89	P													56.70												P	700	15.89
		Z													.6512												Z		

The following values are from the paper by Stewart and Johnson

Volume cc/mole	Volume cc/gram		Temperature, °K 20	22	24	26	28	30	34	38	44	48	52	60	70	
26	12.90	P	68.80	88.70	108.6	128.6										P
		Z	1.090	1.277	1.434	1.567										Z
26.5	13.14	P	45.40	64.50	83.70	102.6	122.0	141.2								P
		Z	.7331	.9468	1.186	1.274	1.407	1.520								Z
27	13.39	P	29.20	47.70	66.20	84.60	103.1	121.6	158.5							P
		Z	.4804	.7134	.9076	1.071	1.212	1.334	1.534							Z
27.5	13.74	P	16.30	34.10	51.90	69.70	87.50	105.3	140.9	176.5						P
		Z	.2731	.5195	.7247	.8984	1.047	1.178	1.389	1.557						Z
28	13.89	P		22.50	39.70	56.90	74.10	91.20	125.6	159.9						P
		Z		.3490	.5644	.7468	.9030	1.037	1.261	1.436						Z
28.5	14.14	P		12.80	29.40	45.90	62.50	79.10	112.2	145.4	195.1					P
		Z		.2021	.4655	.6132	.7753	.9158	1.146	1.309	1.540					Z
29	14.38	P			21.00	37.10	53.10	69.10	101.1	133.1	181.1					P
		Z			.3092	.5043	.6702	.8180	1.051	1.238	1.495					Z
29.5	14.63	P			14.10	29.60	45.00	60.50	91.40	122.4	168.8	199.7				P
		Z			.2112	.4093	.5778	.7250	.9664	1.158	1.379	1.496				Z
30	14.88	P			7.500	22.40	37.40	52.30	82.30	112.2	157.0	186.9				P
		Z			.1143	.3150	.4883	.6374	.8850	1.079	1.305	1.484				Z
31	15.38	P				11.50	25.50	39.50	67.50	95.50	137.5	165.5	193.6			P
		Z				.1671	.3441	.4974	.7500	.9494	1.181	1.303	1.407			Z
32	15.87	P				3.900	17.00	30.20		82.70	122.2	148.5	174.7			P
		Z				.0585	.2368	.3926		.8487	1.083	1.206	1.310			Z
33	16.37	P					10.50	22.90		72.30	109.4	134.1	158.9			P
		Z					.1508	.3070		.7692	.9999	1.124	1.229			Z
34	16.87	P						17.50		64.00	99.00	122.3	145.5	191.4		P
		Z						.2417		.6978	.9323	1.056	1.159	1.352		Z
35	17.36	P						13.10		57.10	90.00	112.0	134.0	177.3		P
		Z						.1863		.6409	.8725	.9952	1.099	1.260		Z
36	17.86	P						10.10		51.60	82.80	103.6	124.3	165.7		P
		Z						.1477		.5957	.8256	.9469	1.049	1.212		Z
37	18.35	P						8.170		47.20	76.70	96.40	116.0	155.4		P
		Z						.1228		.5601	.7860	.9056	1.006	1.168		Z
38	18.85	P								71.60	90.20	108.9	146.2	190.5		P
		Z								.7536	.8702	.9698	1.128	1.280		Z
39	19.35	P								67.30	85.00	102.7	138.1	181.5		P
		Z								.7270	.8416	.9387	1.094	1.238		Z
40	19.84	P								63.40	80.30	97.10	130.8	172.9		P
		Z								.7024	.8155	.9103	1.063	1.204		Z
42	20.83	P								57.60	73.00	88.30	119.1	157.6		P
		Z								.6700	.7784	.8691	1.016	1.152		Z
44	21.83	P								52.80	67.00	81.10	109.4	144.8		P
		Z								.6435	.7485	.8363	.9777	1.109		Z

Volume and Compressibility Factors for Saturated Liquid and Vapor

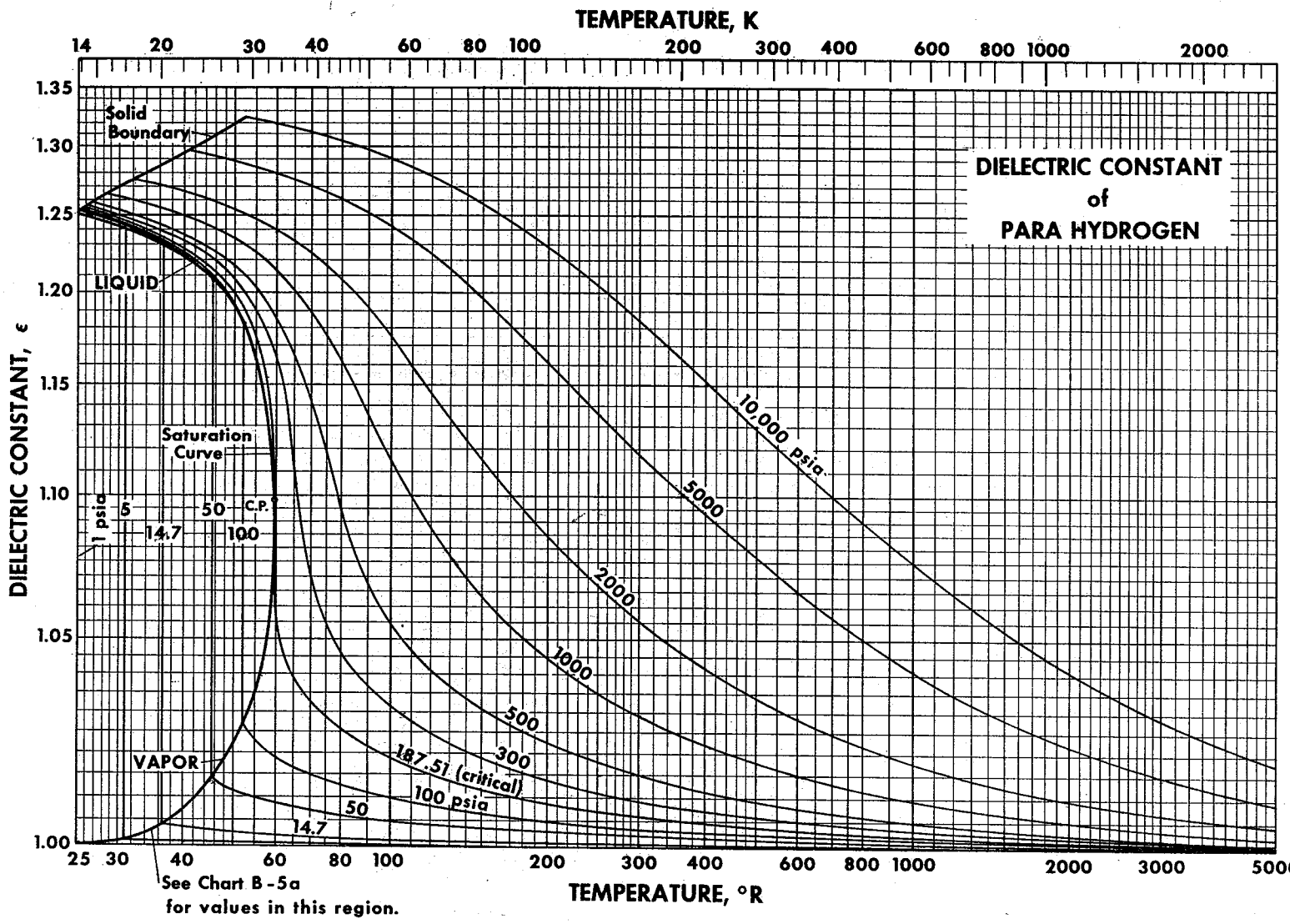
Pressure Atm.	Temp. °K	Saturated Liquid V cc/gm	Saturated Liquid Z	Saturated Vapor V cc/gm	Saturated Vapor Z
.2018	16	13.25	.004107	3123.	0.9678
.4551	18	13.60	.008451	1520.	.9440
.8891	20	14.00	.01589	835.8	.9128
1.5645	22	14.50	.02533	500.4	.8742
2.5455	24	15.10	.03936	317.7	.8276
3.8986	26	15.87	.05847	209.8	.7730
5.695	28	16.89	.08442	141.6	.7077
8.010	30	18.42	.1208	95.64	.6273
10.933	32	21.43	.1799	61.49	.5161
12.98	33.19	33.21	.3191	33.21	.3191

Sources of Data: Woolley, H. W., Scott, R. B., Brickwedde, F. G.; J. Research Natl. Bur. Standards 41, (Nov. 1948) RP 1932

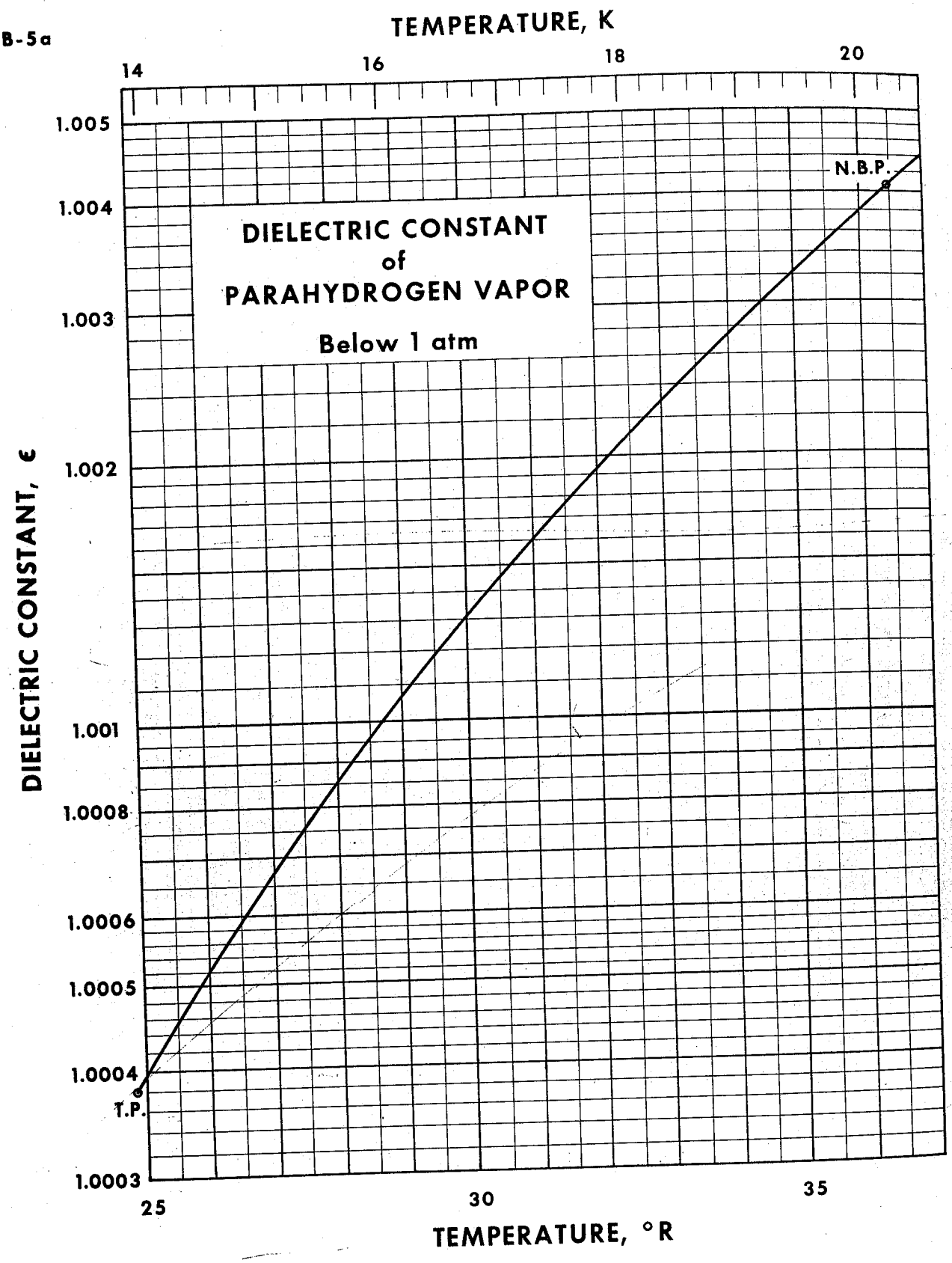
Stewart, R. B. and Johnson, V. J.; Advances in Cryogenic Engineering, 5, Plenum Press, Inc., New York (1960) PP 557-65.

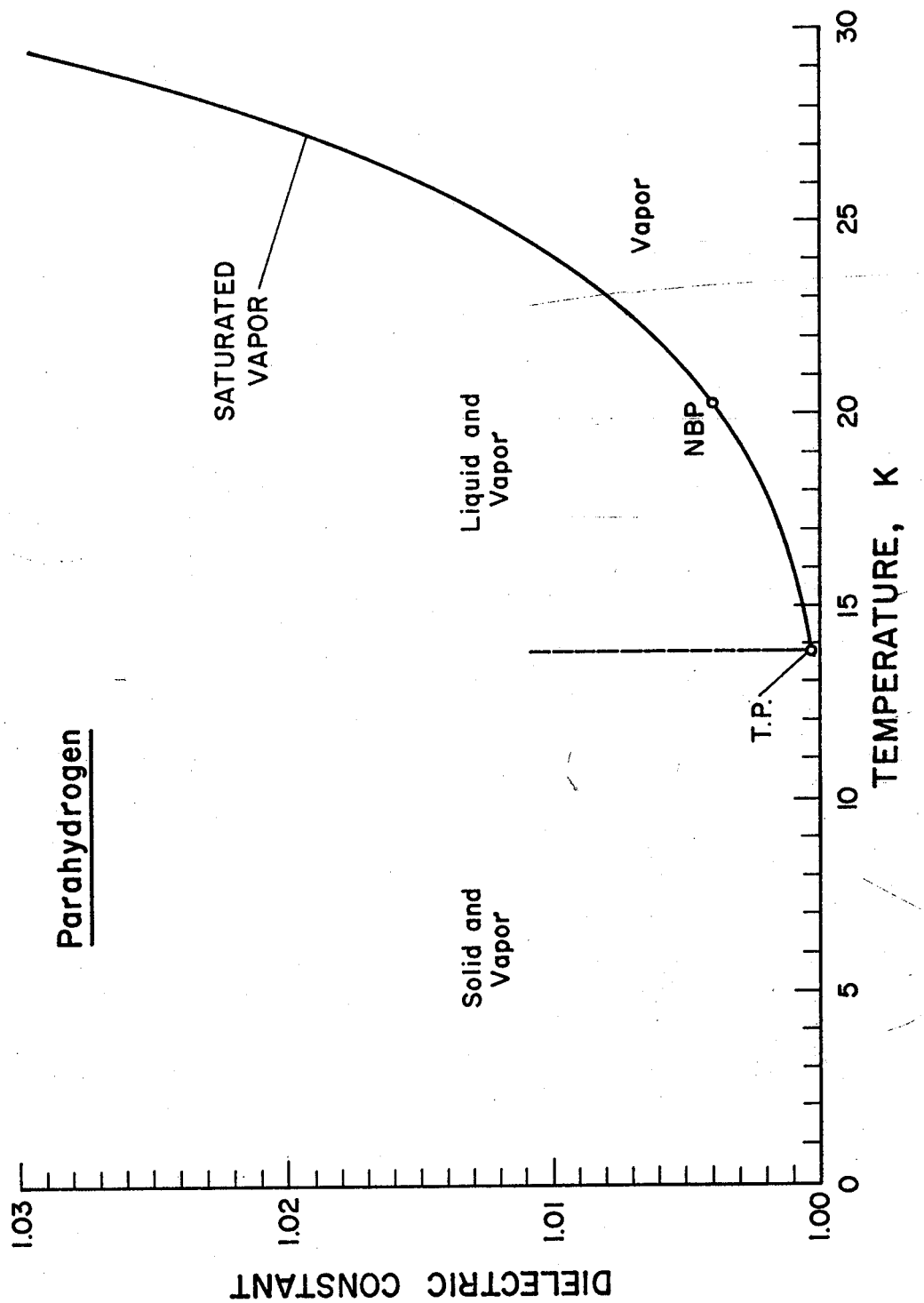
Reprinted from: "Compressibility Factor for Normal Hydrogen", Data Sheet 11.002 in A Compendium of the Properties of Materials at Low Temperature (Phase II) by the National Bureau of Standards, Cryogenic Engineering Laboratory, R. B. Stewart and V. J. Johnson, General Editors; Wright Air Development Division, U. S. A. F., WADD Technical Report 60-56

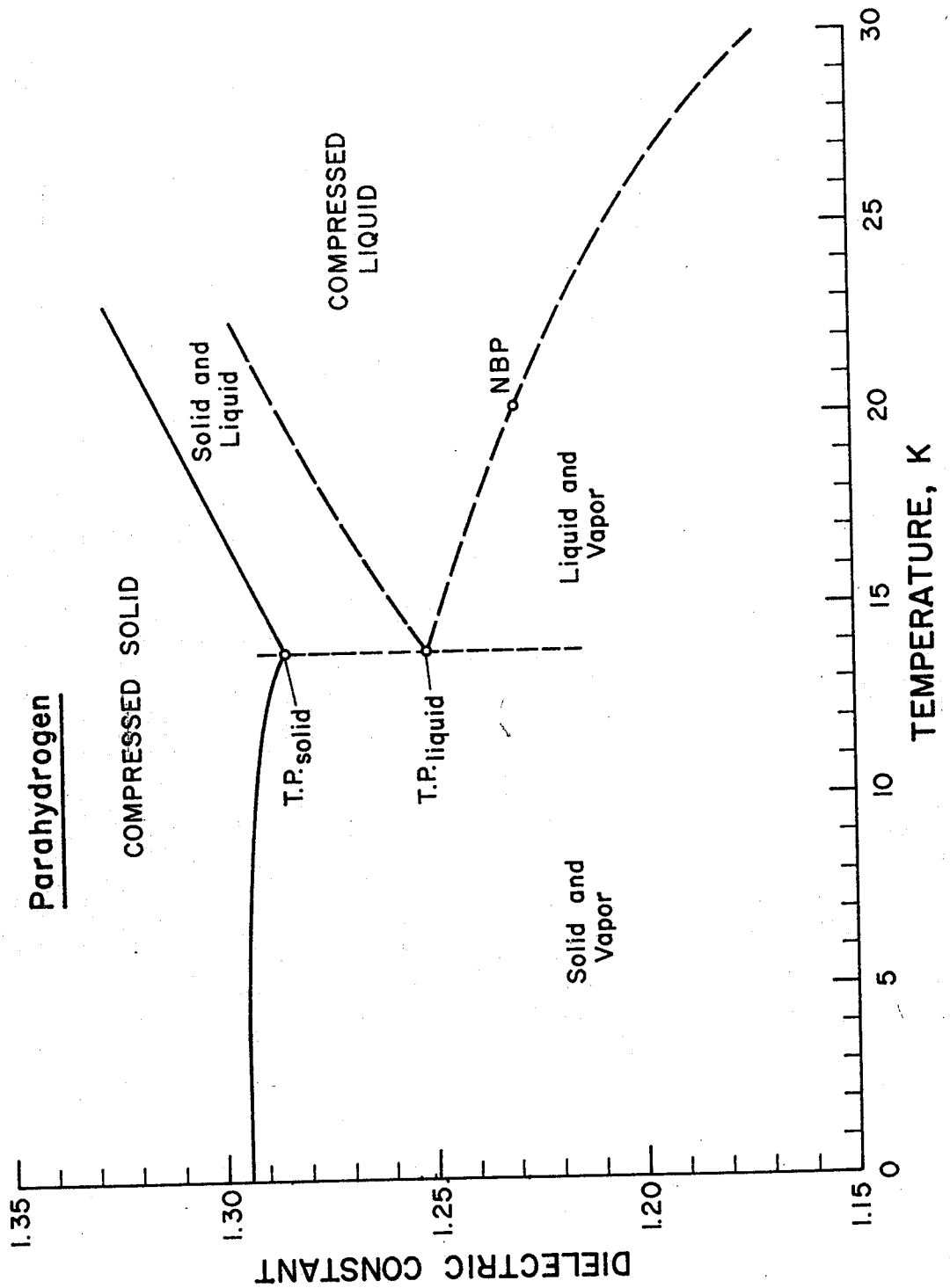
GPO 851871

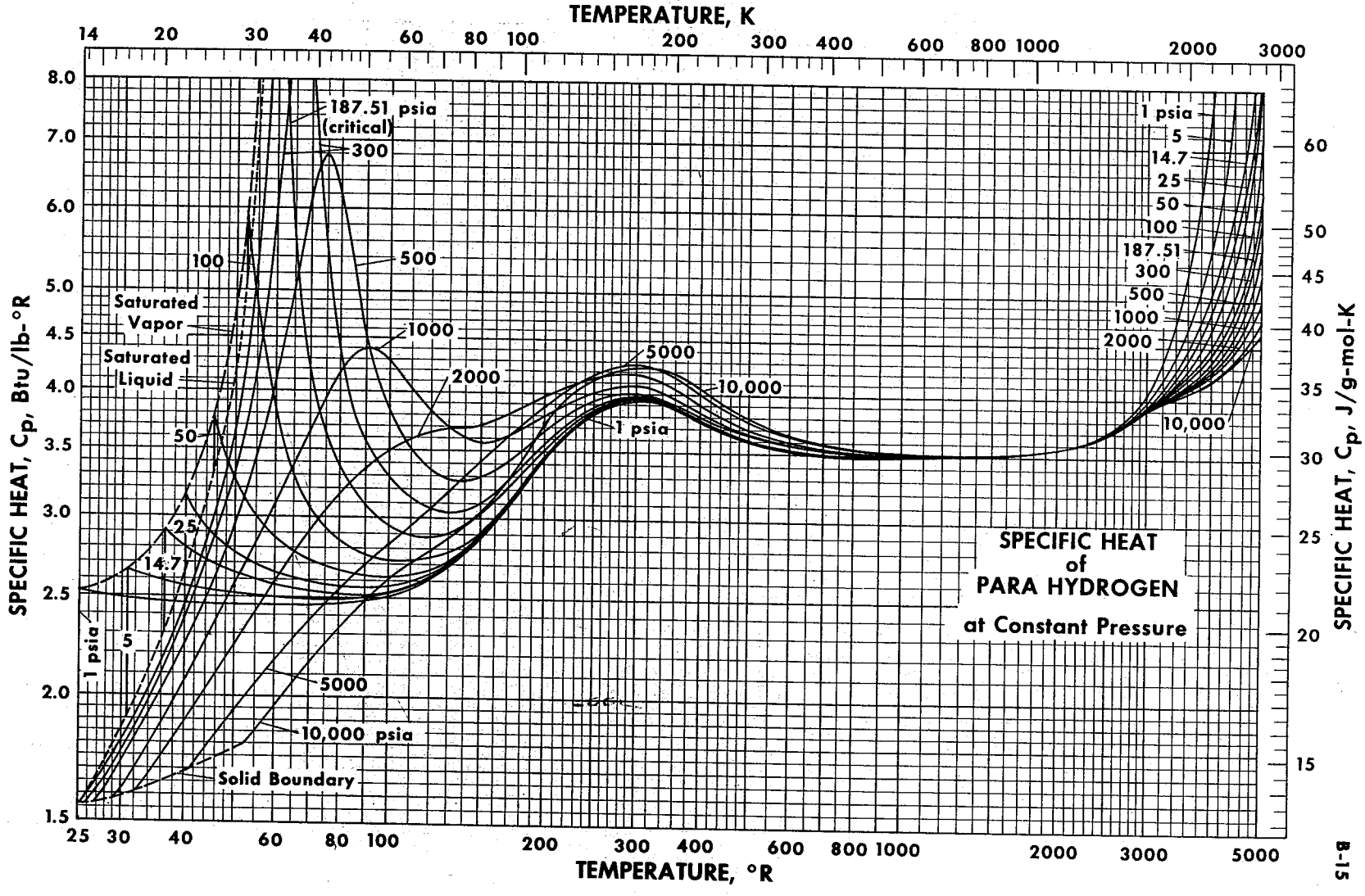

TEMPERATURE, K
14 20 30 40 60 80 100 200 300 400 600 800 1000 2000
DIELECTRIC CONSTANT, ε
1.35 1.30 1.25 1.20 1.15 1.10 1.05 1.00
DIELECTRIC CONSTANT
of
PARA HYDROGEN
Solid Boundary
LIQUID
Saturation Curve
1 psia
5
14.7
50
C.P.
100
VAPOR
10,000 psia
5000
2000
1000
500
300
187.51 (critical)
100 psia
50
14.7
25 30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
See Chart B-5a
for values in this region.
TEMPERATURE, °R

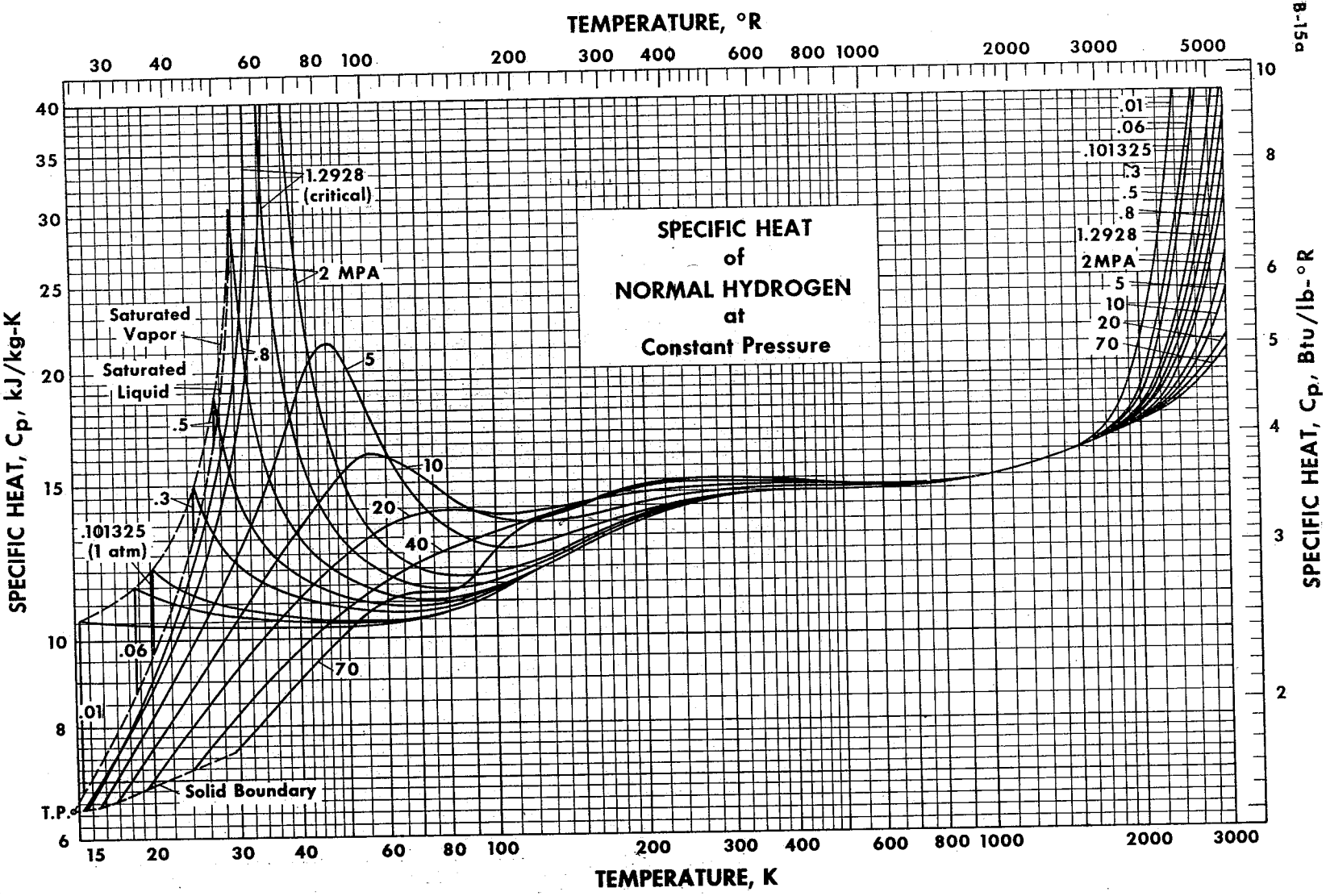
B-5a

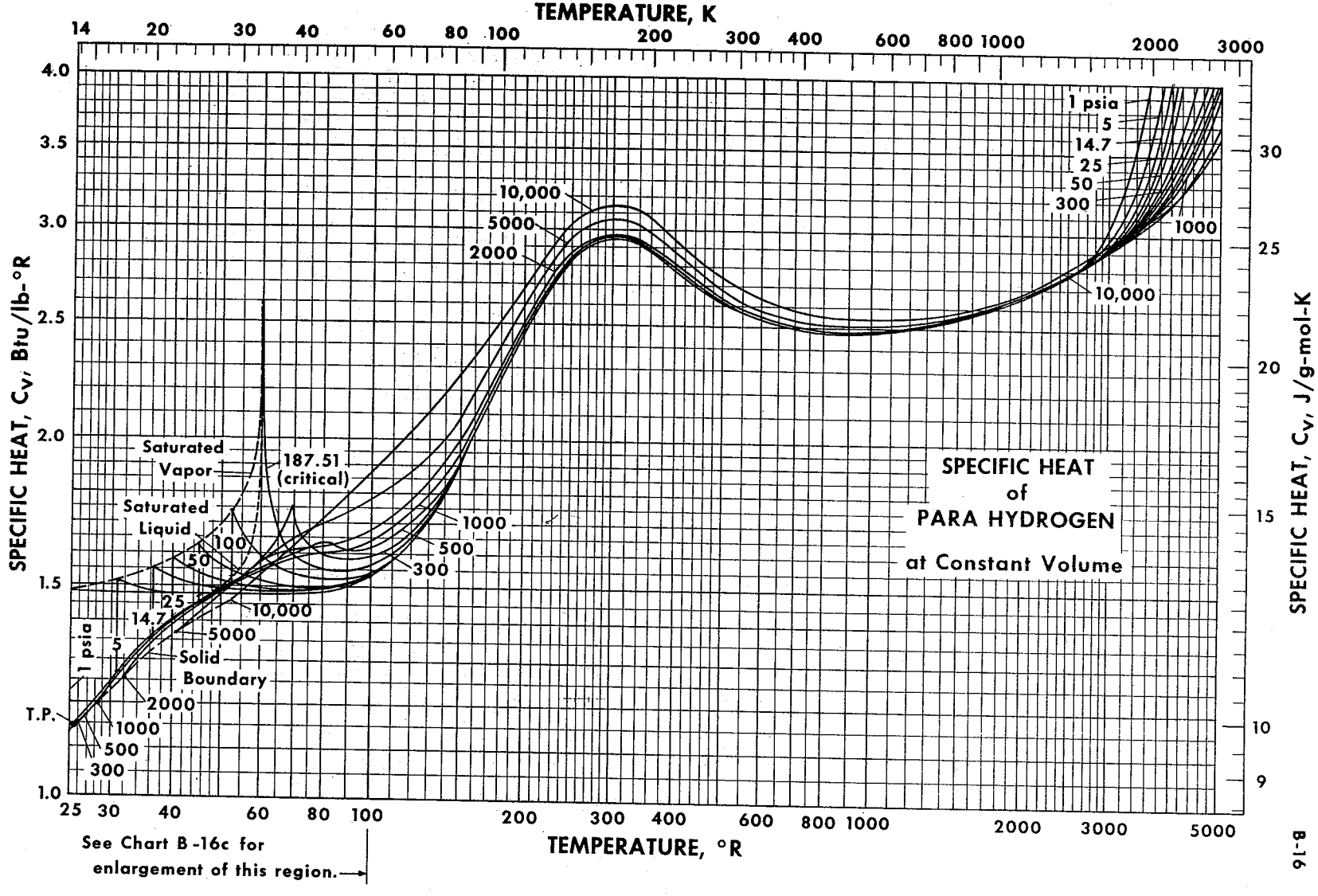

TEMPERATURE, K
14
16
18
20
1.005
1.004
1.003
1.002
1.001
1.0008
1.0006
1.0005
1.0004
1.0003
DIELECTRIC CONSTANT
of
PARAHYDROGEN VAPOR
Below 1 atm
N.B.P.
T.P.
DIELECTRIC CONSTANT, ε
25
30
35
TEMPERATURE, °R

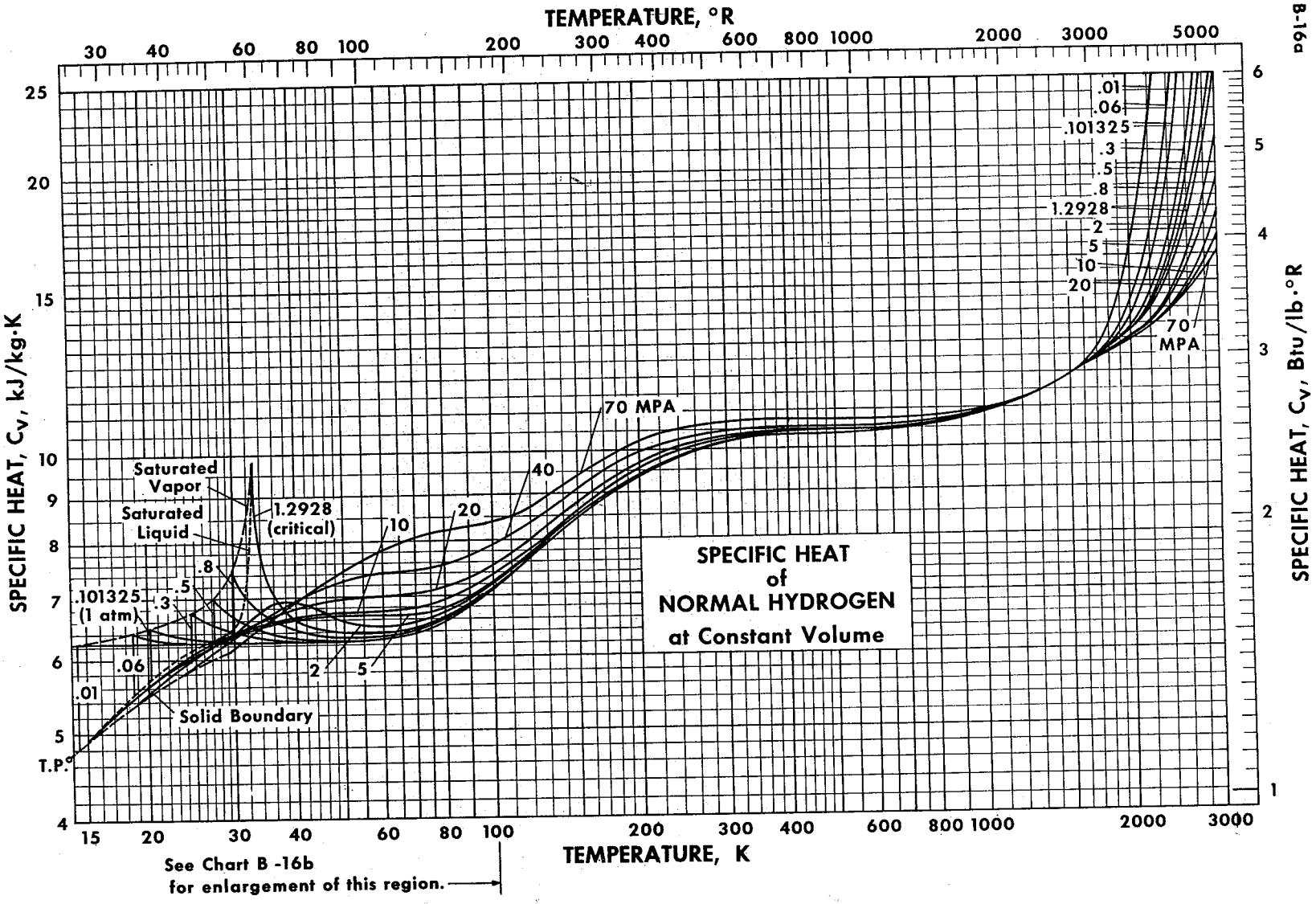

Parahydrogen
SATURATED VAPOR
Vapor
Liquid and Vapor
Solid and Vapor
NBP
T.P.
DIELECTRIC CONSTANT
1.03
1.02
1.01
1.00
0
5
10
15
20
25
30
TEMPERATURE, K


Parahydrogen
COMPRESSED SOLID
Solid and Liquid
COMPRESSED LIQUID
NBP
Liquid and Vapor
Solid and Vapor
T.P. solid
T.P. liquid
DIELECTRIC CONSTANT
1.35
1.30
1.25
1.20
1.15
0
5
10
15
20
25
30
TEMPERATURE, K

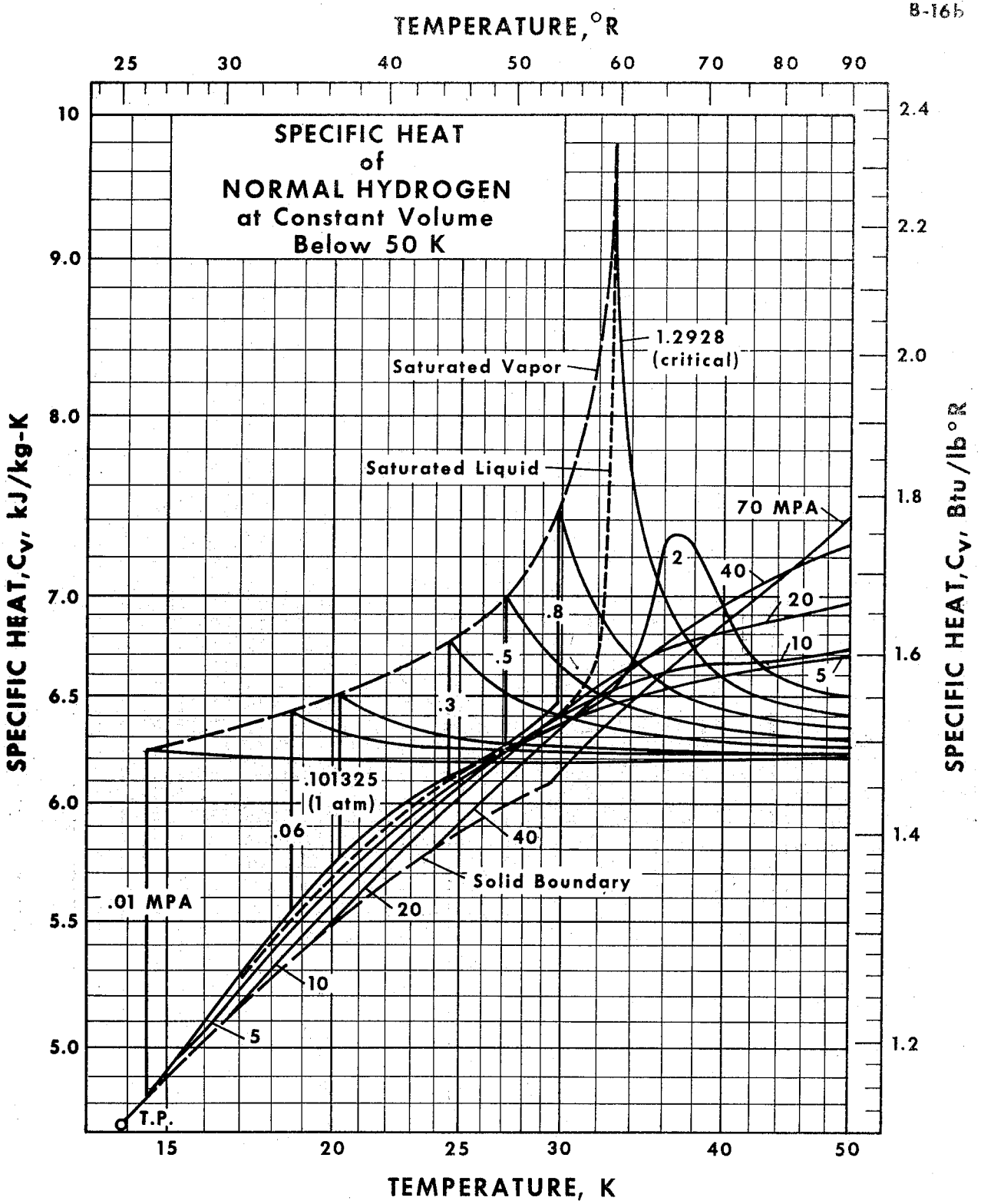

TEMPERATURE, K
14 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
SPECIFIC HEAT, C_p, Btu/lb-°R
8.0 7.0 6.0 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5
SPECIFIC HEAT, C_p, J/g-mol-K
60 50 45 40 35 30 25 20 15
187.51 psia (critical)
300
500
100
1000
2000
5000
10,000
1 psia
5
14.7
25
50
Saturated Vapor
Saturated Liquid
10,000 psia
Solid Boundary
SPECIFIC HEAT of PARA HYDROGEN at Constant Pressure
25 30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
TEMPERATURE, °R


TEMPERATURE, °R
30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
SPECIFIC HEAT
of
NORMAL HYDROGEN
at
Constant Pressure
1.2928 (critical)
2 MPA
Saturated Vapor
Saturated Liquid
.8
5
.5
10
.3
20
40
.101325 (1 atm)
.06
70
.01
Solid Boundary
T.P.
.01
.06
.101325
.3
.5
.8
1.2928
2MPA
5
10
20
70
SPECIFIC HEAT, Cp, kJ/kg-K
SPECIFIC HEAT, Cp, Btu/lb-°R
TEMPERATURE, K
15 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000

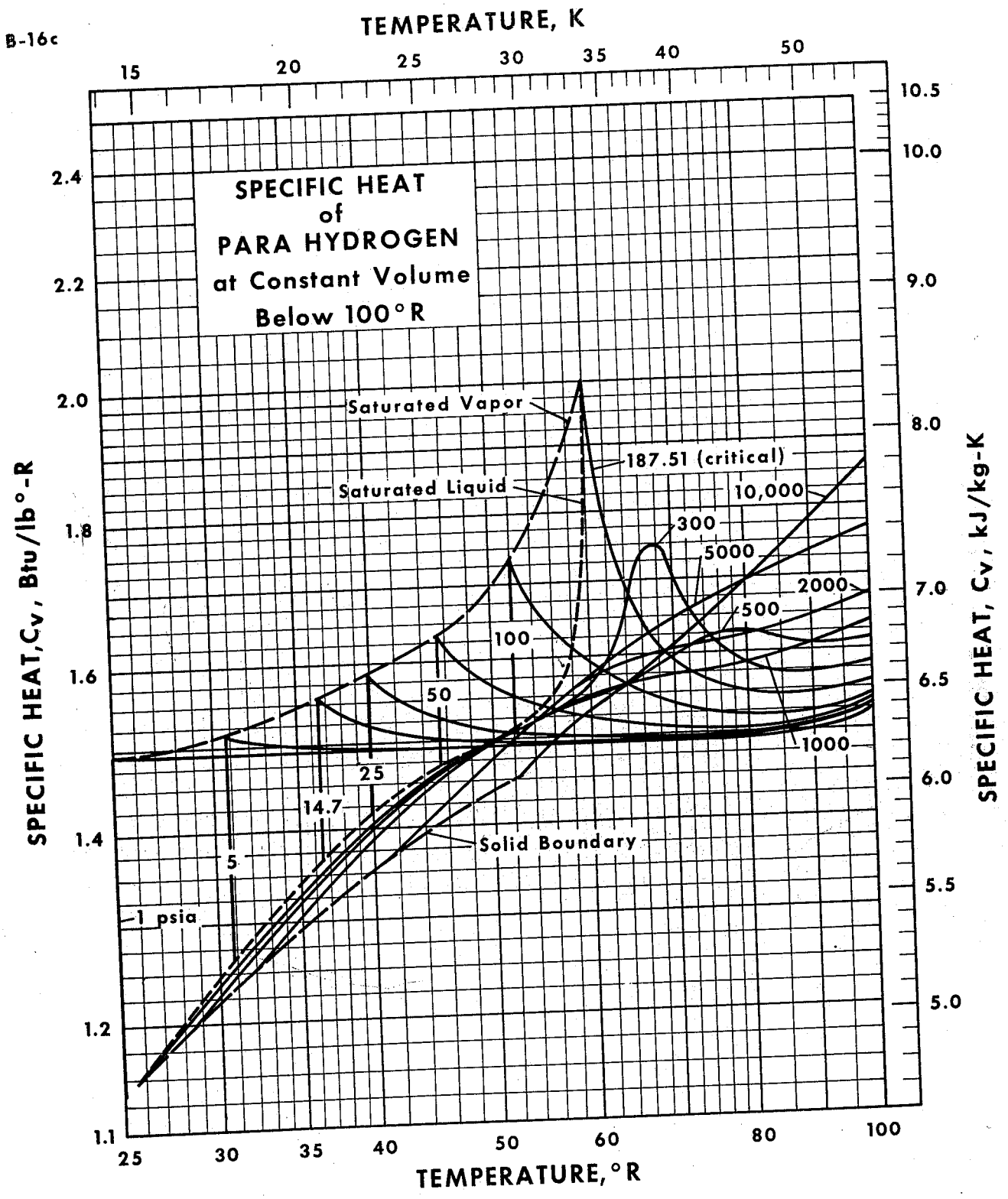

TEMPERATURE, K
14 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
SPECIFIC HEAT, C_v, Btu/lb-°R
4.0 3.5 3.0 2.5 2.0 1.5 1.0
SPECIFIC HEAT, C_v, J/g-mol-K
30 25 20 15 10 9
1 psia
5
14.7
25
50
300
1000
10,000
5000
2000
Saturated Vapor
187.51 (critical)
Saturated Liquid
100
50
25
14.7
1 psia
5
5000
Solid Boundary
2000
1000
500
300
10,000
1000
500
300
T.P.
SPECIFIC HEAT of PARA HYDROGEN at Constant Volume
25 30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
TEMPERATURE, °R
See Chart B-16c for enlargement of this region.

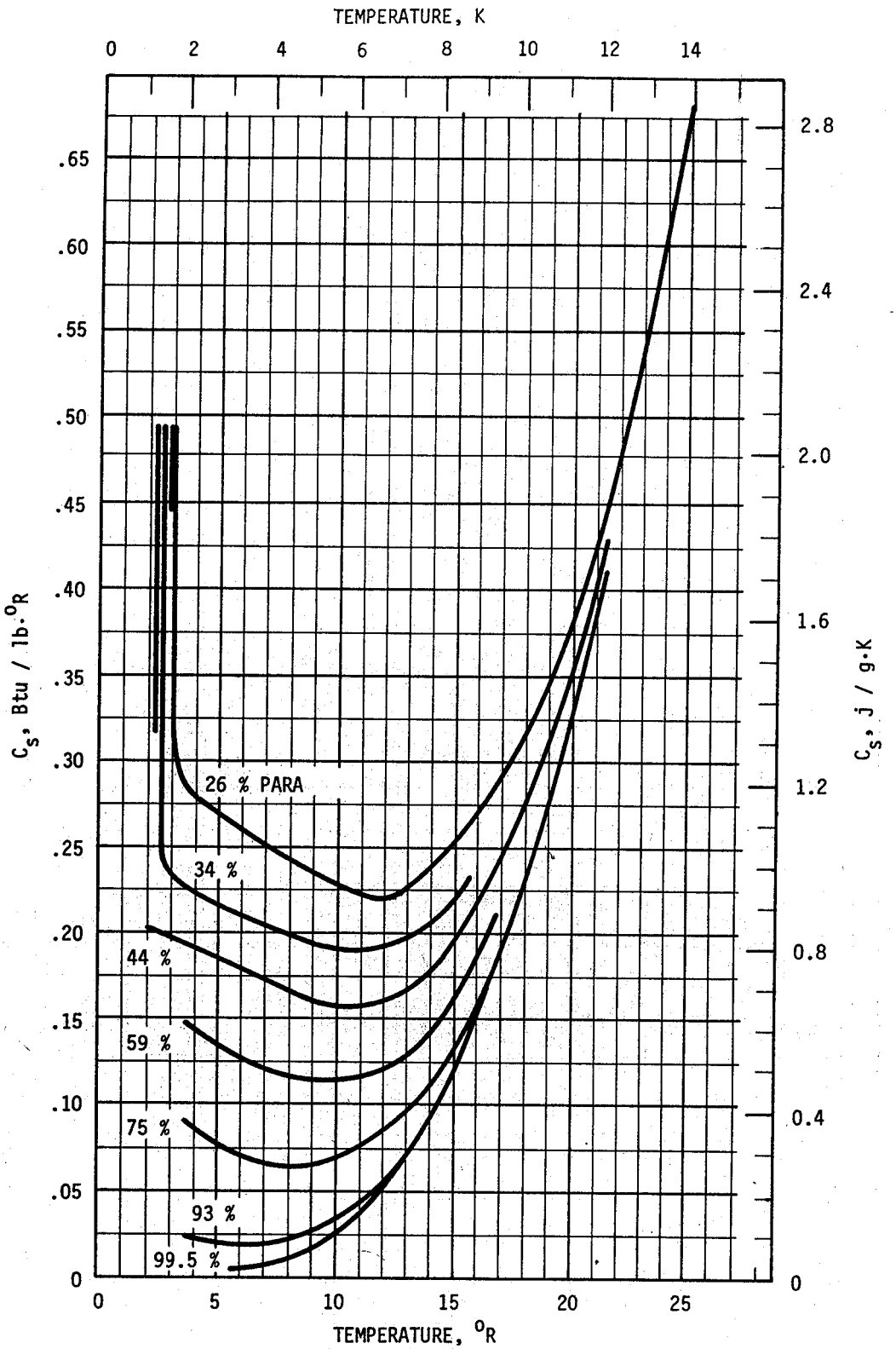

TEMPERATURE, °R
30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
SPECIFIC HEAT, C_v, kJ/kg·K
SPECIFIC HEAT, C_v, Btu/lb·°R
25 20 15 10 9 8 7 6 5 4
6 5 4 3 2 1
.01
.06
.101325
.3
.5
.8
1.2928
2
5
10
20
70 MPA
40
Saturated Vapor
Saturated Liquid
1.2928 (critical)
.101325 (1 atm)
Solid Boundary
T.P.
SPECIFIC HEAT of NORMAL HYDROGEN at Constant Volume
15 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
TEMPERATURE, K
See Chart B -16b for enlargement of this region.

B-16a

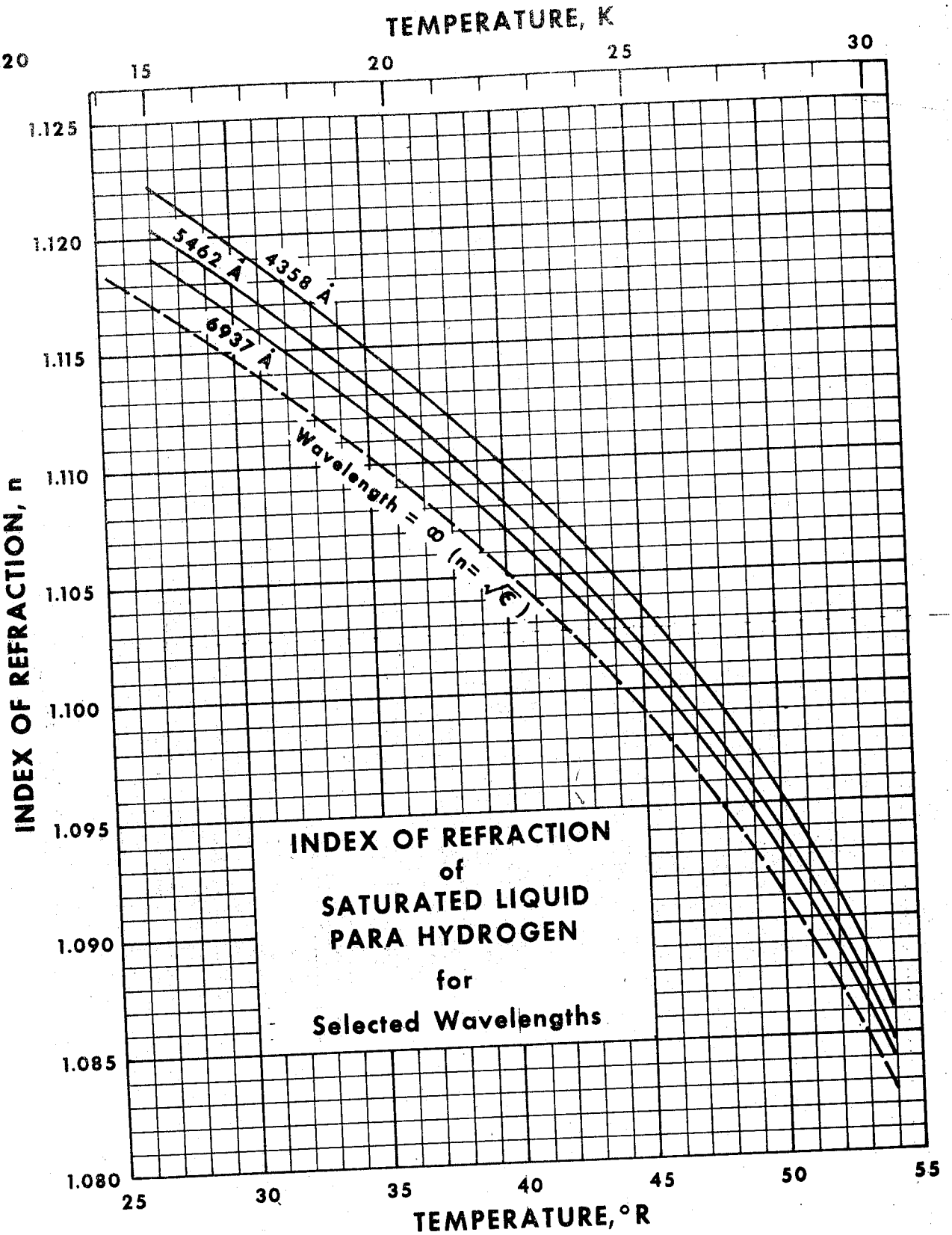

TEMPERATURE, °R
25
30
40
50
60
70
80
90
SPECIFIC HEAT
of
NORMAL HYDROGEN
at Constant Volume
Below 50 K
SPECIFIC HEAT, C_v, kJ/kg-K
SPECIFIC HEAT, C_v, Btu/lb °R
10
9.0
8.0
7.0
6.5
6.0
5.5
5.0
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.2928
(critical)
Saturated Vapor
Saturated Liquid
70 MPA
40
20
10
5
2
.8
.5
.3
.101325
(1 atm)
.06
.01 MPA
Solid Boundary
T.P.
15
20
25
30
40
50
TEMPERATURE, K

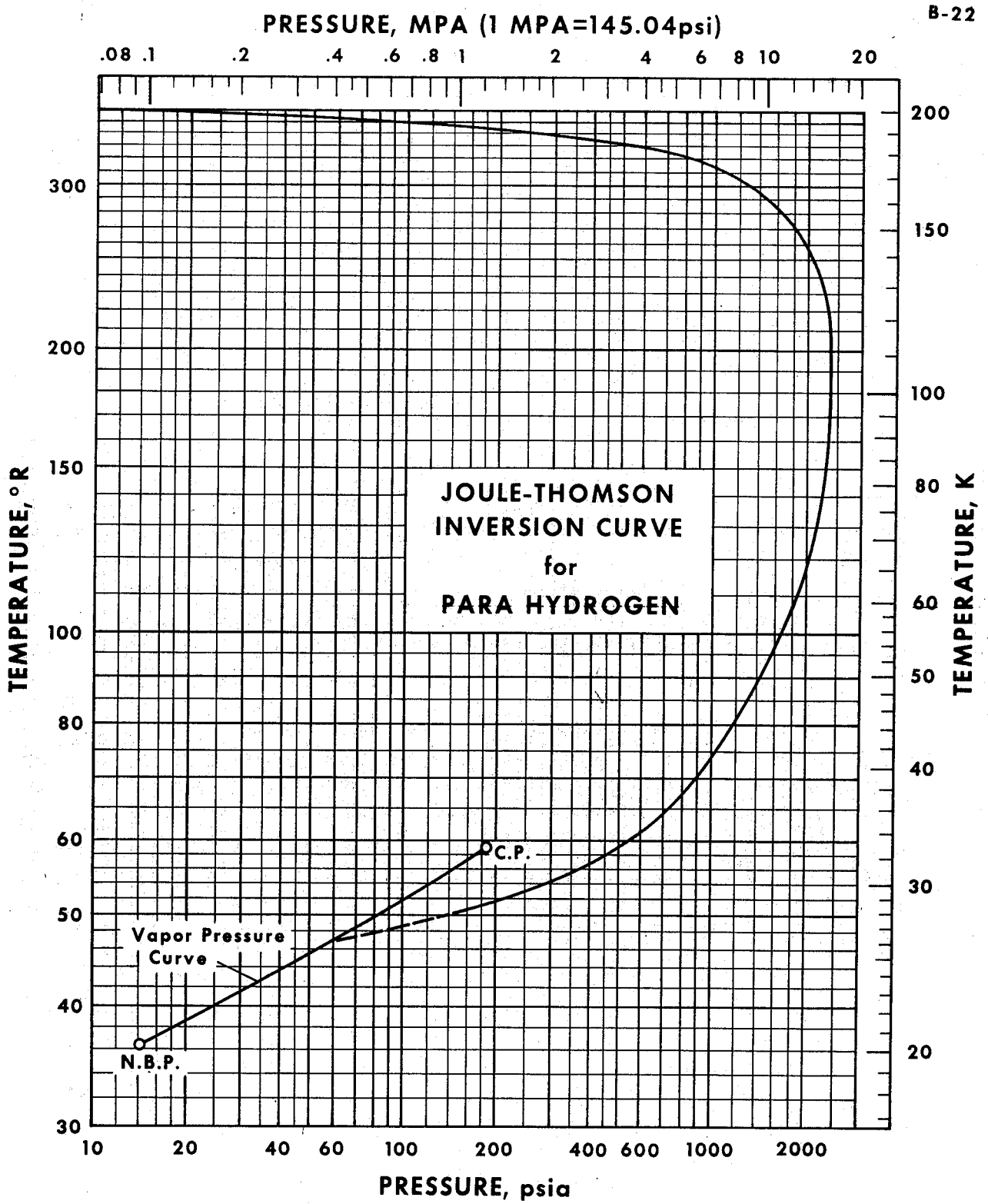
B-16c


TEMPERATURE, K
15
20
25
30
35
40
50
SPECIFIC HEAT
of
PARA HYDROGEN
at Constant Volume
Below 100° R
Saturated Vapor
Saturated Liquid
187.51 (critical)
10,000
300
5000
2000
500
100
50
25
14.7
5
1 psia
1000
Solid Boundary
SPECIFIC HEAT, Cv, Btu/lb°-R
SPECIFIC HEAT, Cv, kJ/kg-K
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.1
10.5
10.0
9.0
8.0
7.0
6.5
6.0
5.5
5.0
25
30
35
40
50
60
80
100
TEMPERATURE, °R

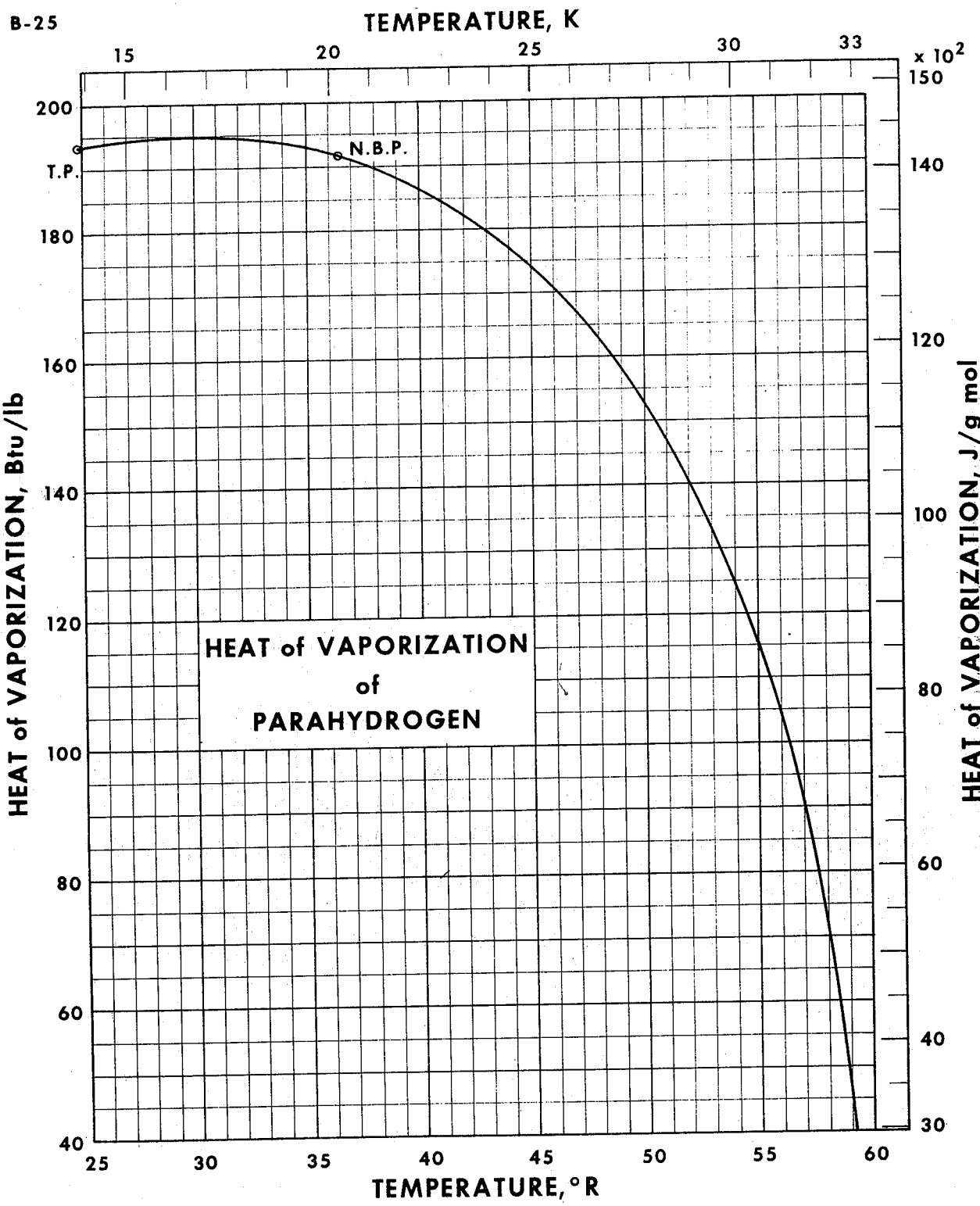


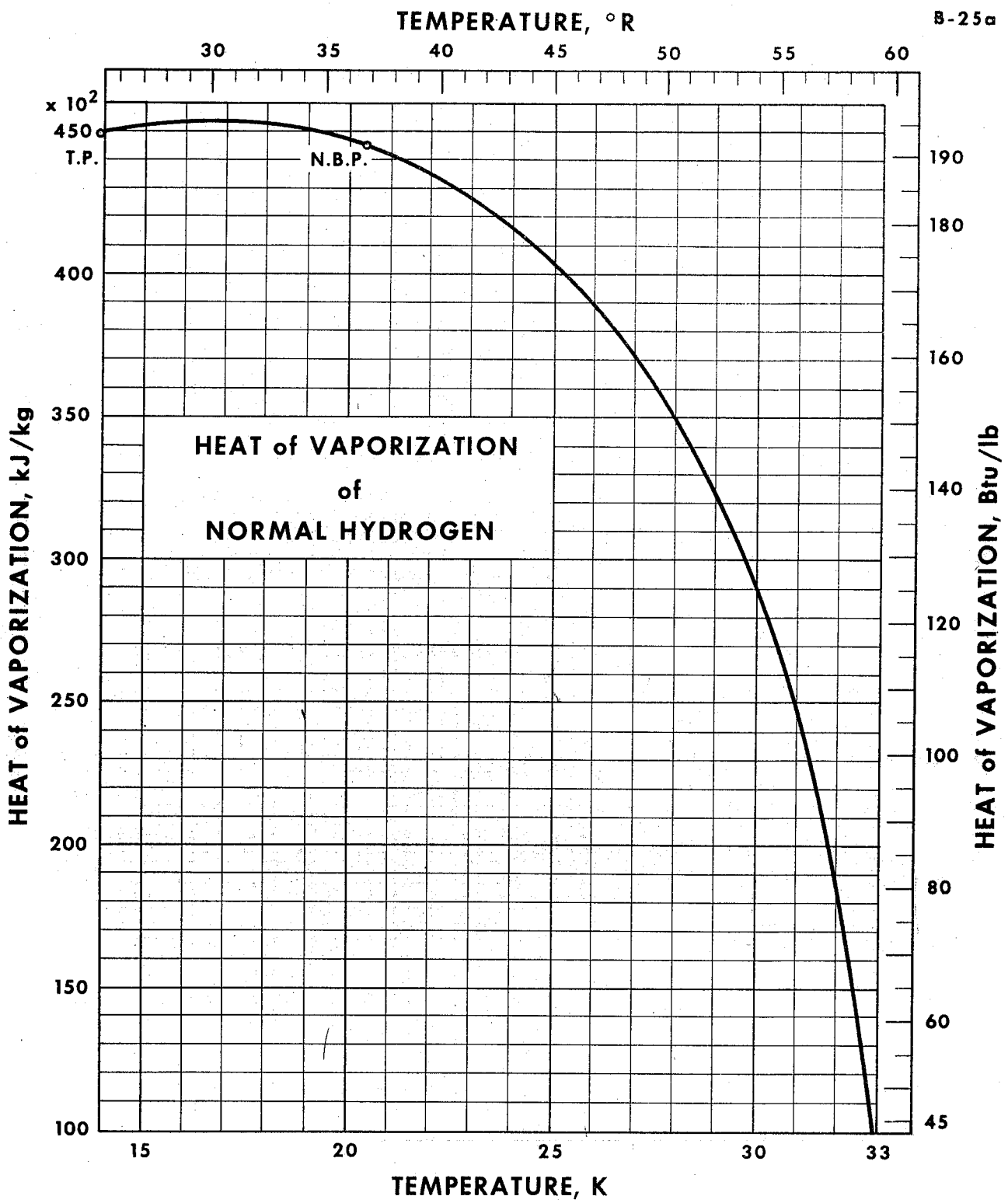
Specific Heat of Solid Hydrogen.

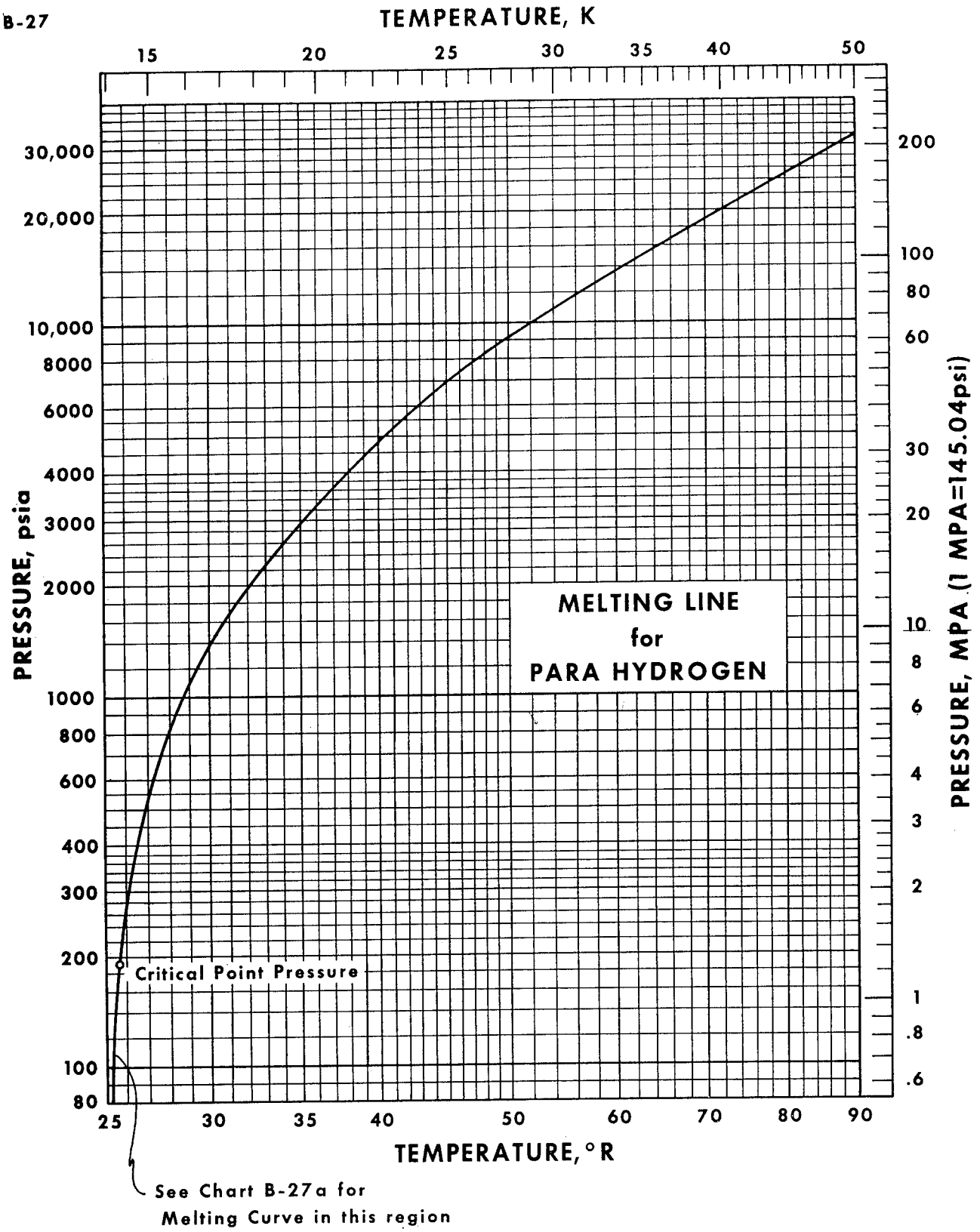

TEMPERATURE, K
15
20
25
30
1.125
1.120
1.115
1.110
1.105
1.100
1.095
1.090
1.085
1.080
INDEX OF REFRACTION, n
5462 Å
4358 Å
6937 Å
Wavelength = ∞ (n = √ε)
INDEX OF REFRACTION
of
SATURATED LIQUID
PARA HYDROGEN
for
Selected Wavelengths
25
30
35
40
45
50
55
TEMPERATURE, °R

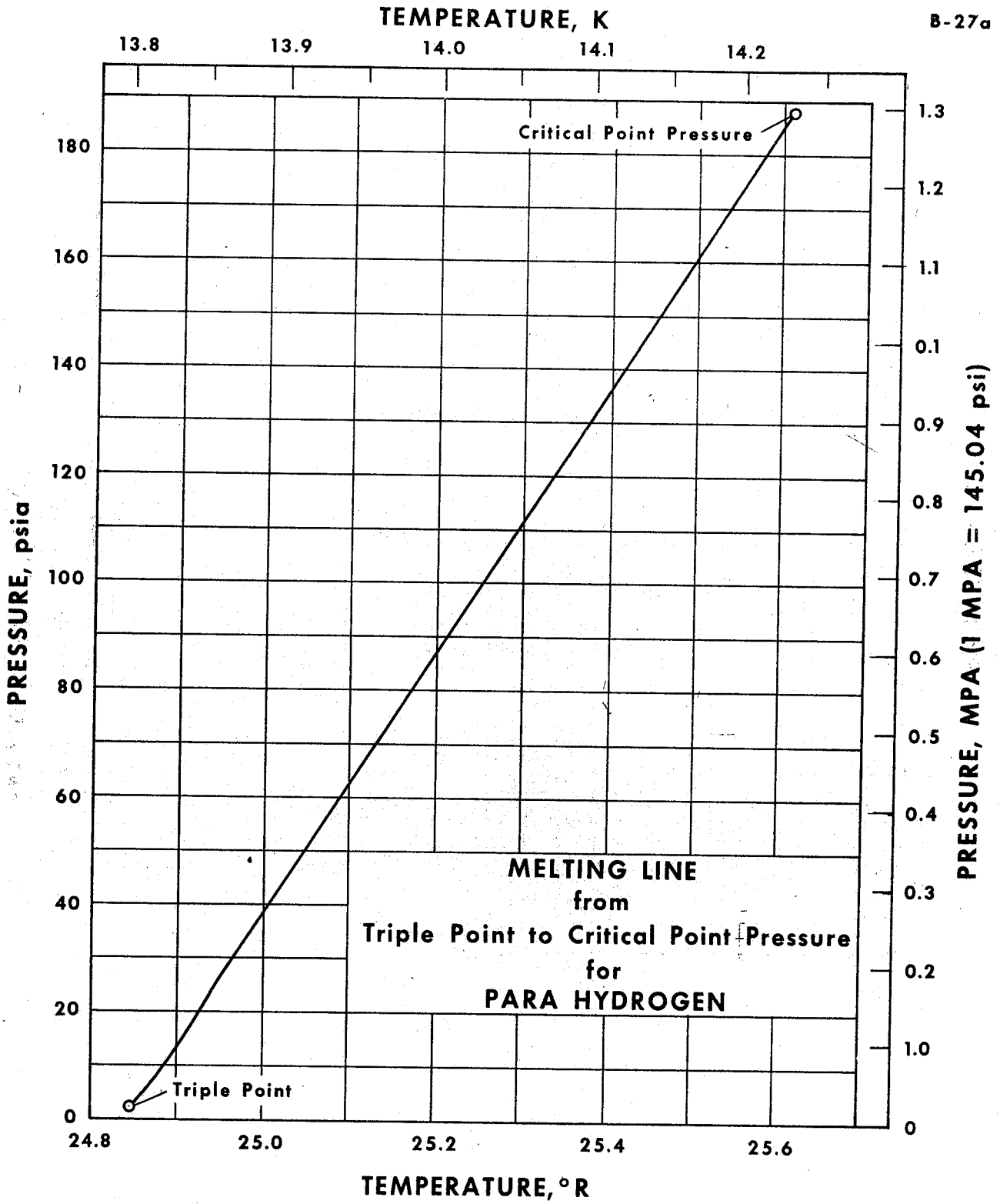

PRESSURE, MPA (1 MPA=145.04psi)
.08 .1 .2 .4 .6 .8 1 2 4 6 8 10 20
TEMPERATURE, °R
300 200 150 100 80 60 50 40 30
TEMPERATURE, K
200 150 100 80 60 50 40 30 20
JOULE-THOMSON
INVERSION CURVE
for
PARA HYDROGEN
C.P.
Vapor Pressure
Curve
N.B.P.
10 20 40 60 100 200 400 600 1000 2000
PRESSURE, psia

B-25


TEMPERATURE, K
15
20
25
30
33
x 10²
150
140
120
100
80
60
40
30
200
180
160
140
120
100
80
60
40
T.P.
N.B.P.
HEAT of VAPORIZATION, Btu/lb
HEAT of VAPORIZATION, J/g mol
HEAT of VAPORIZATION
of
PARAHYDROGEN
25
30
35
40
45
50
55
60
TEMPERATURE, °R


TEMPERATURE, °R
30
35
40
45
50
55
60
x 10²
450
T.P.
N.B.P.
400
350
300
250
200
150
100
HEAT of VAPORIZATION, kJ/kg
190
180
160
140
120
100
80
60
45
HEAT of VAPORIZATION, Btu/lb
HEAT of VAPORIZATION
of
NORMAL HYDROGEN
15
20
25
30
33
TEMPERATURE, K


TEMPERATURE, K
15
20
25
30
35
40
50
30,000
20,000
10,000
8000
6000
4000
3000
2000
1000
800
600
400
300
200
100
80
PRESSURE, psia
200
100
80
60
30
20
10
8
6
4
3
2
1
.8
.6
PRESSURE, MPA (1 MPA=145.04psi)
MELTING LINE
for
PARA HYDROGEN
Critical Point Pressure
25
30
35
40
50
60
70
80
90
TEMPERATURE, °R
See Chart B-27a for
Melting Curve in this region


TEMPERATURE, K
13.8
13.9
14.0
14.1
14.2
Critical Point Pressure
Triple Point
MELTING LINE
from
Triple Point to Critical Point Pressure
for
PARA HYDROGEN
PRESSURE, psia
0
20
40
60
80
100
120
140
160
180
PRESSURE, MPA (1 MPA = 145.04 psi)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
24.8
25.0
25.2
25.4
25.6
TEMPERATURE, °R

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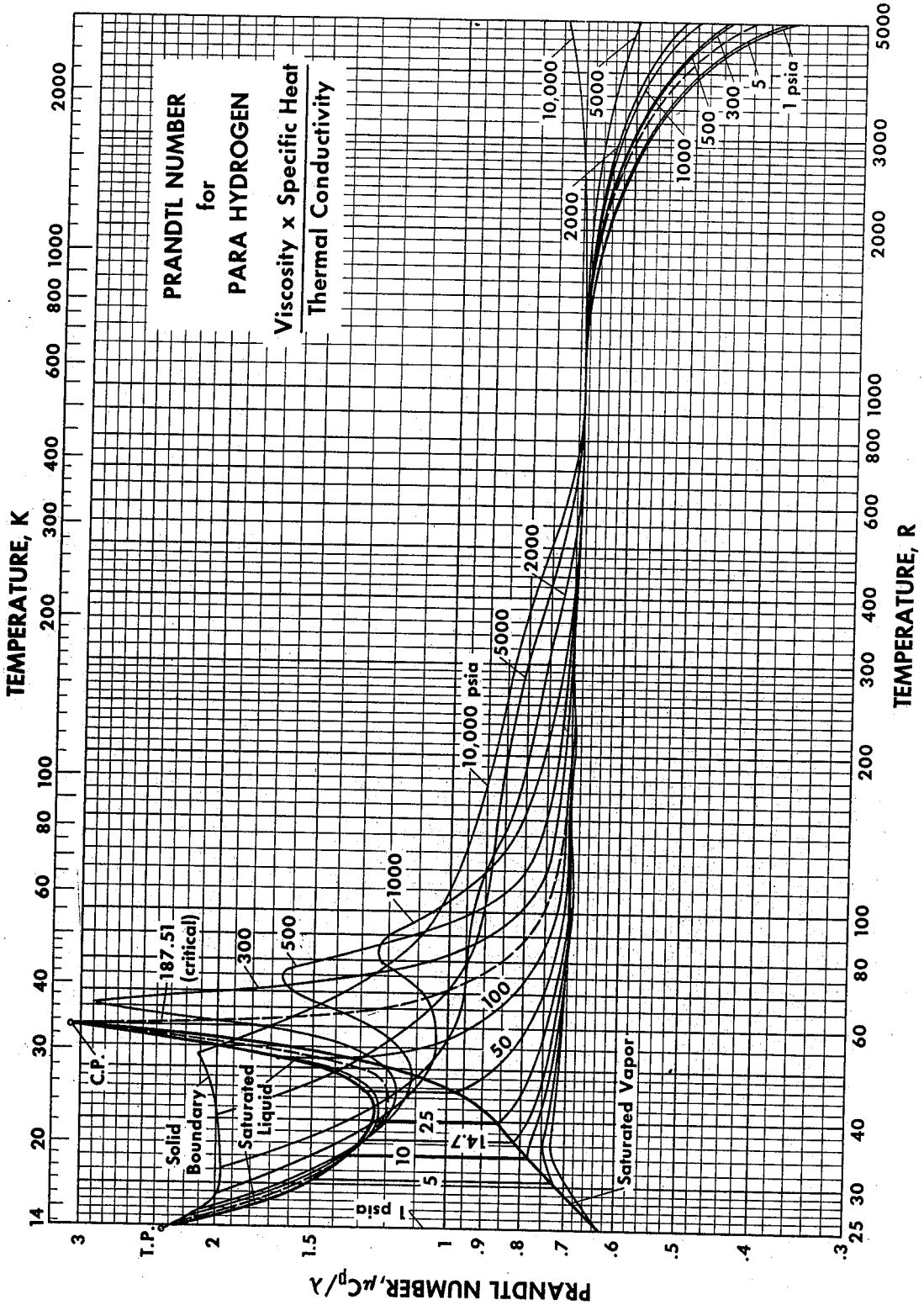
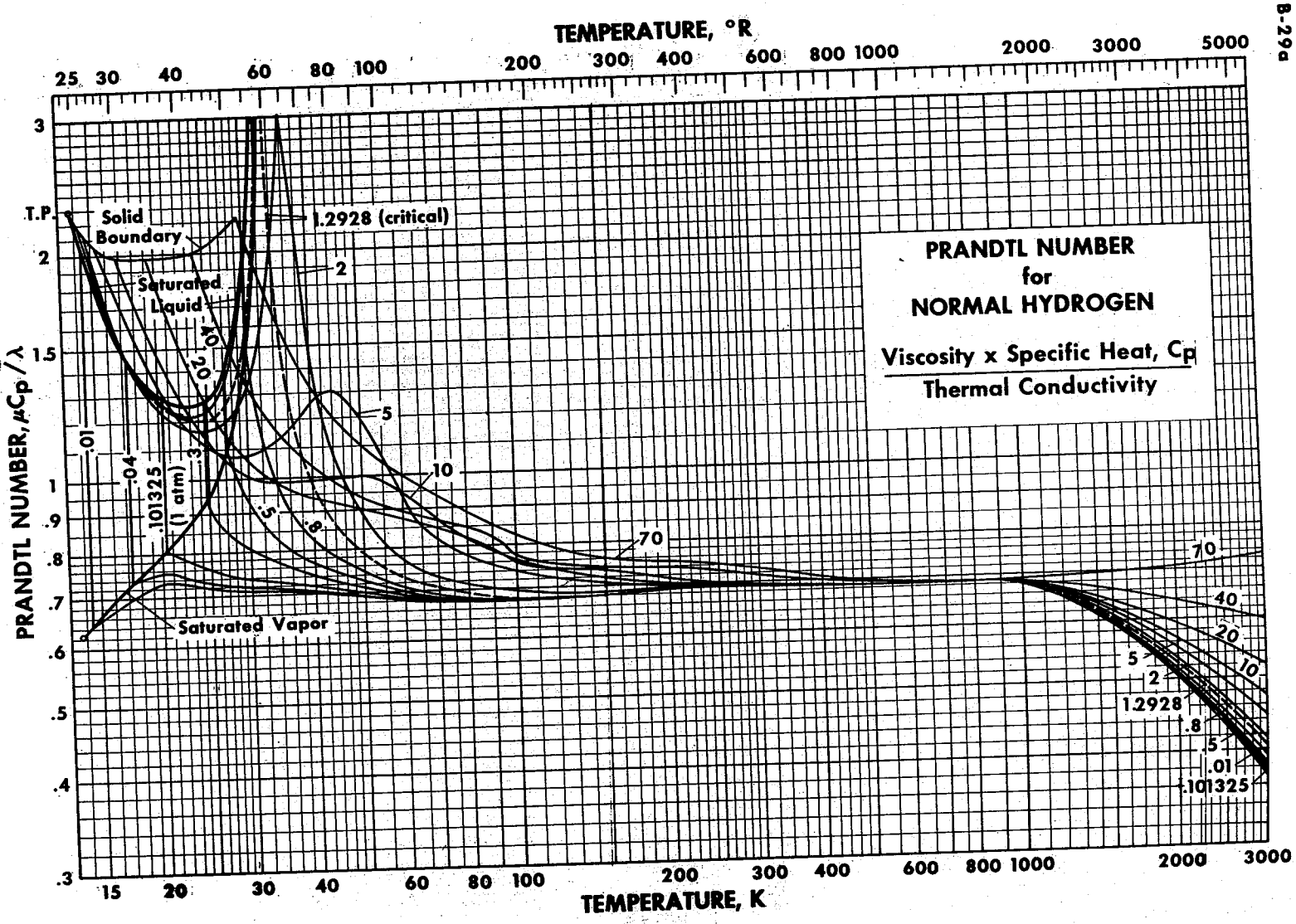
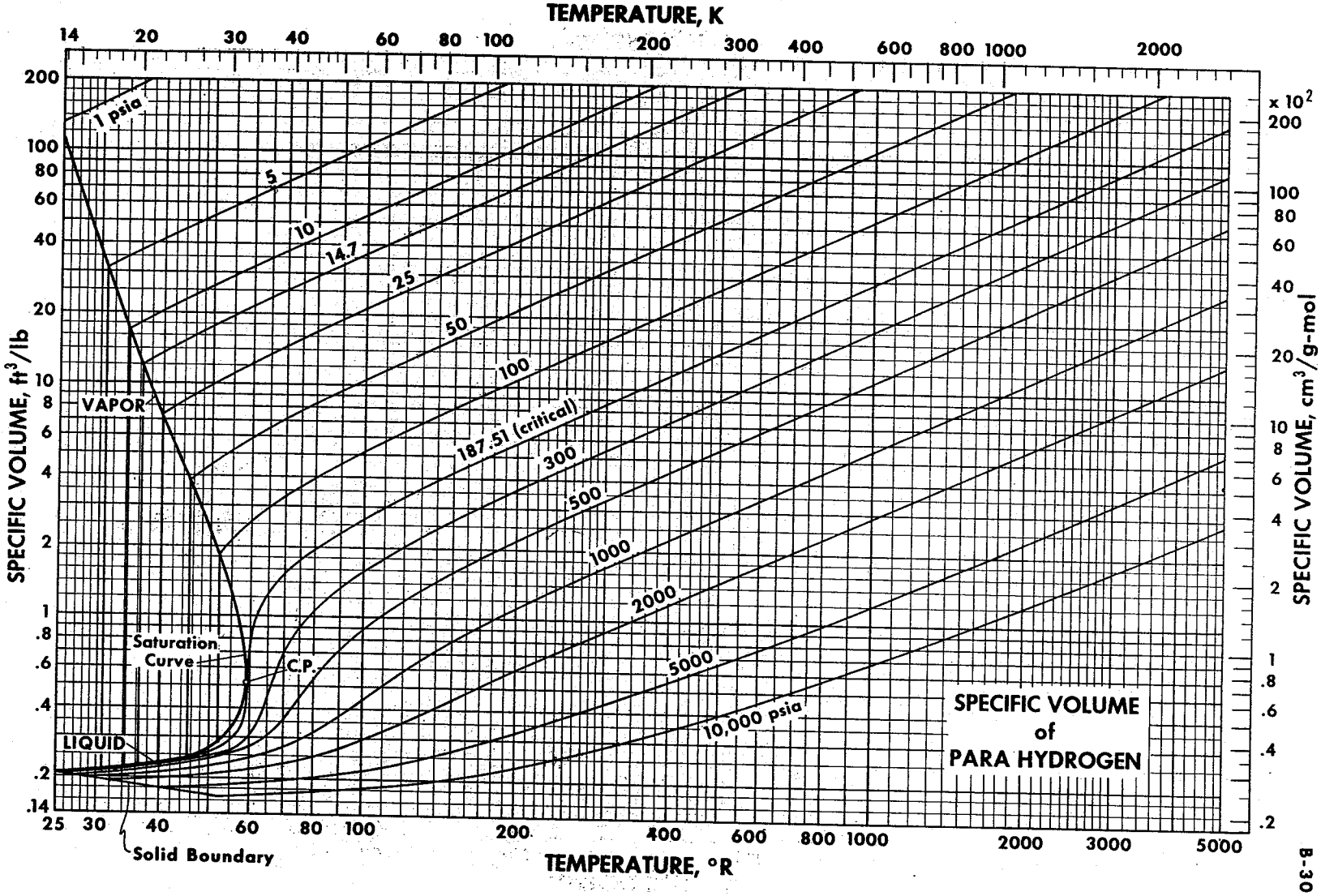
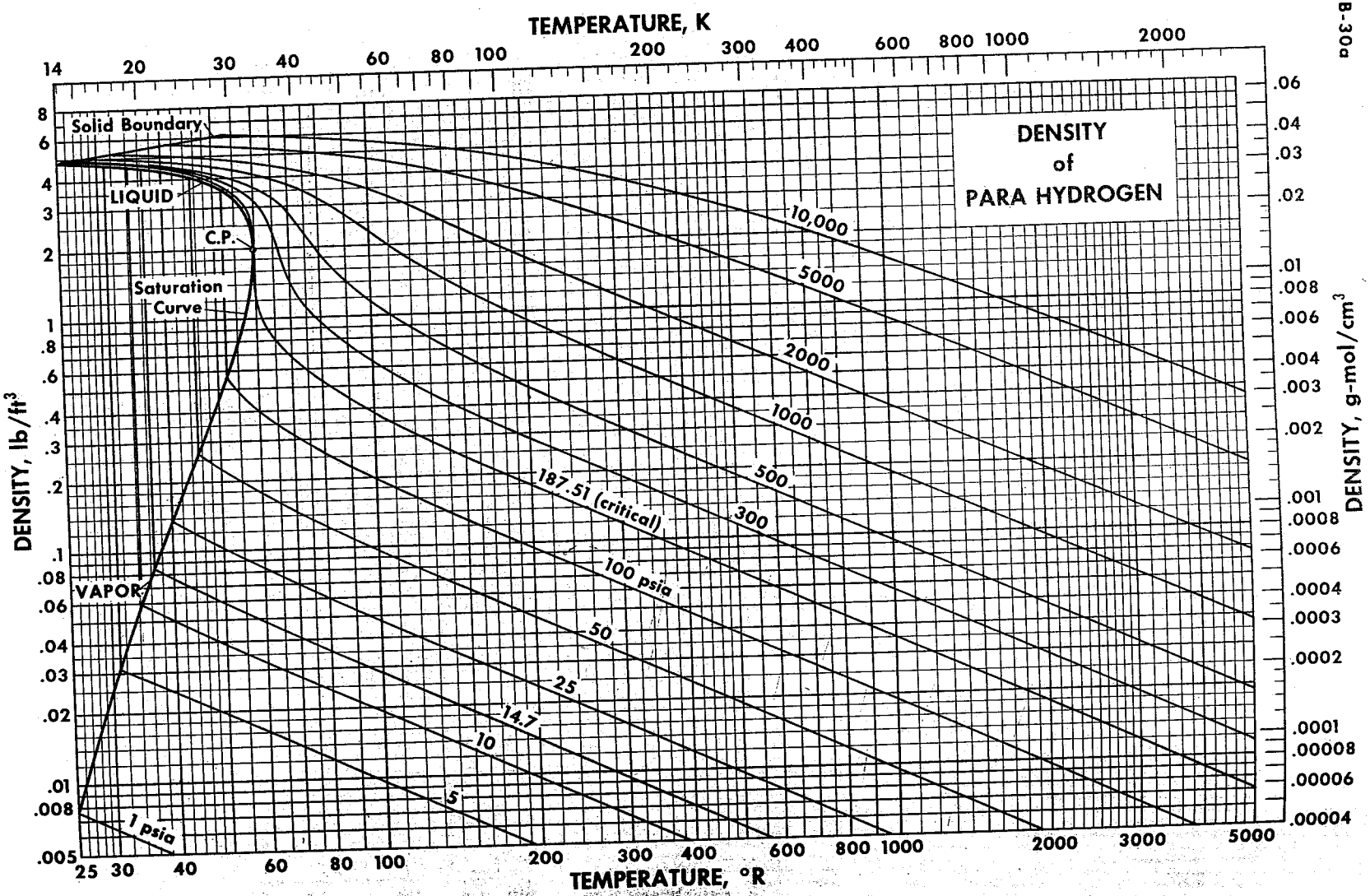
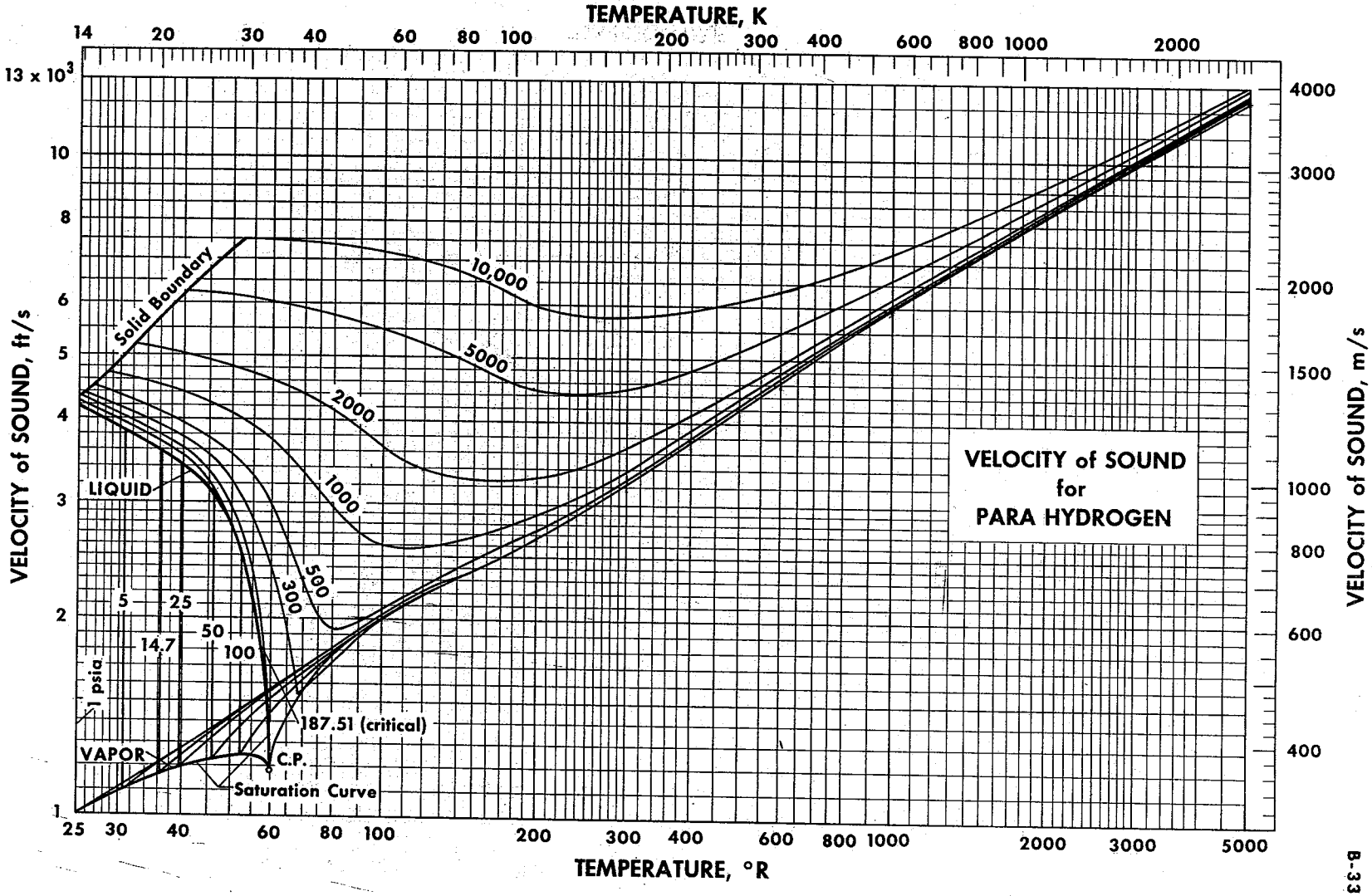
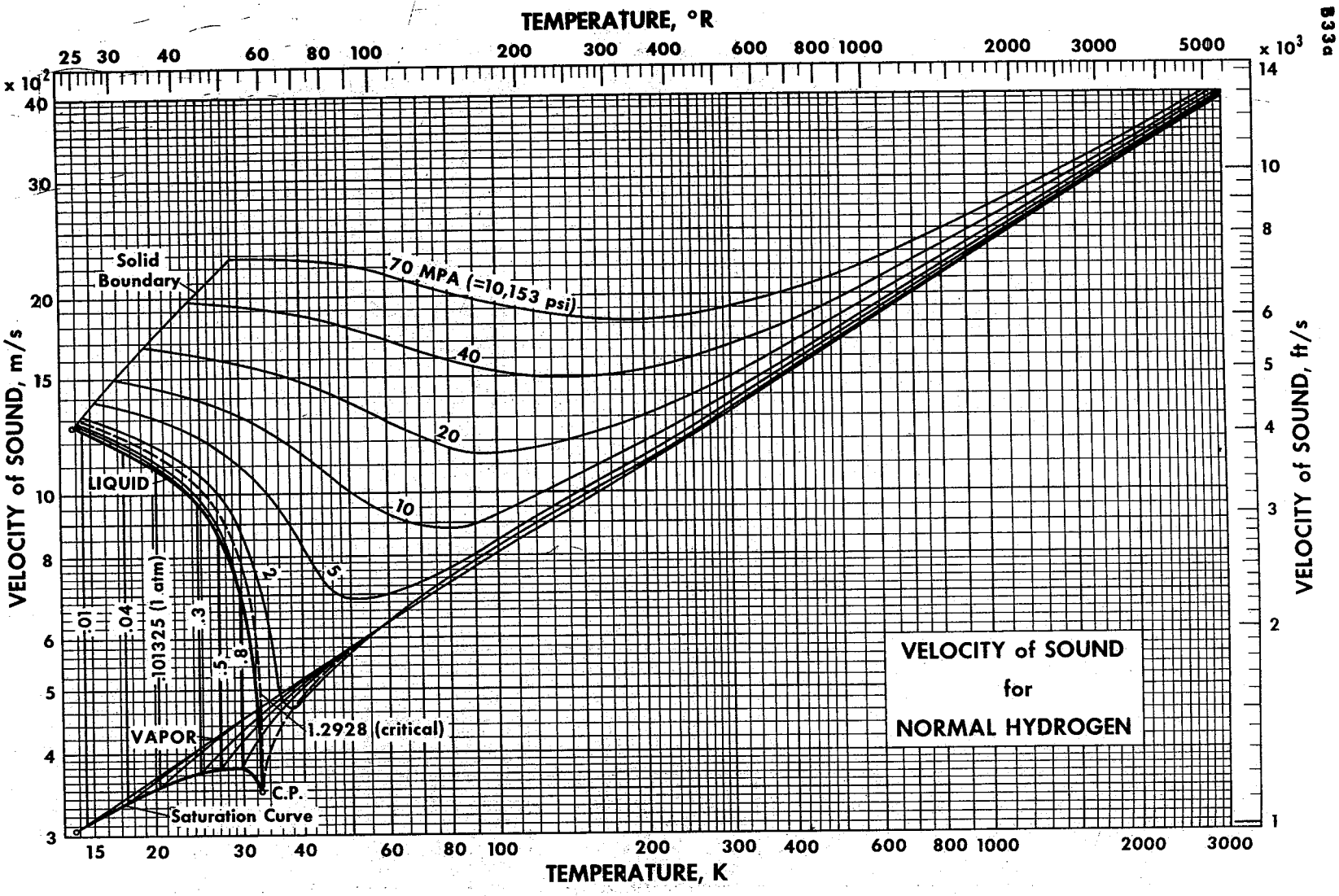

PRANDTL NUMBER
for
PARA HYDROGEN
Viscosity x Specific Heat / Thermal Conductivity
TEMPERATURE, K
TEMPERATURE, R
PRANDTL NUMBER, μC_p/λ
T.P.
C.P.
187.51 (critical)
Solid Boundary
Saturated Liquid
Saturated Vapor
1 psia
5
10
14.7
25
50
100
300
500
1000
2000
5000
10,000 psia


TEMPERATURE, °R
25 30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
PRANDTL NUMBER, μCp/λ
3
T.P.
2
1.5
1
.9
.8
.7
.6
.5
.4
.3
Solid Boundary
Saturated Liquid
Saturated Vapor
1.2928 (critical)
2
5
10
70
.01
.04
.101325 (1 atm)
.3
.5
.8
.10
.20
PRANDTL NUMBER for NORMAL HYDROGEN
Viscosity x Specific Heat, Cp
Thermal Conductivity
70
40
20
10
5
2
1.2928
.8
.5
.01
.101325
15 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
TEMPERATURE, K

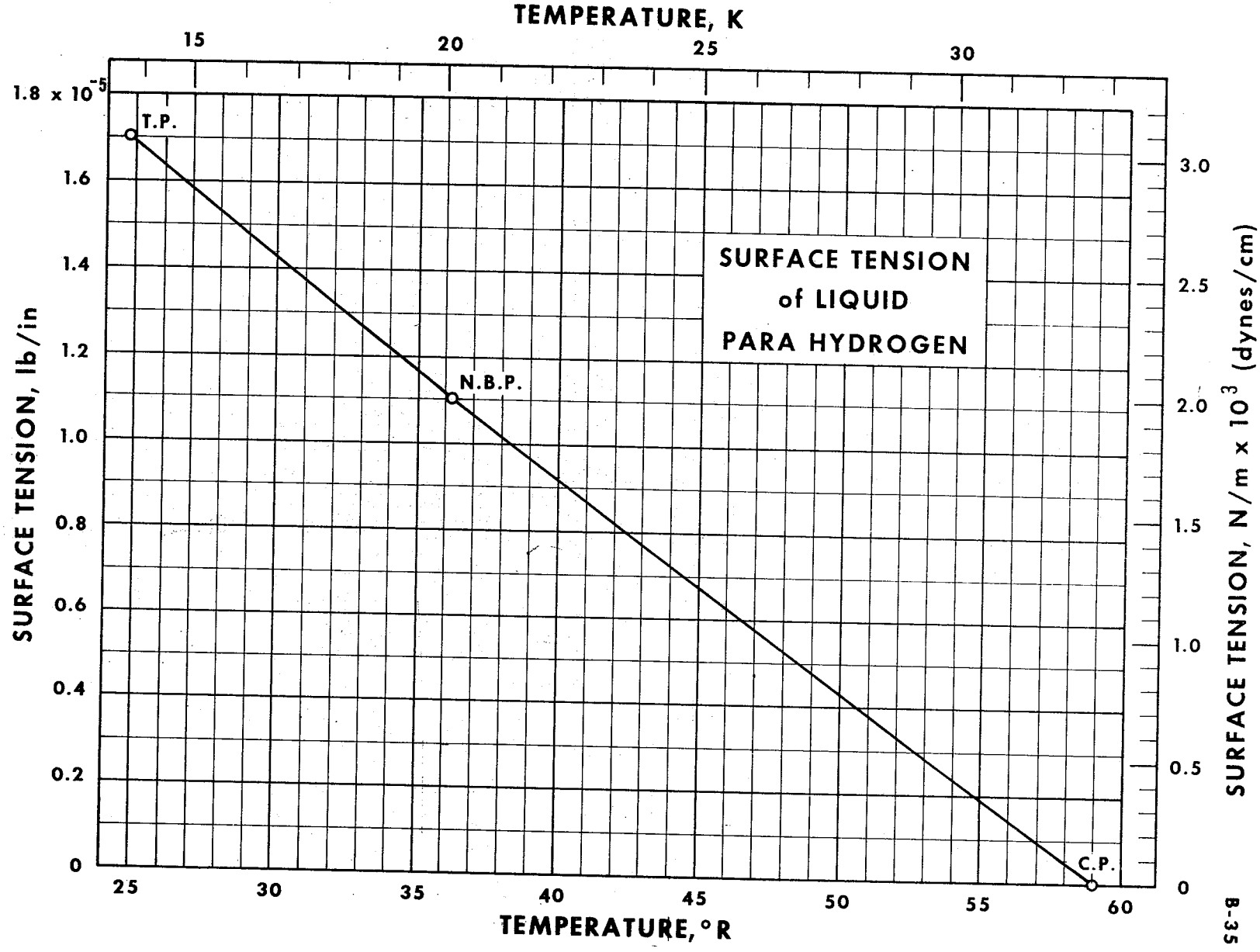

TEMPERATURE, K
14
20
30
40
60
80
100
200
300
400
600
800
1000
2000
SPECIFIC VOLUME, ft³/lb
SPECIFIC VOLUME, cm³/g-mol
x 10²
1 psia
5
10
14.7
25
50
100
187.51 (critical)
300
500
1000
2000
5000
10,000 psia
VAPOR
LIQUID
Saturation Curve
C.P.
Solid Boundary
SPECIFIC VOLUME of PARA HYDROGEN
TEMPERATURE, °R
25
30
40
60
80
100
200
400
600
800
1000
2000
3000
5000

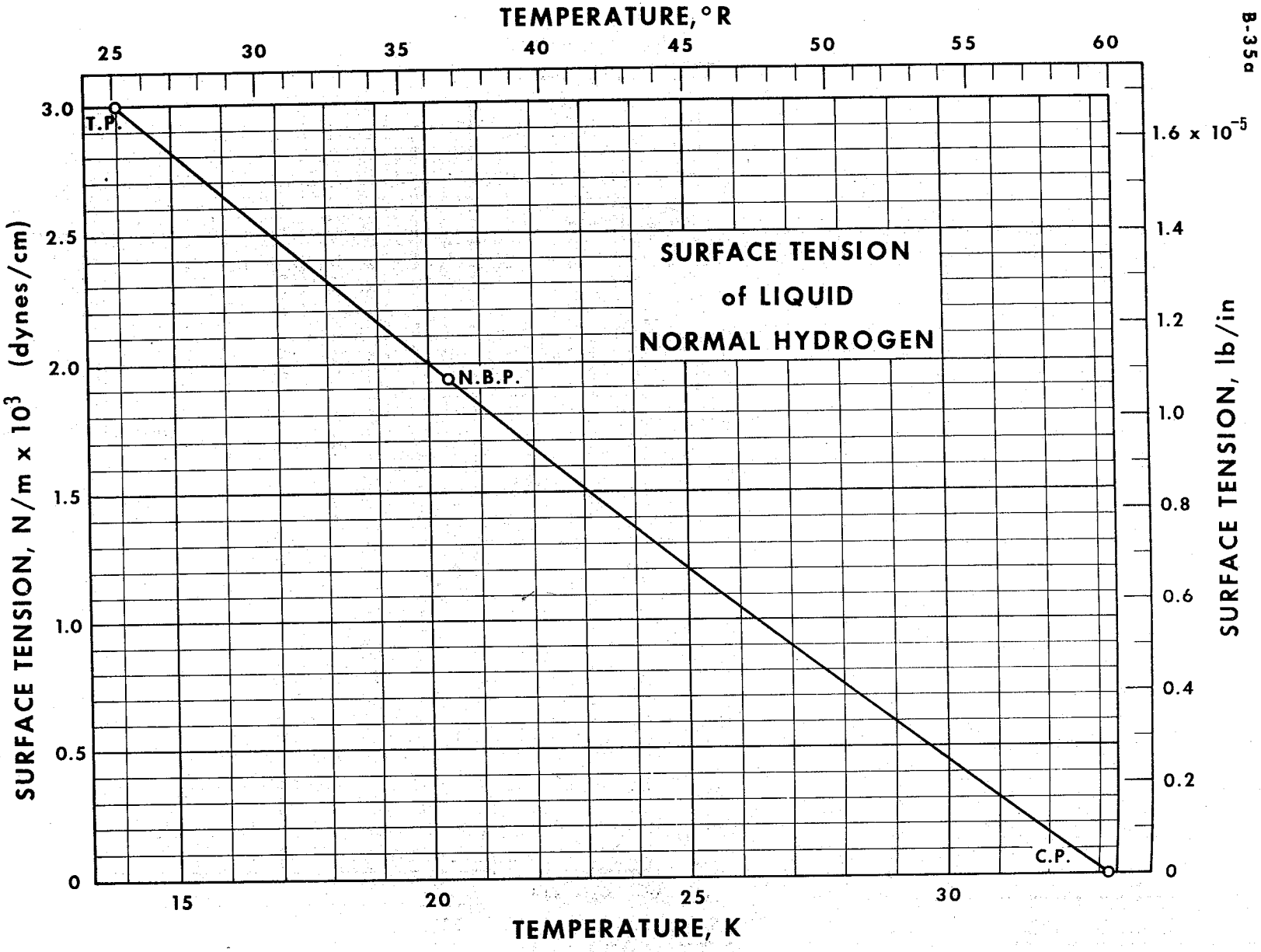

DENSITY of PARA HYDROGEN
TEMPERATURE, K
TEMPERATURE, °R
DENSITY, lb/ft³
DENSITY, g-mol/cm³
Solid Boundary
LIQUID
C.P.
Saturation Curve
VAPOR
10,000
5000
2000
1000
500
300
187.51 (critical)
100 psia
50
25
14.7
10
5
1 psia

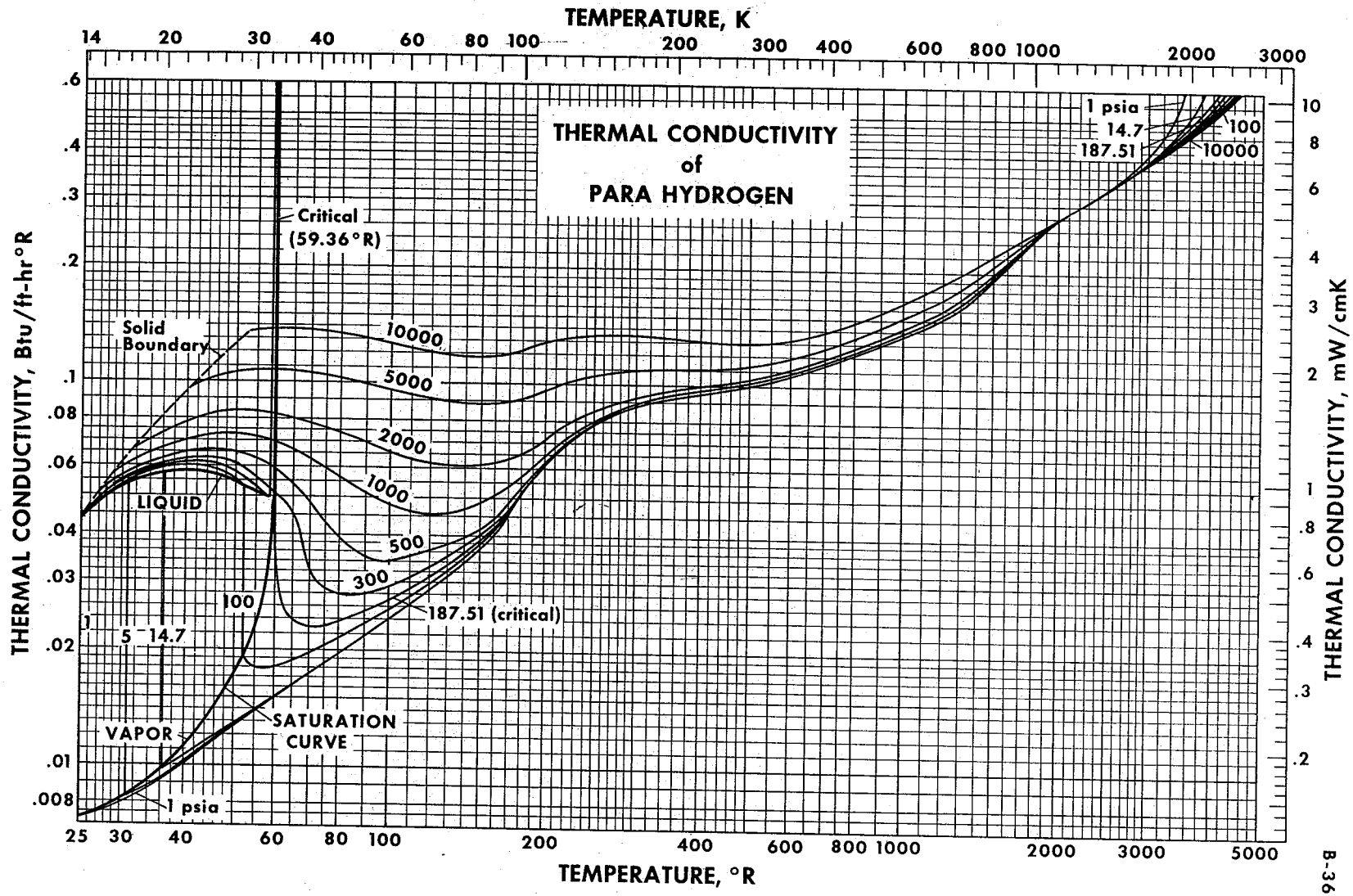

TEMPERATURE, K
14
20
30
40
60
80
100
200
300
400
600
800
1000
2000
13 x 10³
10
8
6
5
4
3
2
1
VELOCITY of SOUND, ft/s
4000
3000
2000
1500
1000
800
600
400
VELOCITY of SOUND, m/s
Solid Boundary
10,000
5000
2000
1000
500
300
LIQUID
5
25
14.7
50
100
1 psia
187.51 (critical)
VAPOR
C.P.
Saturation Curve
VELOCITY of SOUND
for
PARA HYDROGEN
25
30
40
60
80
100
200
300
400
600
800
1000
2000
3000
5000
TEMPERATURE, °R

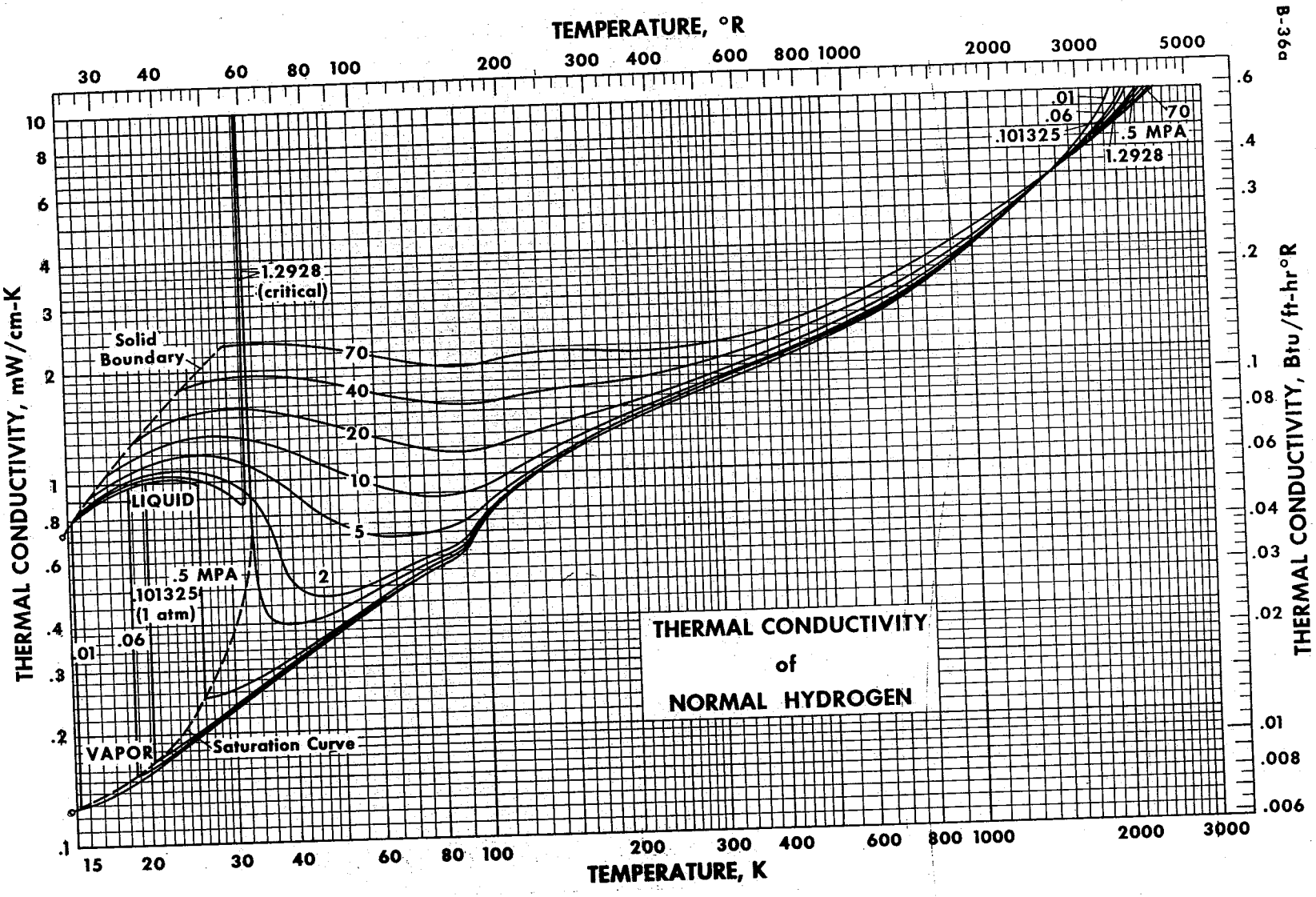

TEMPERATURE, °R
25 30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
x 10³
14
10
8
6
5
4
3
2
1
VELOCITY of SOUND, ft/s
x 10²
40
30
20
15
10
8
6
5
4
3
VELOCITY of SOUND, m/s
Solid Boundary
70 MPA (=10,153 psi)
40
20
10
5
2
1
.5
.3
.1
.04
.01
101325 (1 atm)
.8
LIQUID
VAPOR
1.2928 (critical)
C.P.
Saturation Curve
VELOCITY of SOUND
for
NORMAL HYDROGEN
15 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
TEMPERATURE, K

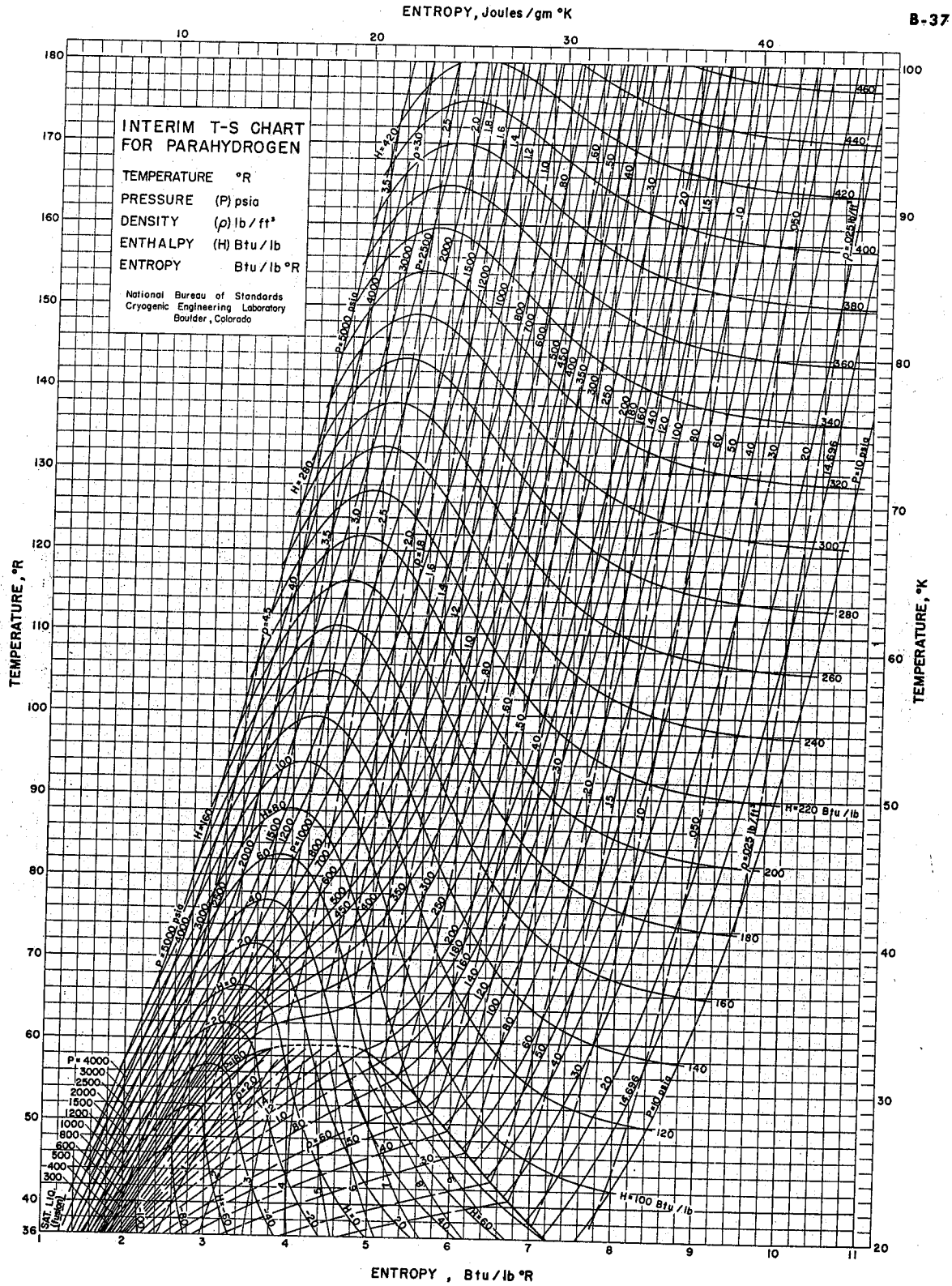
B33a

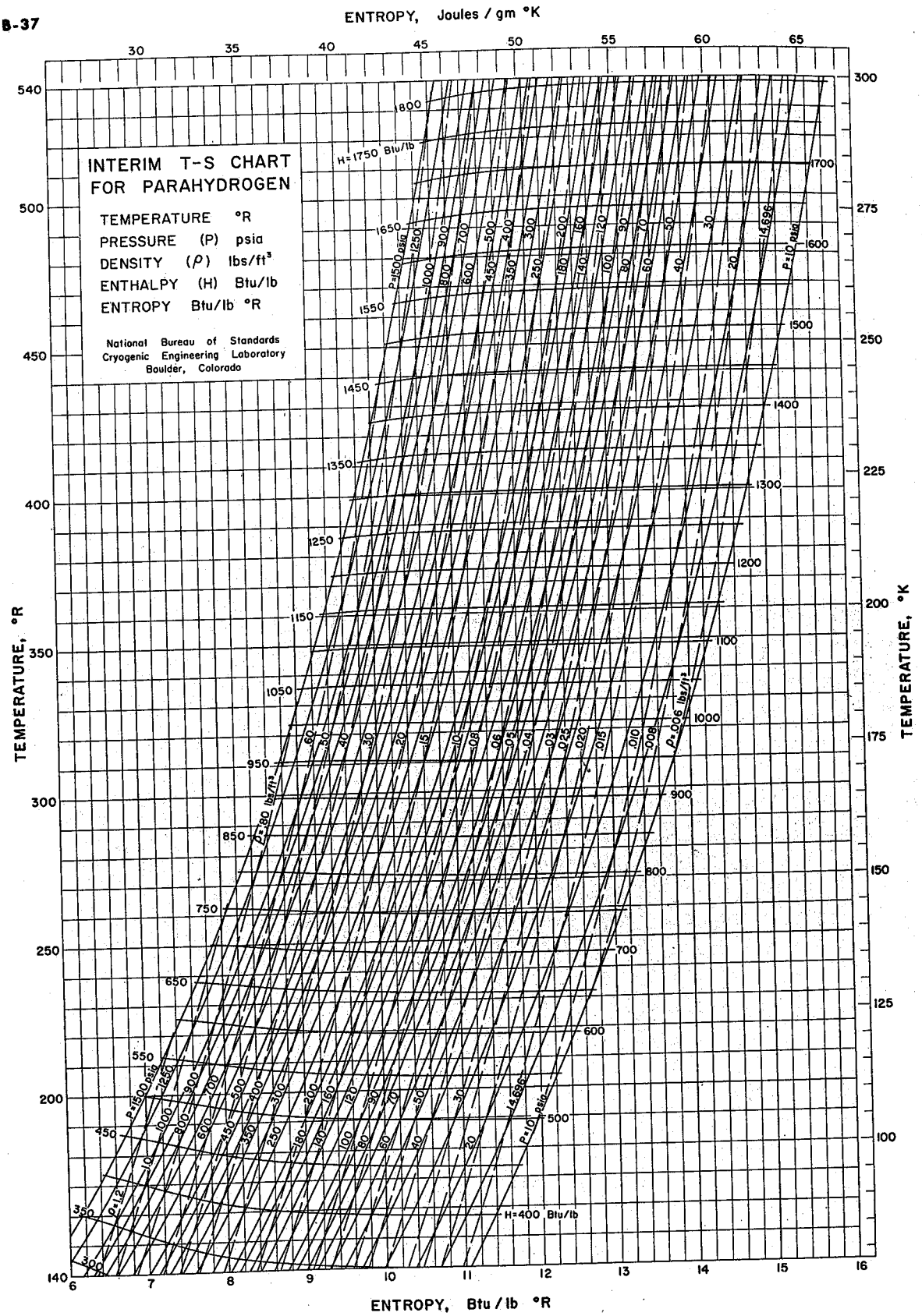

TEMPERATURE, K
15
20
25
30
SURFACE TENSION, lb/in
1.8 x 10^-5
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
T.P.
N.B.P.
C.P.
SURFACE TENSION of LIQUID PARA HYDROGEN
25
30
35
40
45
50
55
60
TEMPERATURE, °R
SURFACE TENSION, N/m x 10^3 (dynes/cm)
3.0
2.5
2.0
1.5
1.0
0.5
0

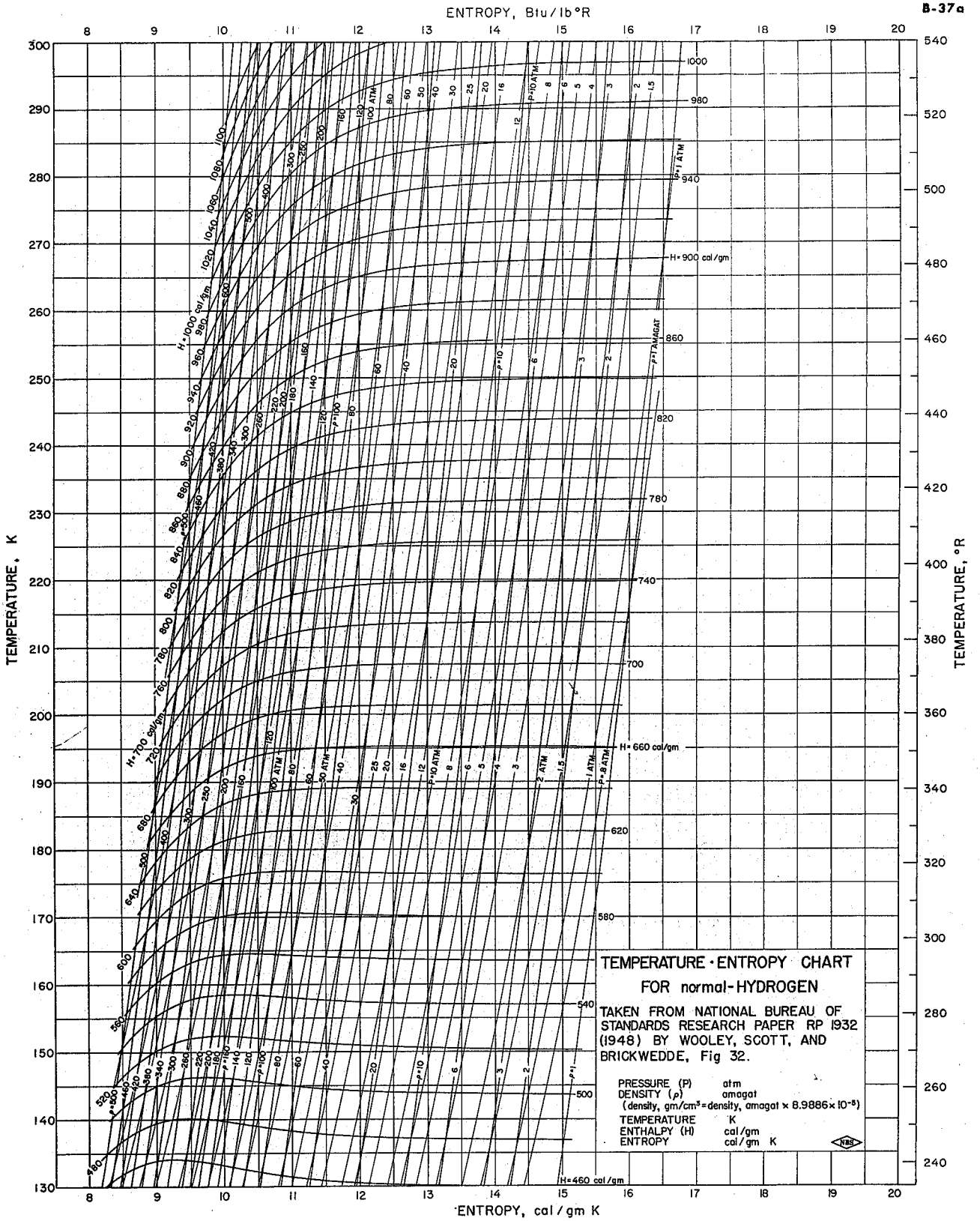

TEMPERATURE, °R
25
30
35
40
45
50
55
60
SURFACE TENSION
of LIQUID
NORMAL HYDROGEN
T.P.
N.B.P.
C.P.
SURFACE TENSION, N/m x 10³ (dynes/cm)
3.0
2.5
2.0
1.5
1.0
0.5
0
SURFACE TENSION, lb/in
1.6 x 10⁻⁵
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
15
20
25
30
TEMPERATURE, K


TEMPERATURE, K
14
20
30
40
60
80
100
200
300
400
600
800
1000
2000
3000
THERMAL CONDUCTIVITY
of
PARA HYDROGEN
1 psia
14.7
187.51
100
10000
Critical
(59.36°R)
Solid
Boundary
10000
5000
2000
1000
500
300
187.51 (critical)
LIQUID
100
5
14.7
1
VAPOR
SATURATION
CURVE
1 psia
THERMAL CONDUCTIVITY, Btu/ft-hr°R
.6
.4
.3
.2
.1
.08
.06
.04
.03
.02
.01
.008
THERMAL CONDUCTIVITY, mW/cmK
10
8
6
4
3
2
1
.8
.6
.4
.3
.2
25
30
40
60
80
100
200
400
600
800
1000
2000
3000
5000
TEMPERATURE, °R


TEMPERATURE, °R
30 40 60 80 100 200 300 400 600 800 1000 2000 3000 5000
THERMAL CONDUCTIVITY, mW/cm-K
10 8 6 4 3 2 1 .8 .6 .4 .3 .2 .1
THERMAL CONDUCTIVITY, Btu/ft-hr°R
.6 .4 .3 .2 .1 .08 .06 .04 .03 .02 .01 .008 .006
TEMPERATURE, K
15 20 30 40 60 80 100 200 300 400 600 800 1000 2000 3000
1.2928 (critical)
Solid Boundary
70
40
20
10
5
2
LIQUID
.5 MPA
.101325 (1 atm)
.06
.01
VAPOR
Saturation Curve
.01
.06
.101325
.5 MPA
1.2928
70
THERMAL CONDUCTIVITY
of
NORMAL HYDROGEN


ENTROPY, Joules/gm °K
INTERIM T-S CHART FOR PARAHYDROGEN
TEMPERATURE °R
PRESSURE (P) psia
DENSITY (ρ) lb/ft³
ENTHALPY (H) Btu/lb
ENTROPY Btu/lb °R
National Bureau of Standards
Cryogenic Engineering Laboratory
Boulder, Colorado
TEMPERATURE, °R
TEMPERATURE, °K
ENTROPY, Btu/lb °R
H=220 Btu/lb
H=100 Btu/lb
SAT. LIQ. (fusion)


INTERIM T-S CHART
FOR PARAHYDROGEN
TEMPERATURE °R
PRESSURE (P) psia
DENSITY (ρ) lbs/ft³
ENTHALPY (H) Btu/lb
ENTROPY Btu/lb °R
National Bureau of Standards
Cryogenic Engineering Laboratory
Boulder, Colorado
ENTROPY, Joules / gm °K
ENTROPY, Btu / lb °R
TEMPERATURE, °R
TEMPERATURE, °K
H=1750 Btu/lb
H=400 Btu/lb
P=1500 psia
P=14.696 psia
P=10 psia
ρ=.80 lbs/ft³
ρ=.006 lbs/ft³


ENTROPY, Btu/lb °R
ENTROPY, cal/gm K
TEMPERATURE, K
TEMPERATURE, °R
TEMPERATURE · ENTROPY CHART
FOR normal-HYDROGEN
TAKEN FROM NATIONAL BUREAU OF STANDARDS RESEARCH PAPER RP 1932 (1948) BY WOOLEY, SCOTT, AND BRICKWEDDE, Fig 32.
PRESSURE (P) atm
DENSITY (ρ) amagat
(density, gm/cm³ = density, amagat × 8.9886 × 10⁻⁵)
TEMPERATURE K
ENTHALPY (H) cal/gm
ENTROPY cal/gm K
NBS
H = 1000 cal/gm
H = 900 cal/gm
H = 700 cal/gm
H = 660 cal/gm
H = 460 cal/gm
P = 1 ATM
P = 2 ATM
P = 5 ATM
P = 10 ATM
P = 20 ATM
P = 50 ATM
P = 100 ATM
P = 1 AMAGAT

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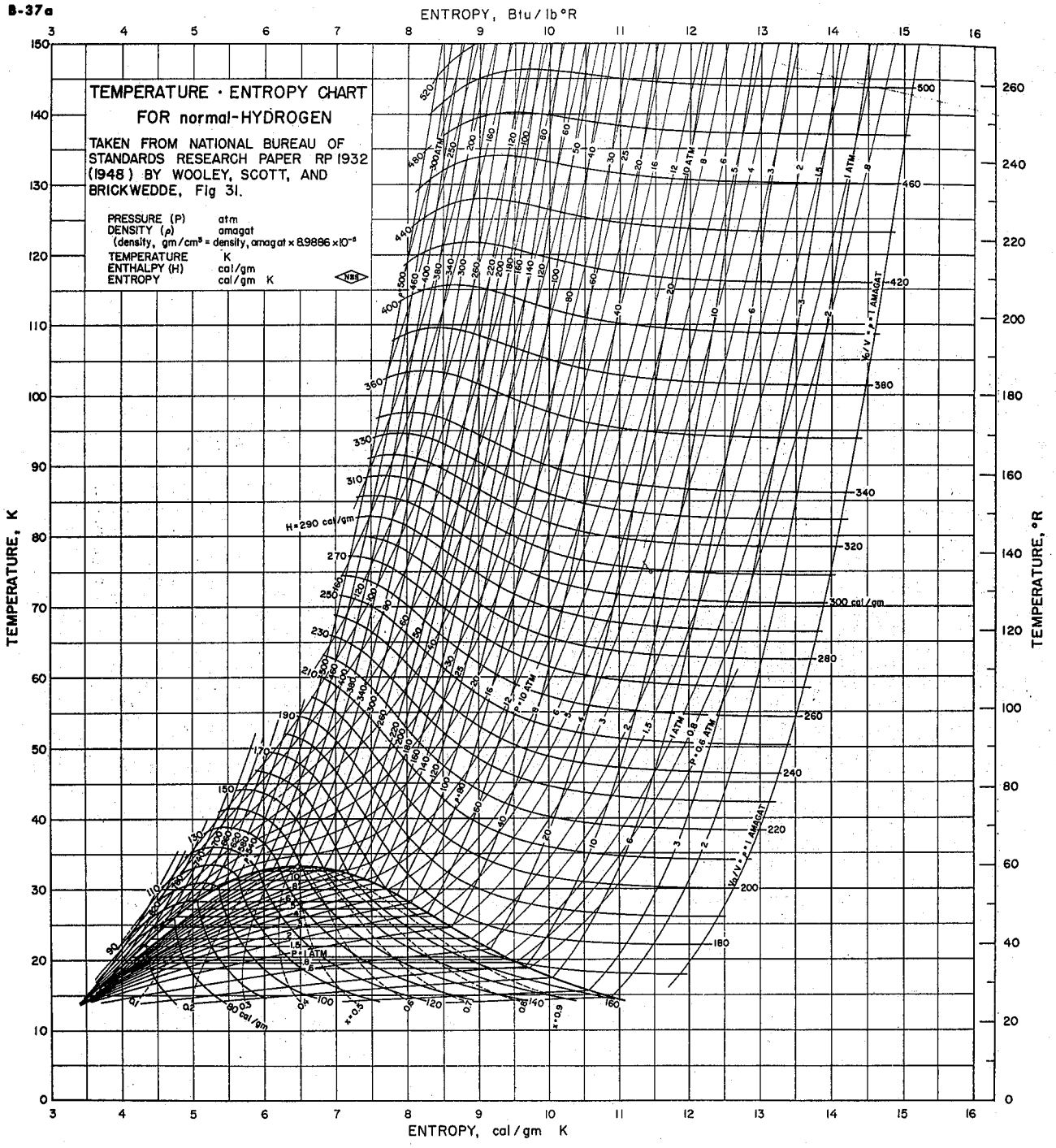
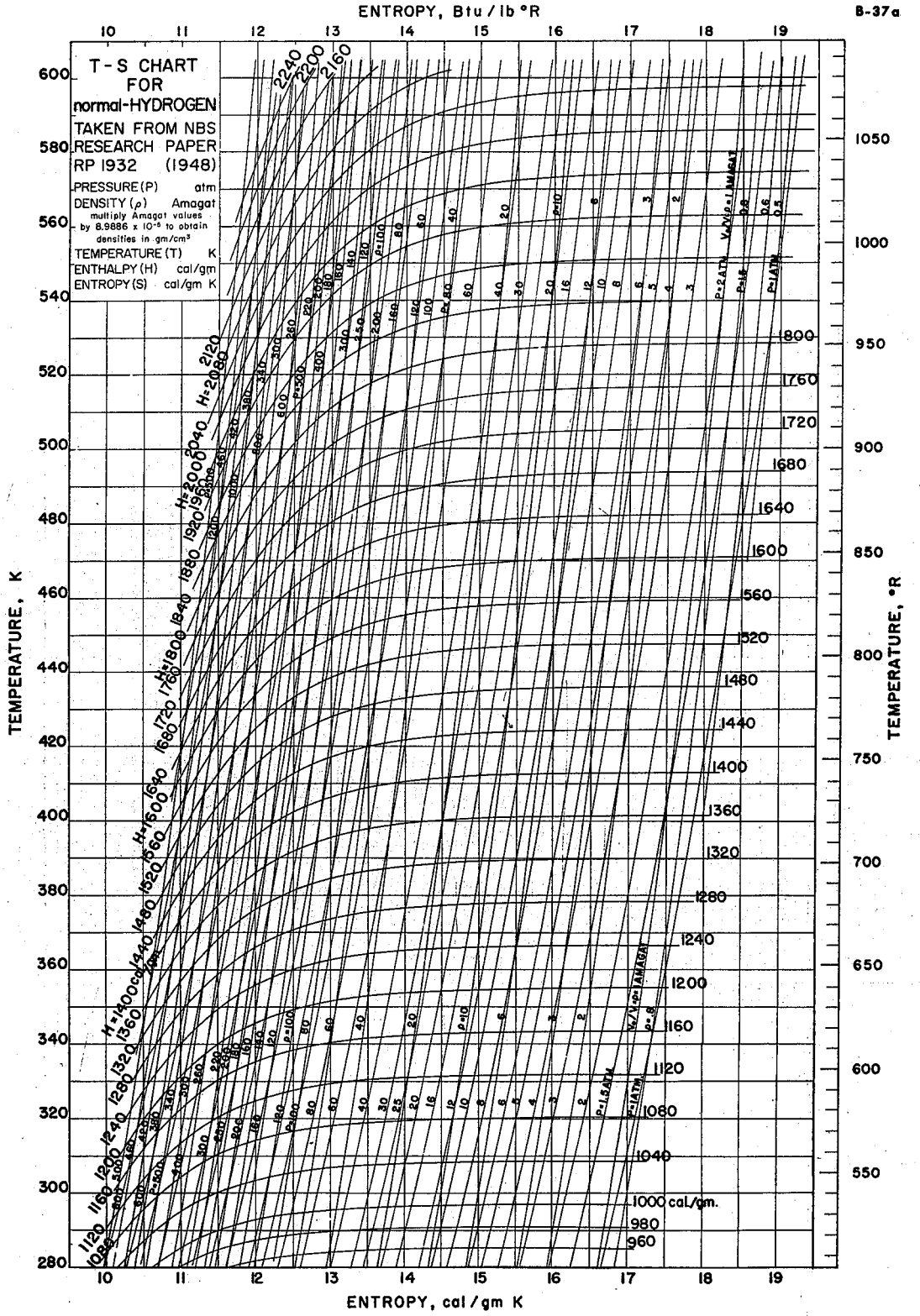
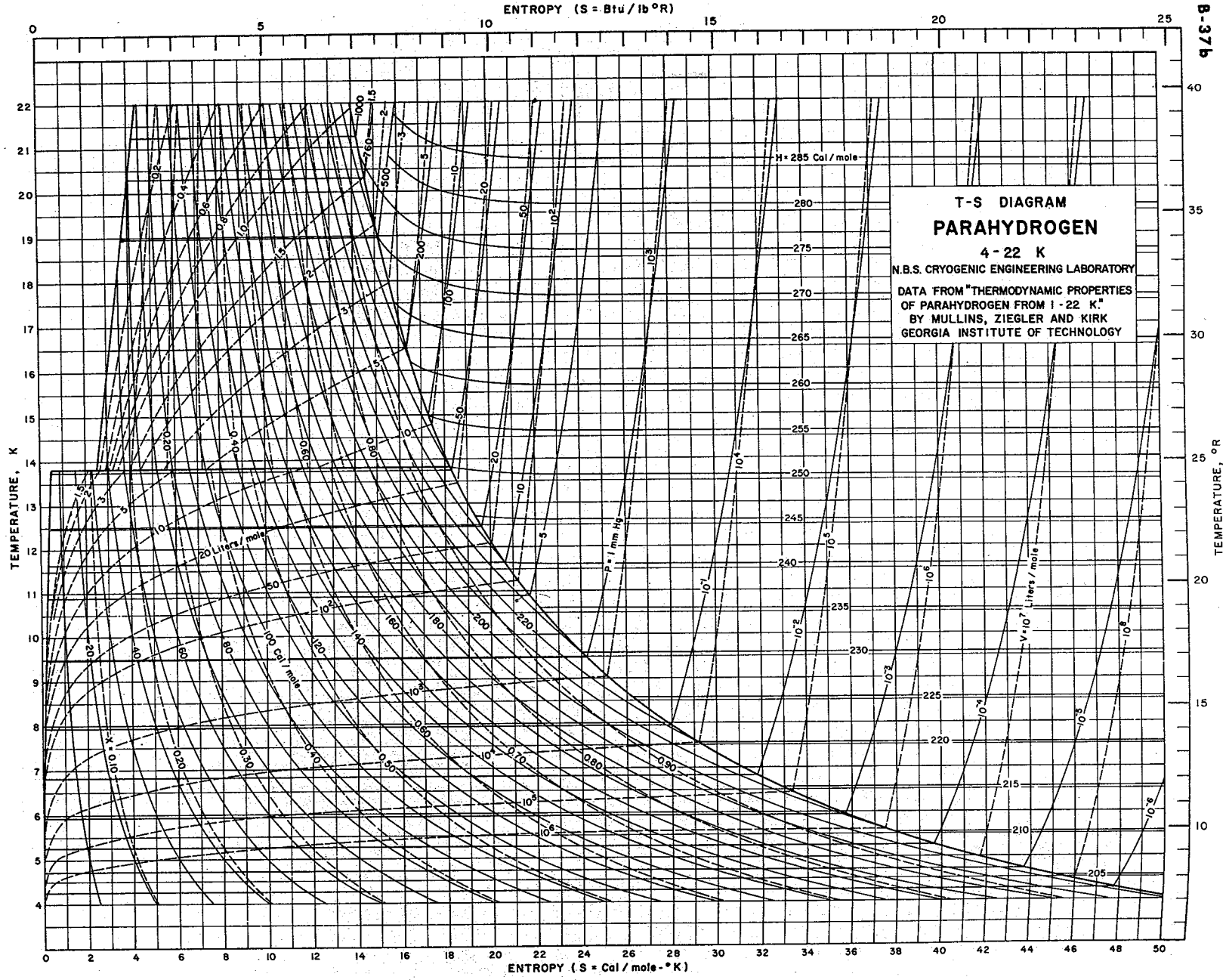
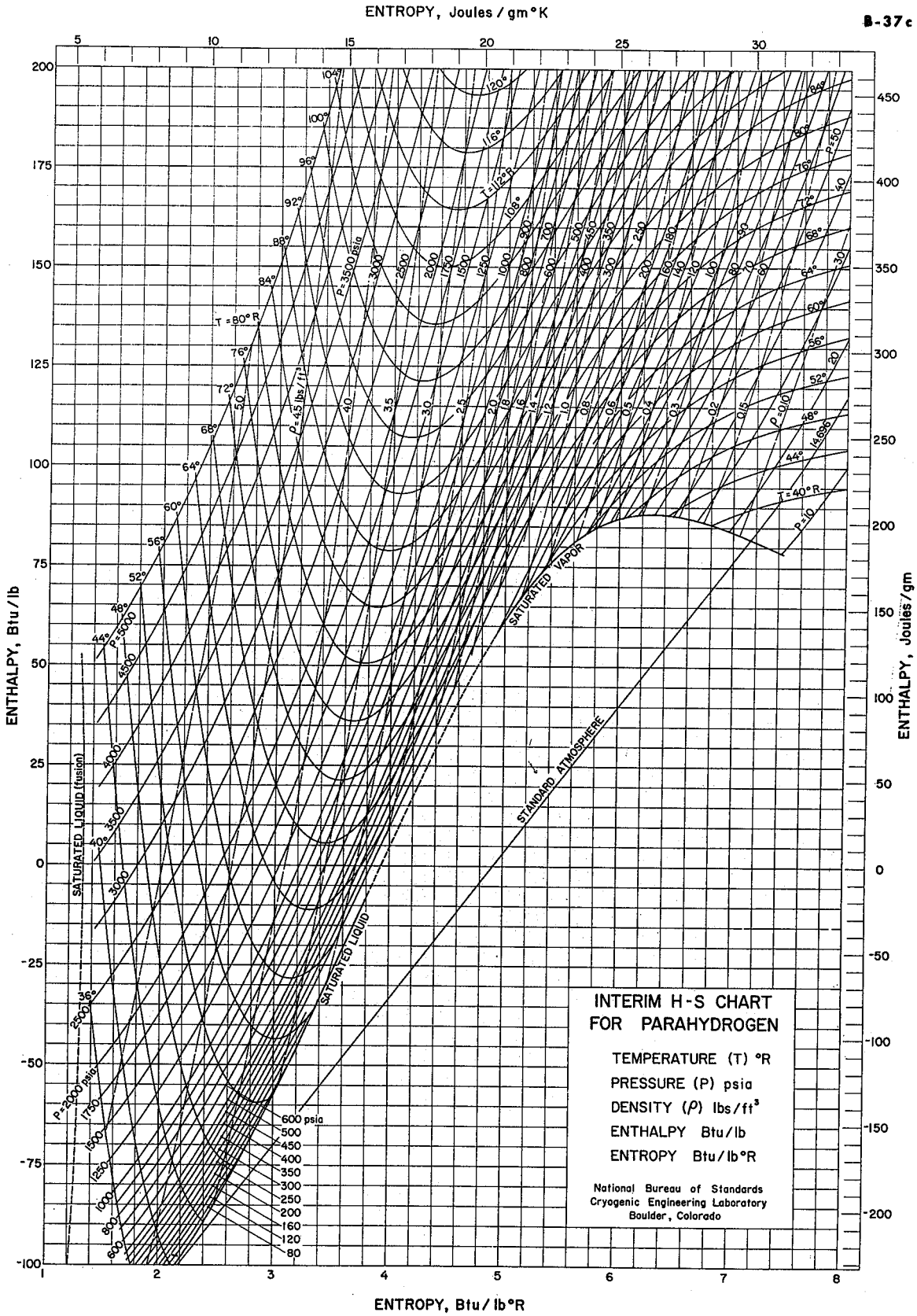

TEMPERATURE · ENTROPY CHART
FOR normal-HYDROGEN
TAKEN FROM NATIONAL BUREAU OF STANDARDS RESEARCH PAPER RP 1932 (1948) BY WOOLEY, SCOTT, AND BRICKWEDDE, Fig 31.
PRESSURE (P) atm
DENSITY (ρ) amagat
(density, gm/cm³ = density, amagat × 8.9886 × 10⁻⁶
TEMPERATURE K
ENTHALPY (H) cal/gm
ENTROPY cal/gm K
NBS
ENTROPY, Btu/lb °R
ENTROPY, cal/gm K
TEMPERATURE, K
TEMPERATURE, °R
H=290 cal/gm
300 cal/gm
P=10 ATM
P=1 ATM
P=0.6 ATM
ρ/ρ₀=1 AMAGAT


T-S CHART FOR normal-HYDROGEN
TAKEN FROM NBS RESEARCH PAPER RP 1932 (1948)
PRESSURE (P) atm
DENSITY (ρ) Amagat
multiply Amagat values by 8.9886 x 10⁻⁵ to obtain densities in gm/cm³
TEMPERATURE (T) K
ENTHALPY (H) cal/gm
ENTROPY (S) cal/gm K
ENTROPY, Btu / lb °R
ENTROPY, cal / gm K
TEMPERATURE, K
TEMPERATURE, °R
1000 cal/gm.
980
960


ENTROPY (S = Btu / lb °R)
ENTROPY (S = Cal / mole - °K)
TEMPERATURE, K
TEMPERATURE, °R
T-S DIAGRAM
PARAHYDROGEN
4 - 22 K
N.B.S. CRYOGENIC ENGINEERING LABORATORY
DATA FROM "THERMODYNAMIC PROPERTIES OF PARAHYDROGEN FROM 1 - 22 K." BY MULLINS, ZIEGLER AND KIRK GEORGIA INSTITUTE OF TECHNOLOGY
H = 285 Cal / mole
P = 1 mm Hg
V = 10^7 Liters / mole
20 Liters / mole
100 Cal / mole
X = 0.10


ENTROPY, Joules / gm °K
ENTHALPY, Btu / lb
ENTHALPY, Joules / gm
ENTROPY, Btu / lb °R
SATURATED LIQUID (fusion)
SATURATED VAPOR
STANDARD ATMOSPHERE
SATURATED LIQUID
INTERIM H-S CHART
FOR PARAHYDROGEN
TEMPERATURE (T) °R
PRESSURE (P) psia
DENSITY (ρ) lbs/ft³
ENTHALPY Btu/lb
ENTROPY Btu/lb°R
National Bureau of Standards
Cryogenic Engineering Laboratory
Boulder, Colorado

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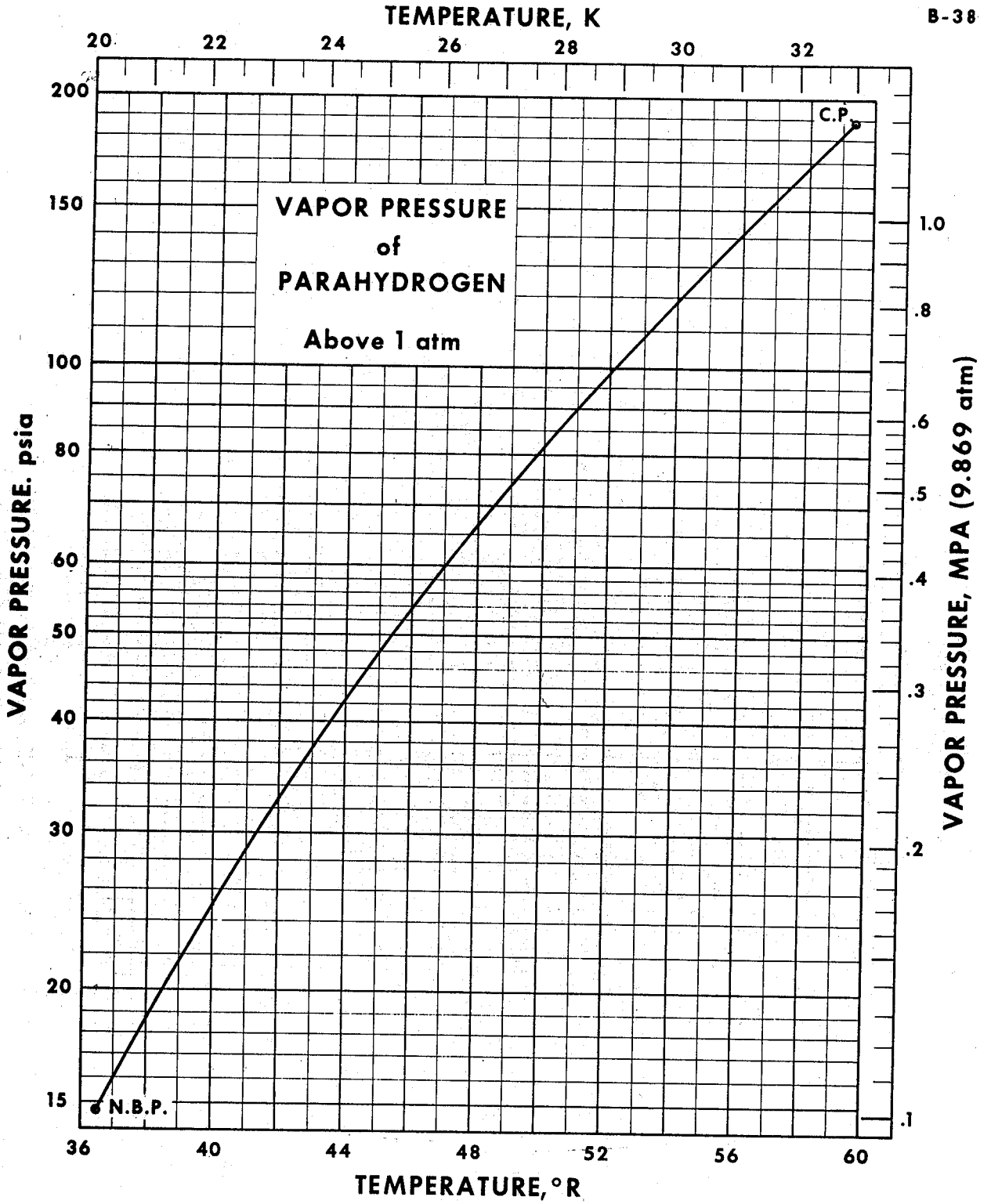
TEMPERATURE, K
20
22
24
26
28
30
32
VAPOR PRESSURE
of
PARAHYDROGEN
Above 1 atm
C.P.
N.B.P.
VAPOR PRESSURE, psia
200
150
100
80
60
50
40
30
20
15
VAPOR PRESSURE, MPA (9.869 atm)
1.0
.8
.6
.5
.4
.3
.2
.1
36
40
44
48
52
56
60
TEMPERATURE, °R

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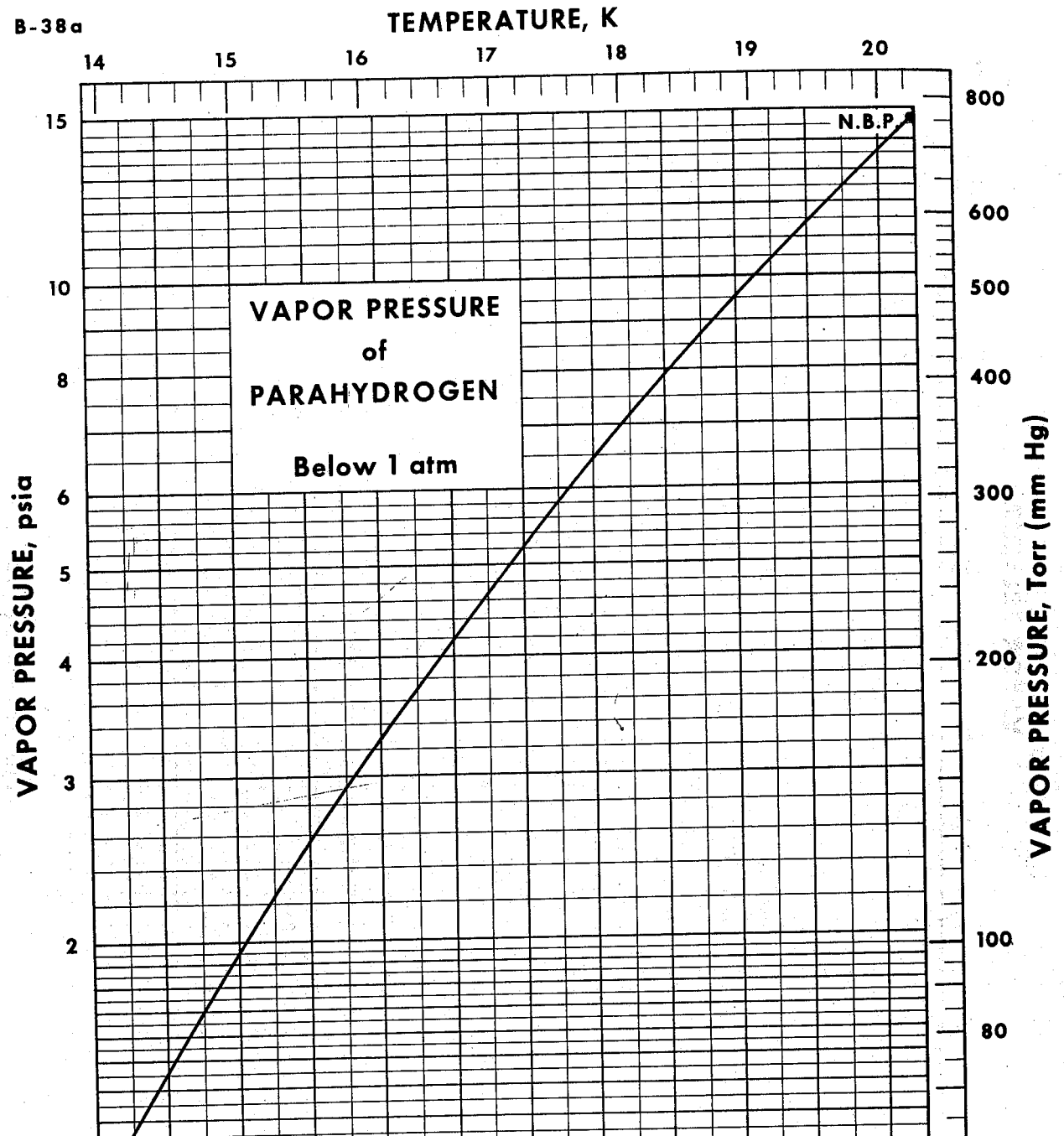
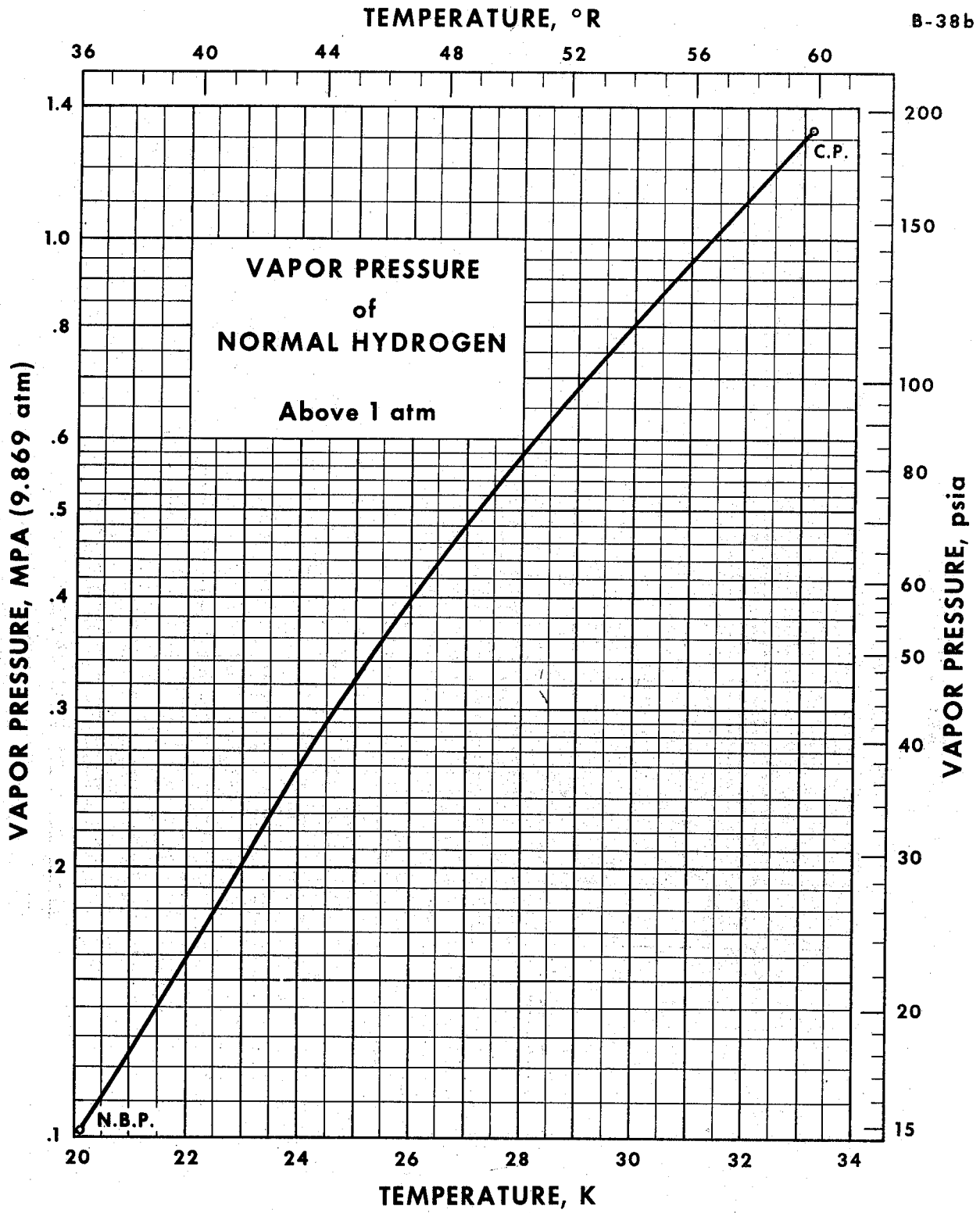
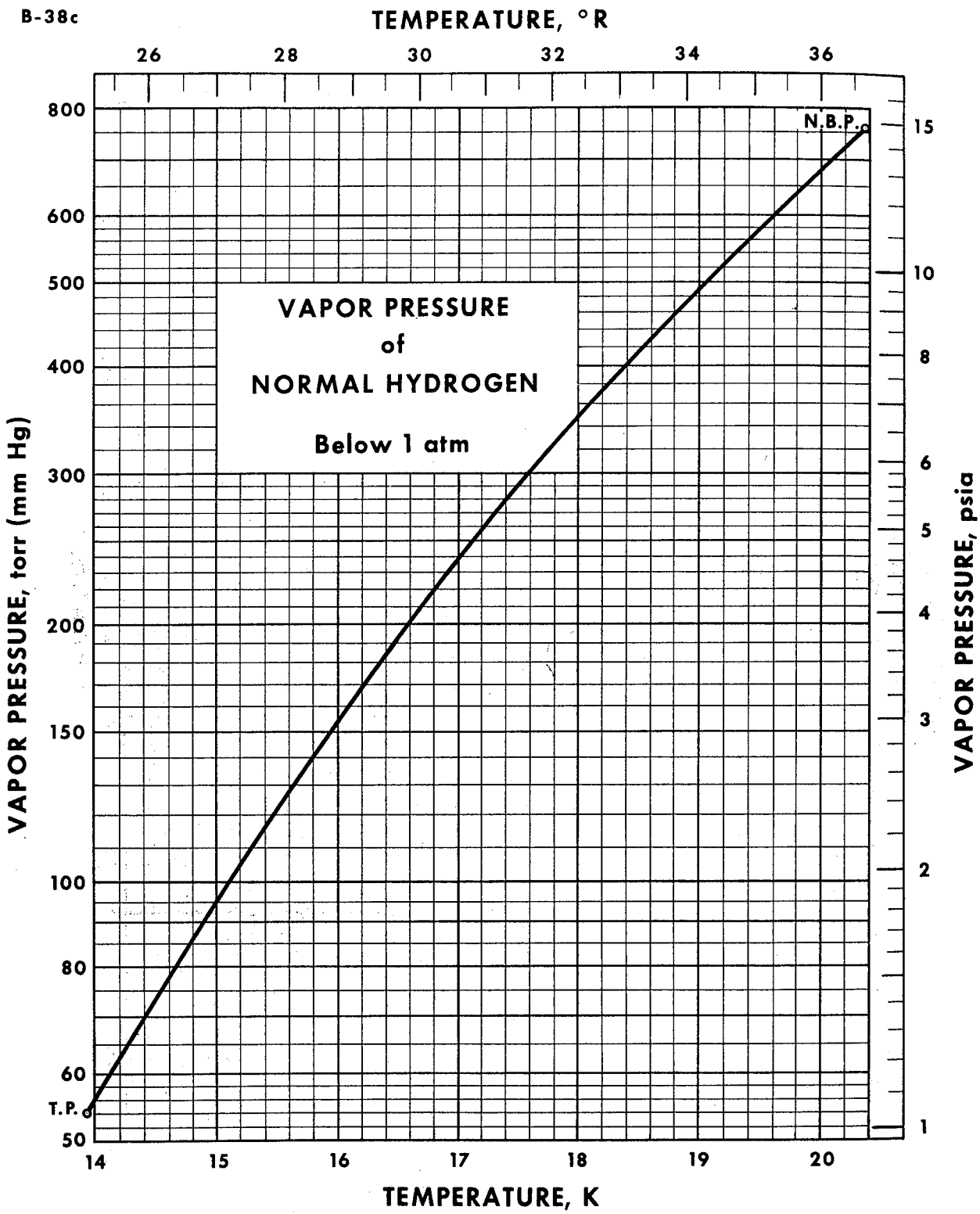
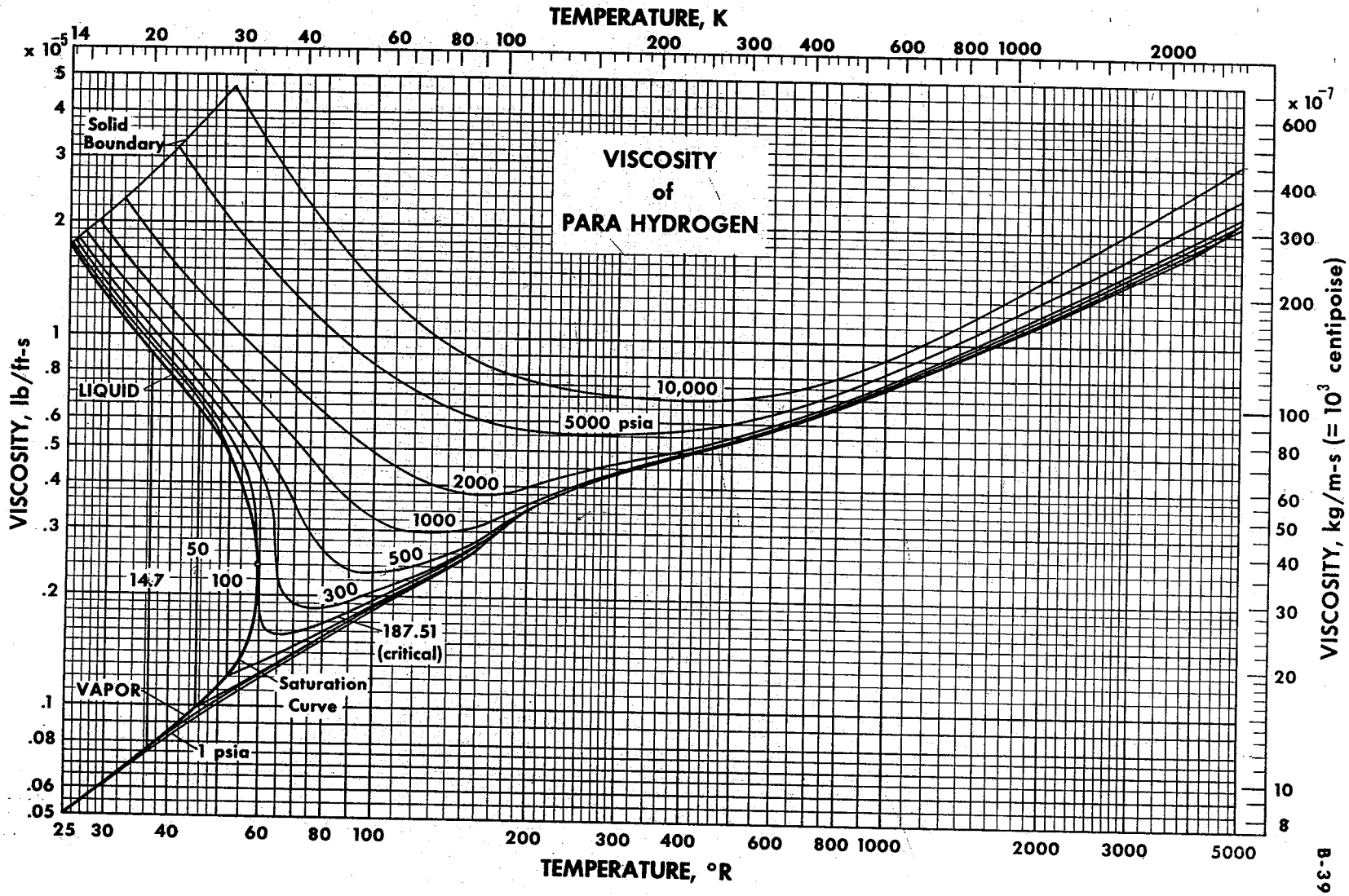
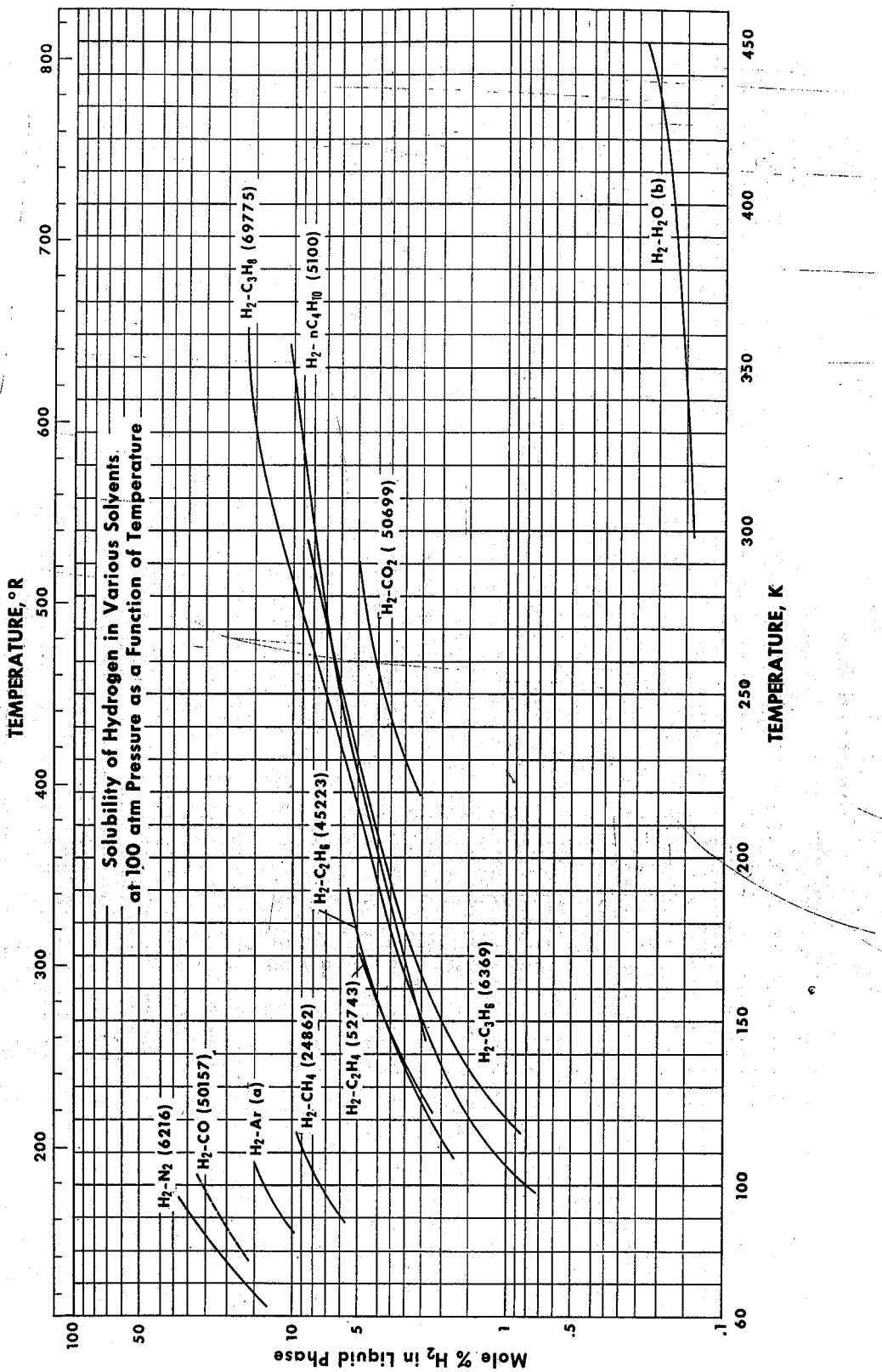

TEMPERATURE, K
14
15
16
17
18
19
20
VAPOR PRESSURE of PARAHYDROGEN
Below 1 atm
N.B.P.
T.P.
VAPOR PRESSURE, psia
15
10
8
6
5
4
3
2
1
VAPOR PRESSURE, Torr (mm Hg)
800
600
500
400
300
200
100
80
60
25
26
28
30
32
34
36
TEMPERATURE, °R

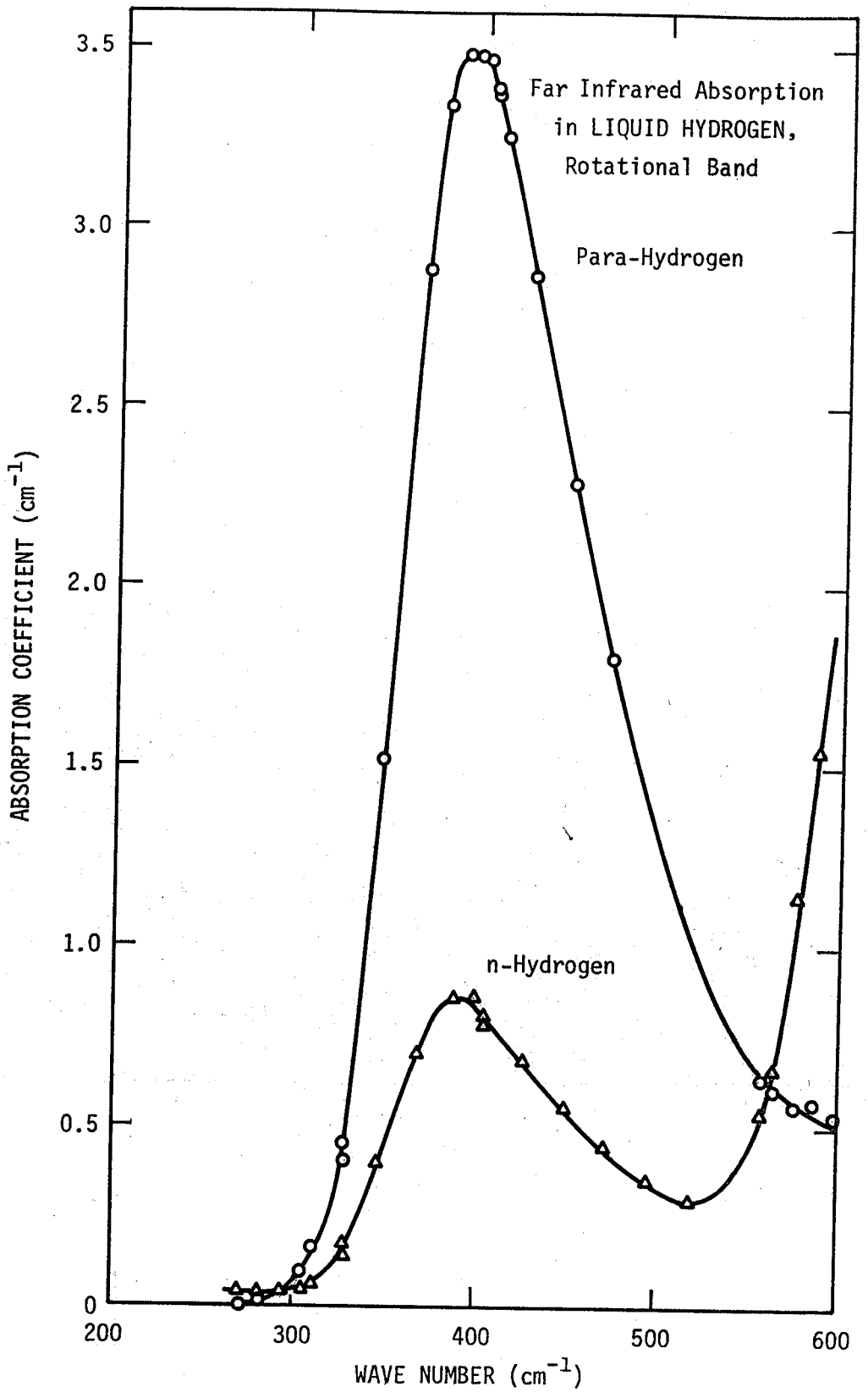

TEMPERATURE, °R
36
40
44
48
52
56
60
VAPOR PRESSURE
of
NORMAL HYDROGEN
Above 1 atm
C.P.
N.B.P.
VAPOR PRESSURE, MPA (9.869 atm)
1.4
1.0
.8
.6
.5
.4
.3
.2
.1
VAPOR PRESSURE, psia
200
150
100
80
60
50
40
30
20
15
20
22
24
26
28
30
32
34
TEMPERATURE, K

B-38c

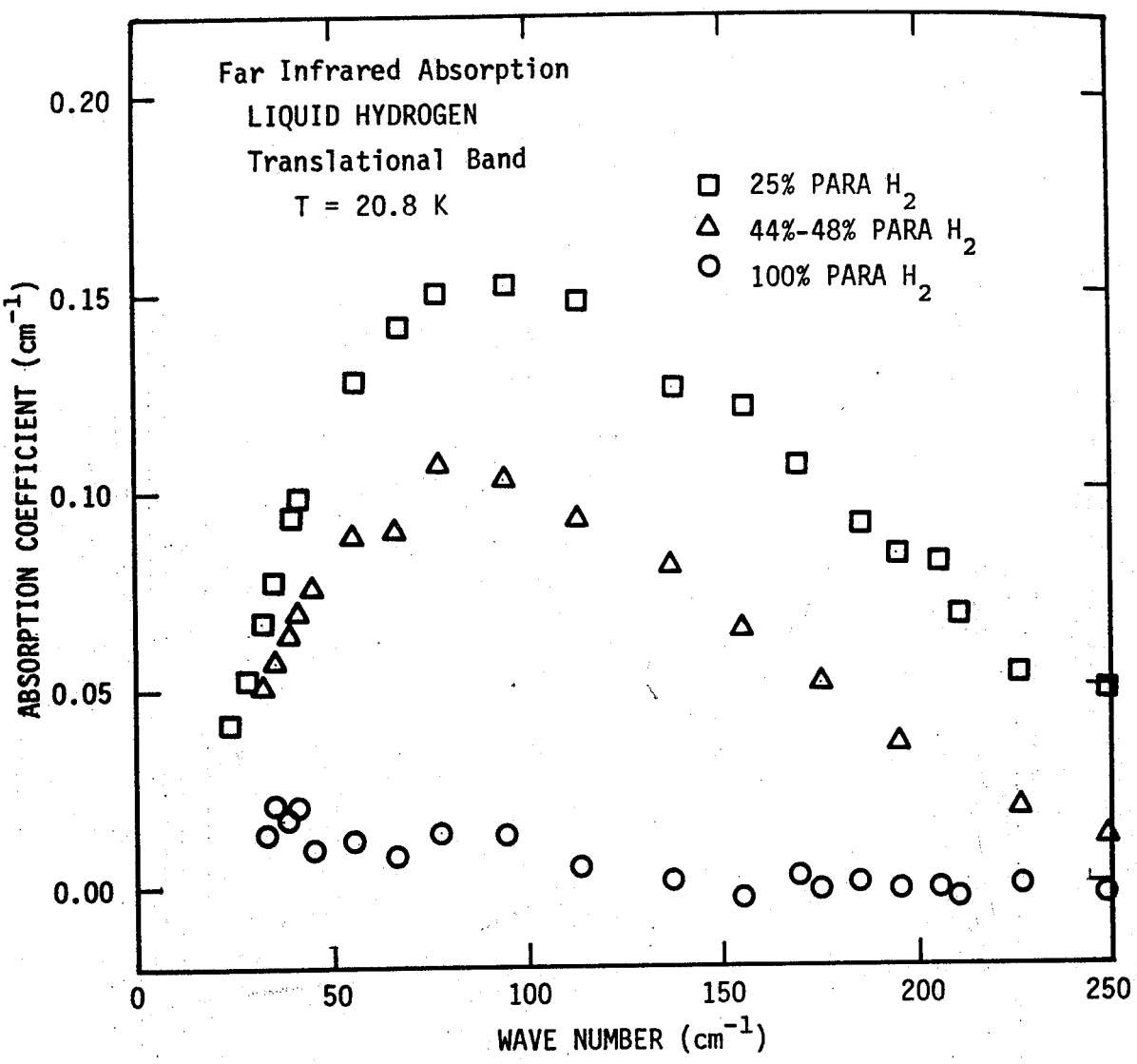

TEMPERATURE, °R
26
28
30
32
34
36
800
600
500
400
300
200
150
100
80
60
50
N.B.P.
T.P.
VAPOR PRESSURE
of
NORMAL HYDROGEN
Below 1 atm
VAPOR PRESSURE, torr (mm Hg)
15
10
8
6
5
4
3
2
1
VAPOR PRESSURE, psia
14
15
16
17
18
19
20
TEMPERATURE, K

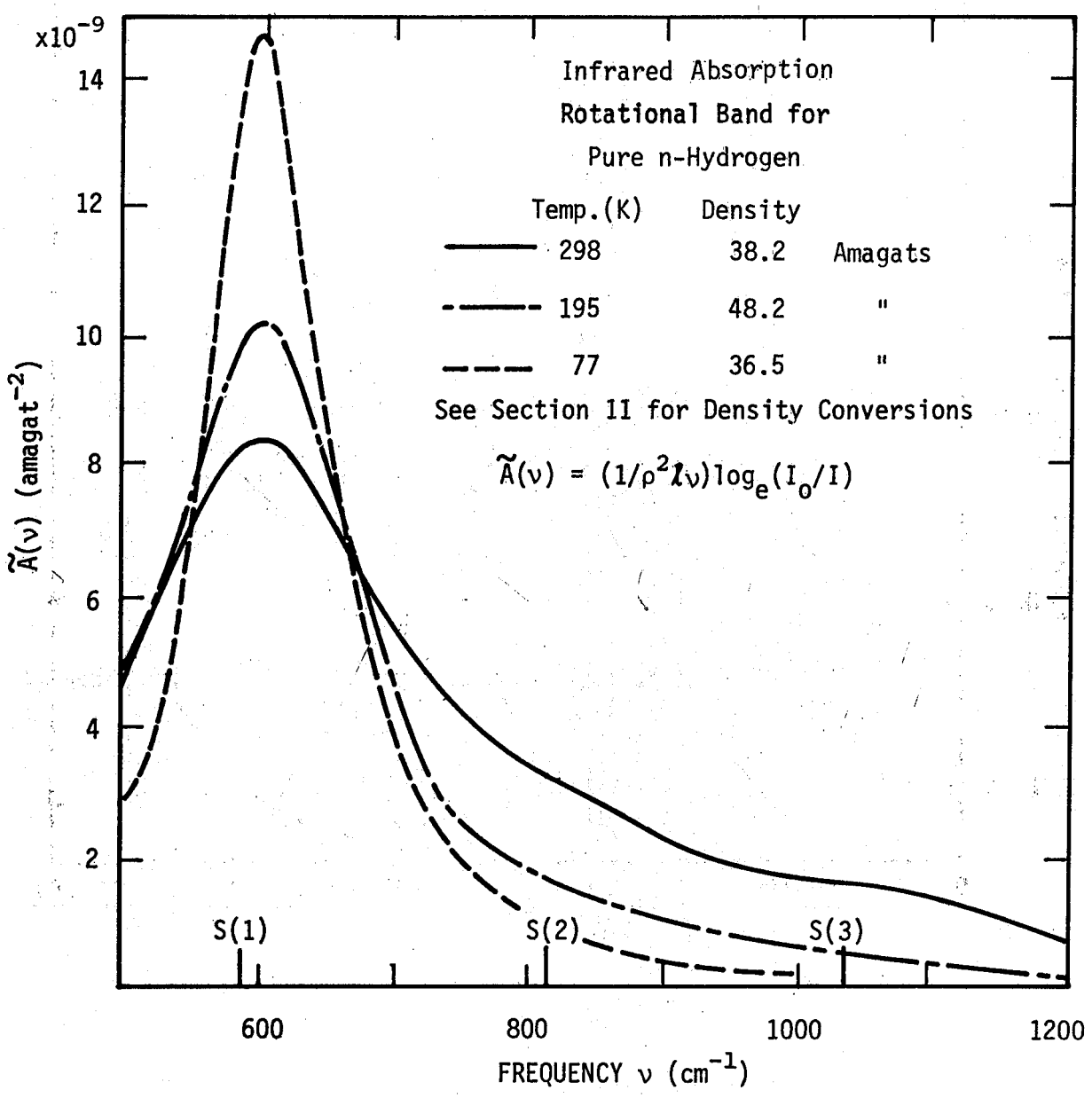

TEMPERATURE, K
14
20
30
40
60
80
100
200
300
400
600
800
1000
2000
x 10⁻⁵
5
4
3
2
1
.8
.6
.5
.4
.3
.2
.1
.08
.06
.05
VISCOSITY, lb/ft-s
VISCOSITY
of
PARA HYDROGEN
Solid
Boundary
LIQUID
10,000
5000 psia
2000
1000
500
300
187.51
(critical)
Saturation
Curve
VAPOR
1 psia
50
14.7
100
x 10⁻⁷
600
400
300
200
100
80
60
50
40
30
20
10
8
VISCOSITY, kg/m-s (= 10³ centipoise)
25
30
40
60
80
100
200
300
400
600
800
1000
2000
3000
5000
TEMPERATURE, °R

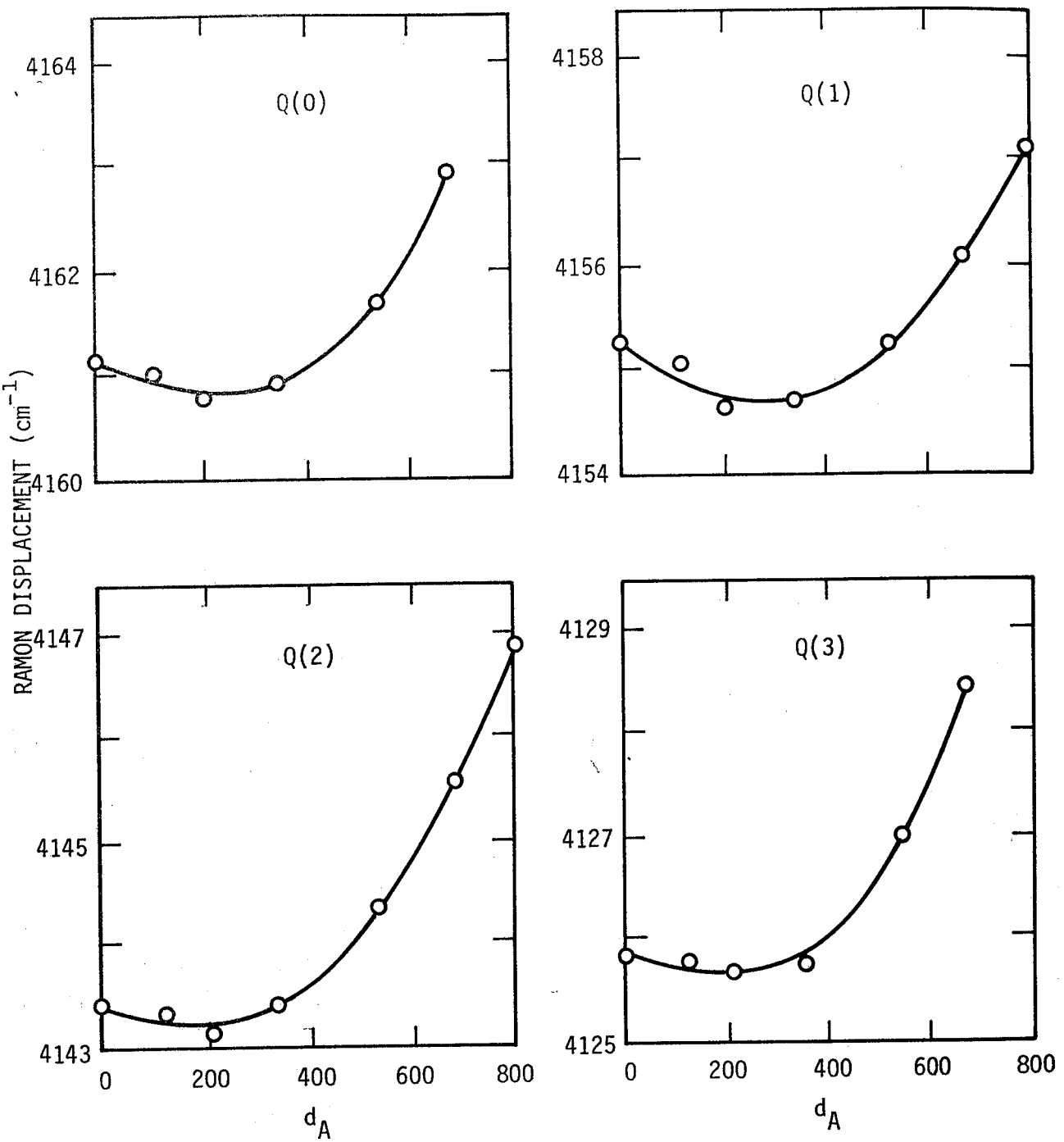

Solubility of Hydrogen in Various Solvents
at 100 atm Pressure as a Function of Temperature
TEMPERATURE, °R
TEMPERATURE, K
Mole % H2 in Liquid Phase
H2-N2 (6216)
H2-CO (50157)
H2-Ar (a)
H2-CH4 (24862)
H2-C2H4 (52743)
H2-C2H6 (45223)
H2-C3H6 (6369)
H2-CO2 (50699)
H2-C3H8 (69775)
H2- nC4H10 (5100)
H2-H2O (b)


Far Infrared Absorption
in LIQUID HYDROGEN,
Rotational Band
Para-Hydrogen
n-Hydrogen
ABSORPTION COEFFICIENT (cm⁻¹)
WAVE NUMBER (cm⁻¹)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
200
300
400
500
600

B-42a

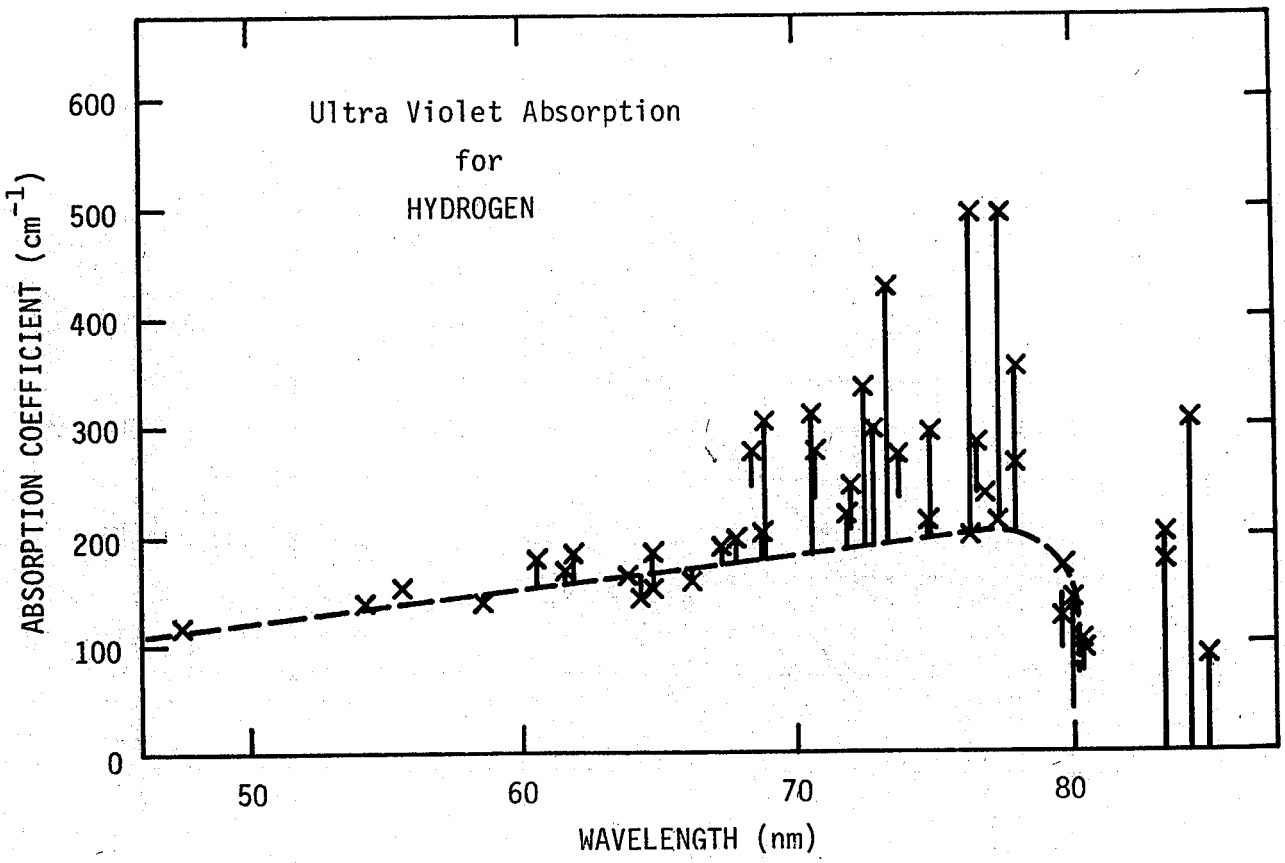

Far Infrared Absorption
LIQUID HYDROGEN
Translational Band
T = 20.8 K
25% PARA H2
44%-48% PARA H2
100% PARA H2
ABSORPTION COEFFICIENT (cm-1)
0.20
0.15
0.10
0.05
0.00
0
50
100
150
200
250
WAVE NUMBER (cm-1)

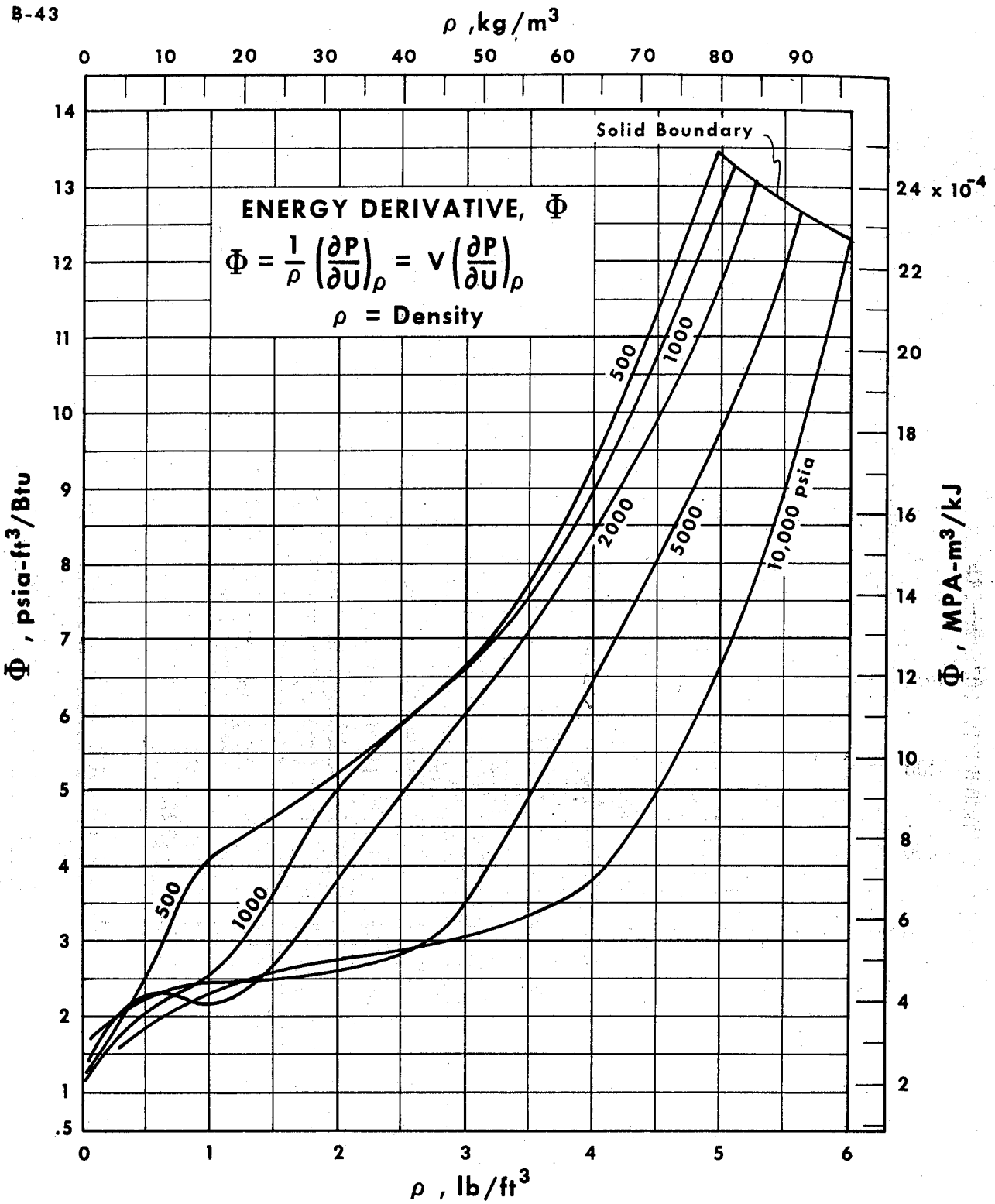

x10⁻⁹
14
12
10
8
6
4
2
Ã(ν) (amagat⁻²)
Infrared Absorption
Rotational Band for
Pure n-Hydrogen
Temp.(K) Density
298 38.2 Amagats
195 48.2 "
77 36.5 "
See Section II for Density Conversions
Ã(ν) = (1/ρ²ℓν)log_e(I_o/I)
S(1)
S(2)
S(3)
600
800
1000
1200
FREQUENCY ν (cm⁻¹)

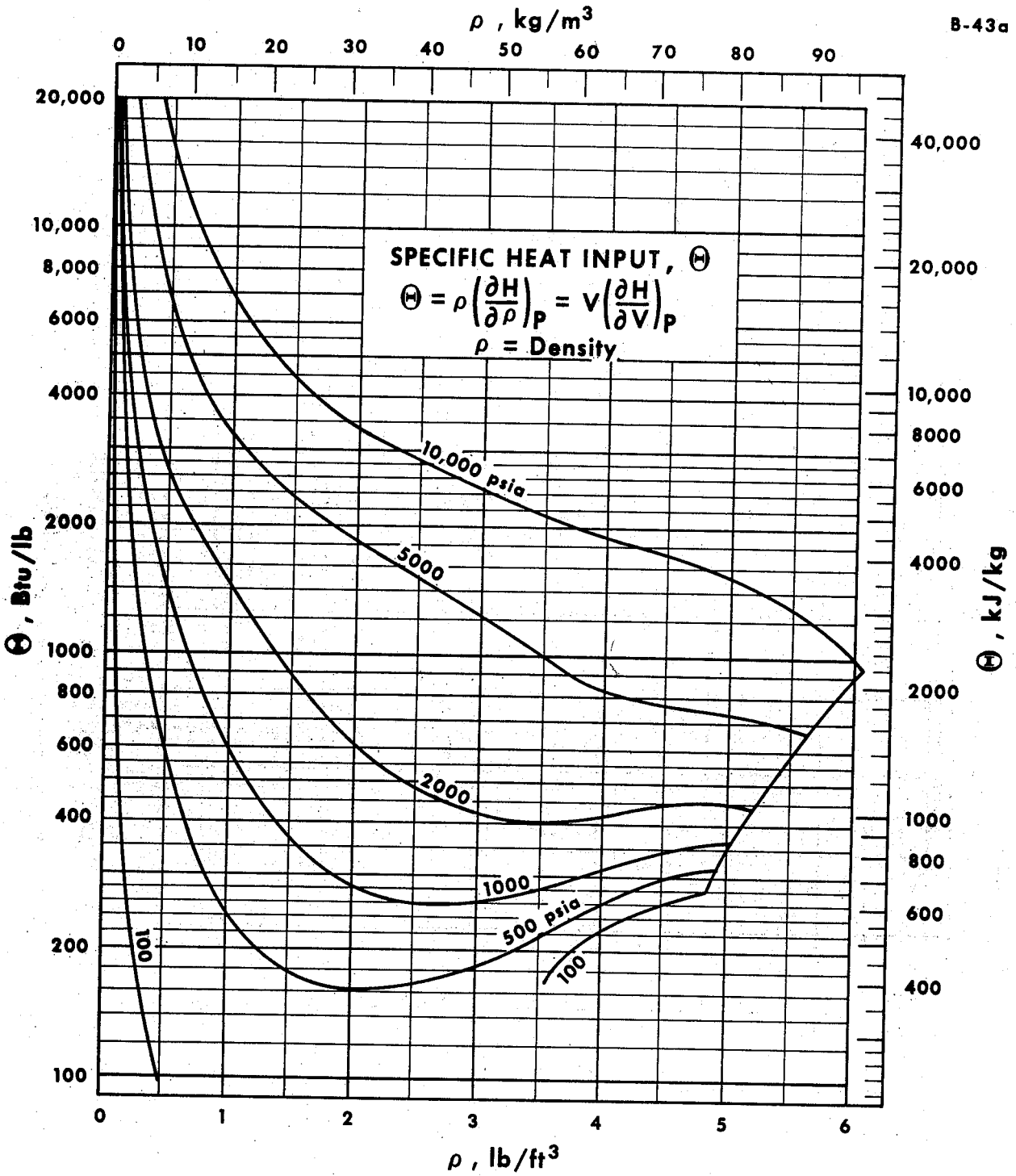


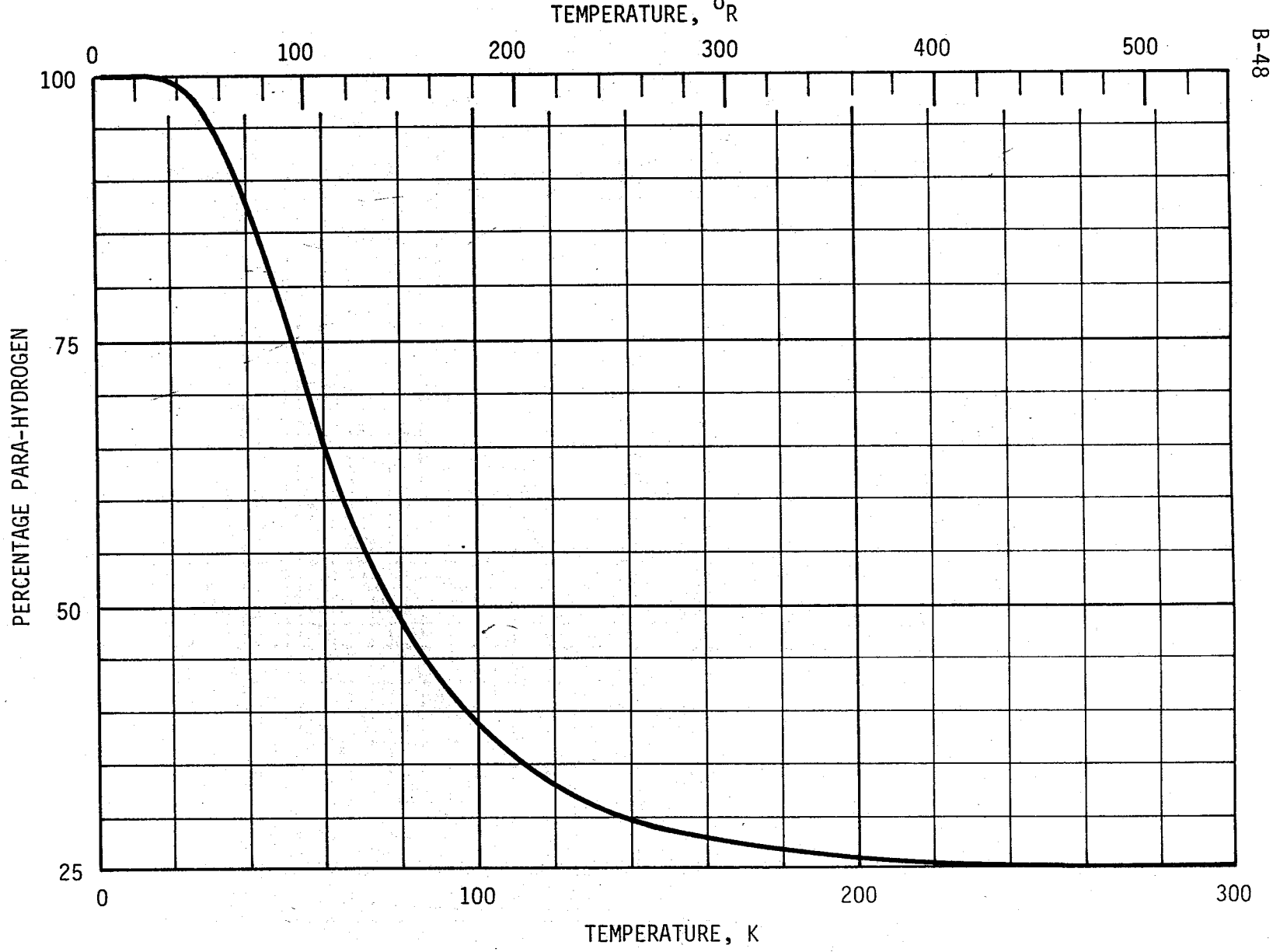
Frequency Shift for Ramon Q Bands, d_A = Density in Amagats.
See Section 11 for Density Conversions.

B-42d

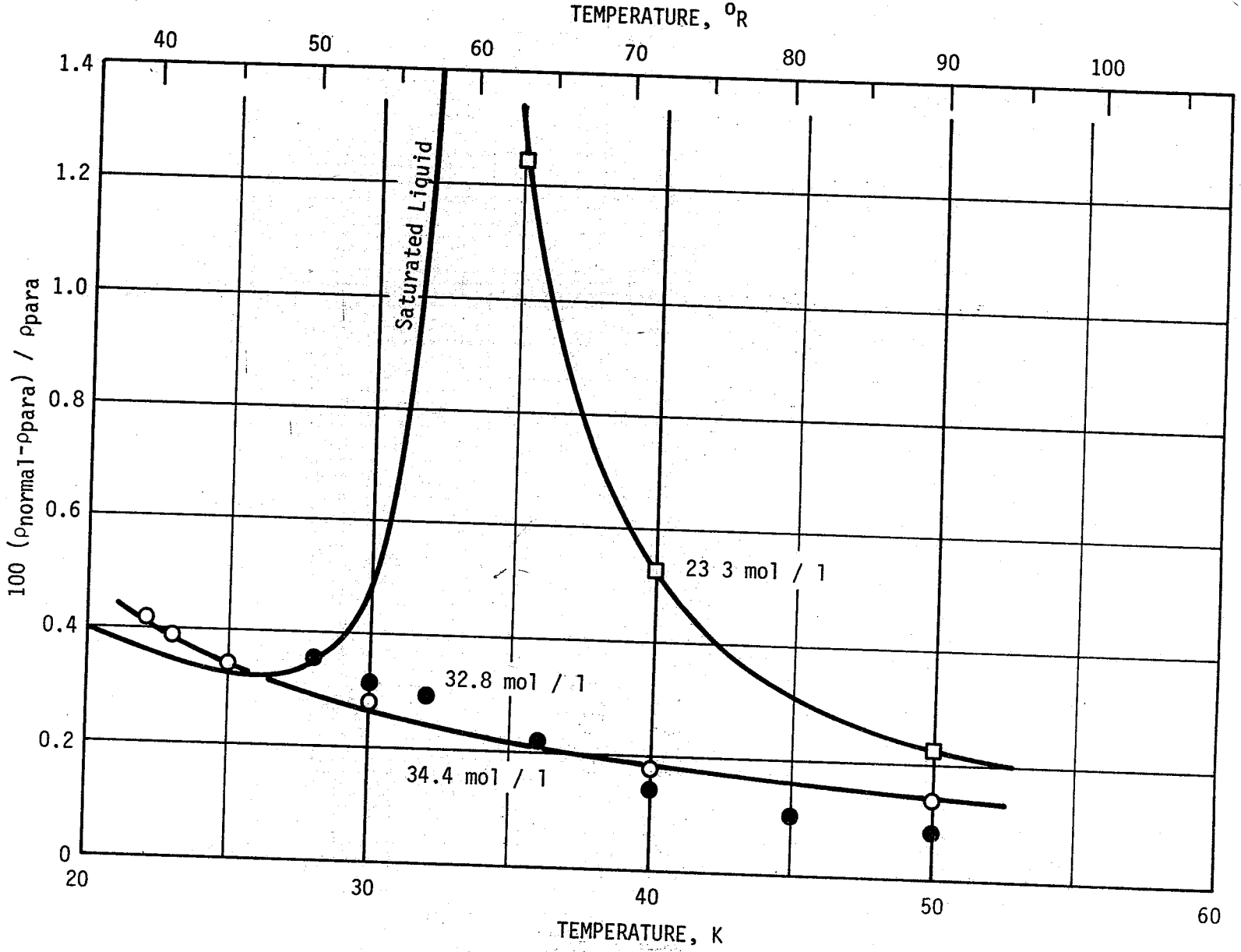

Ultra Violet Absorption
for
HYDROGEN
ABSORPTION COEFFICIENT (cm^{-1})
600
500
400
300
200
100
0
50
60
70
80
WAVELENGTH (nm)


ρ ,kg/m3
0 10 20 30 40 50 60 70 80 90
Solid Boundary
ENERGY DERIVATIVE, Φ
Φ = 1/ρ (∂P/∂U)ρ = V (∂P/∂U)ρ
ρ = Density
500
1000
2000
5000
10,000 psia
500
1000
Φ , psia-ft3/Btu
Φ , MPA-m3/kJ
24 x 10-4
ρ , lb/ft3
14 13 12 11 10 9 8 7 6 5 4 3 2 1 .5
22 20 18 16 14 12 10 8 6 4 2
0 1 2 3 4 5 6

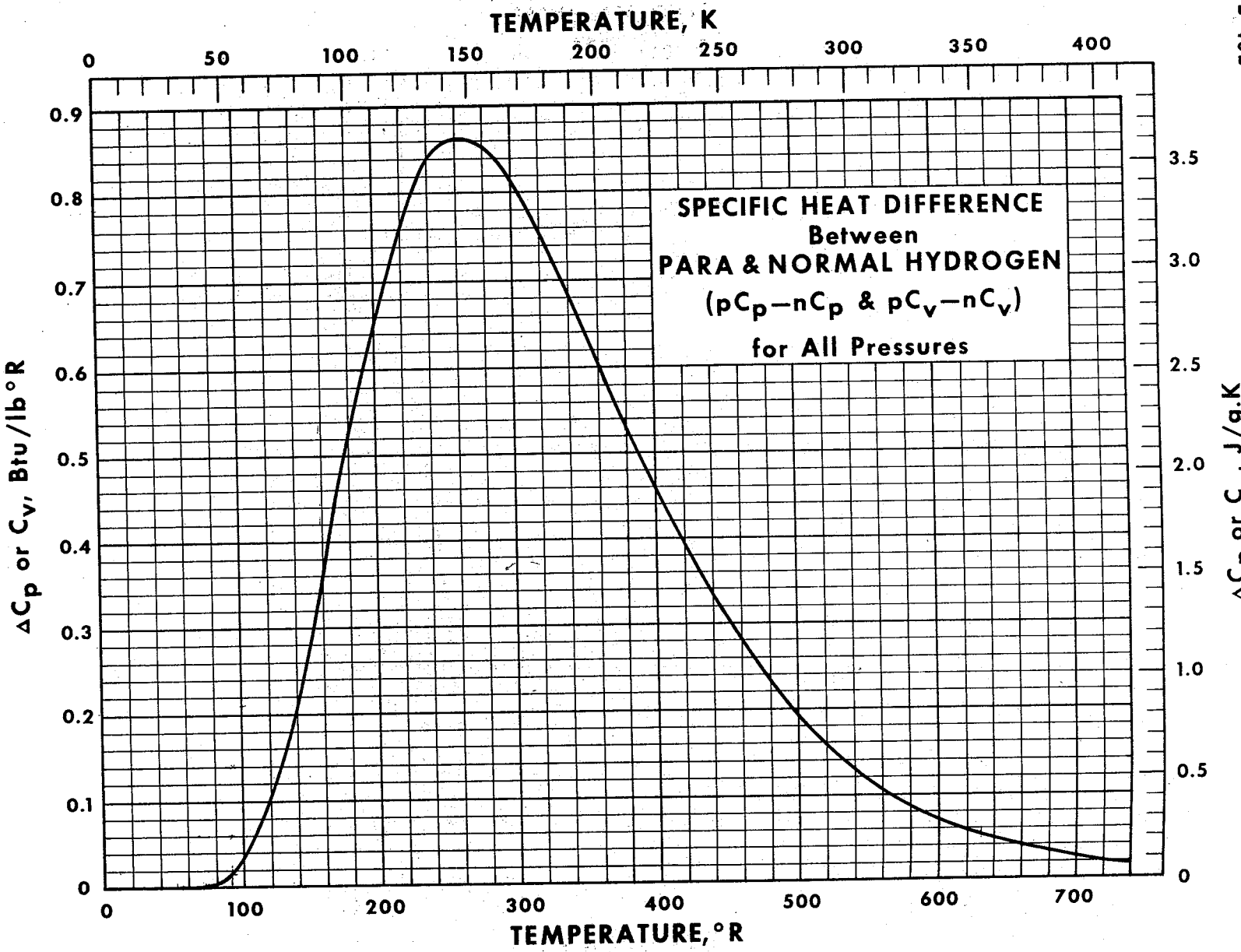

ρ , kg/m³
0
10
20
30
40
50
60
70
80
90
SPECIFIC HEAT INPUT, Θ
Θ = ρ(∂H/∂ρ)P = V(∂H/∂V)P
ρ = Density
10,000 psia
5000
2000
1000
500 psia
100
Θ , Btu/lb
20,000
10,000
8,000
6000
4000
2000
1000
800
600
400
200
100
Θ , kJ/kg
40,000
20,000
10,000
8000
6000
4000
2000
1000
800
600
400
0
1
2
3
4
5
6
ρ , lb/ft³

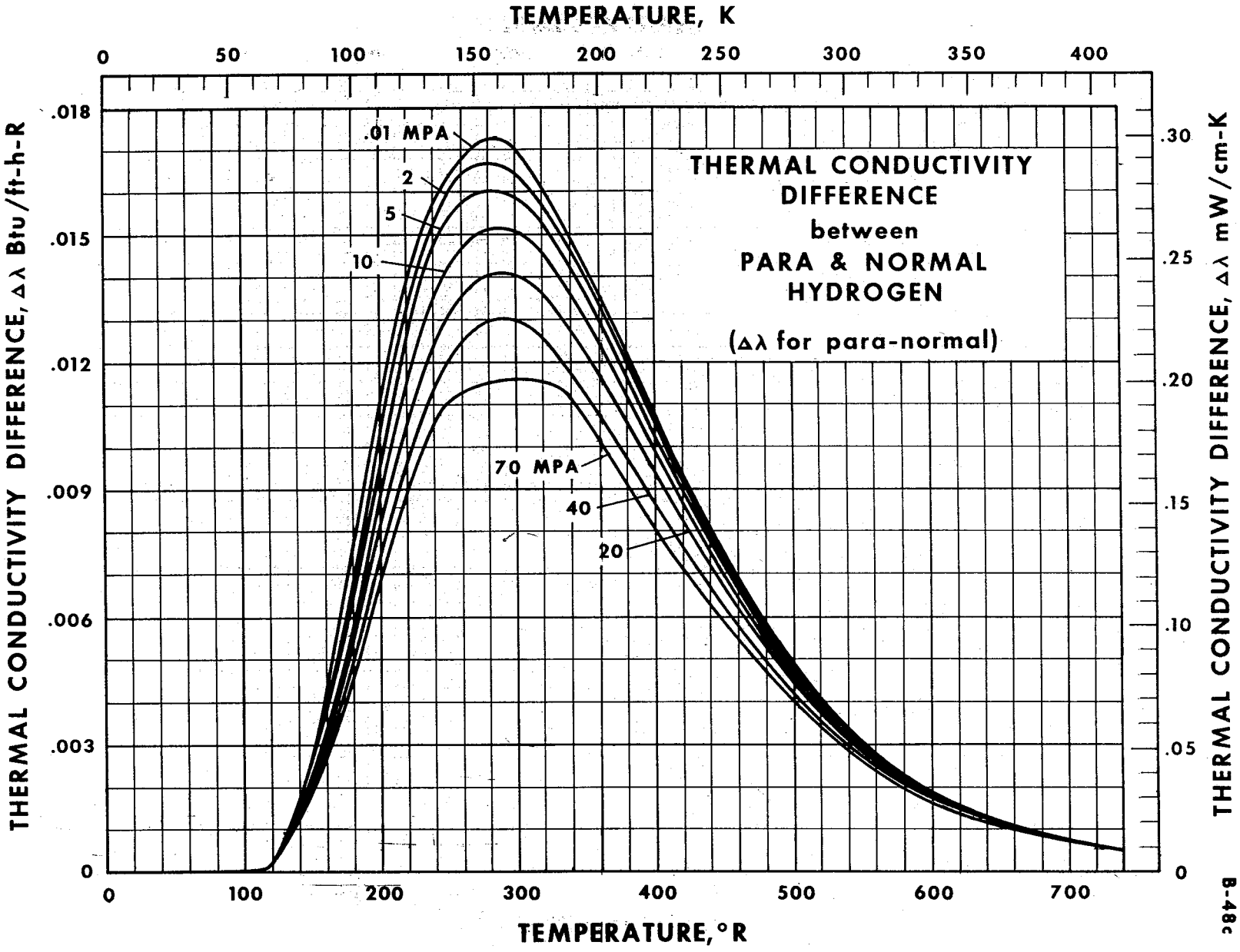


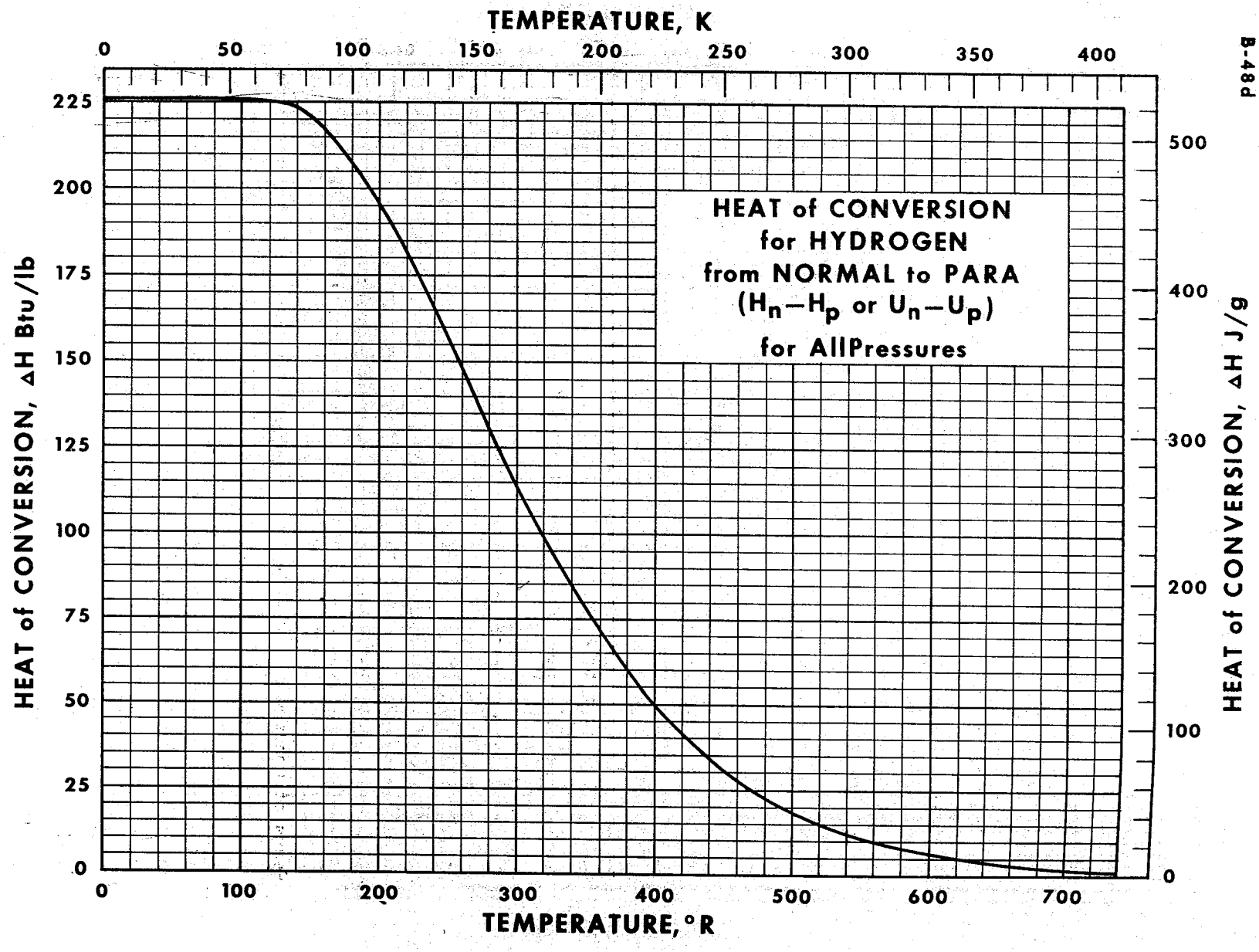
Percentage para-hydrogen in equilibrium with ortho-hydrogen as a function of temperature.



Density differences between normal and para hydrogen at a given temperature and pressure.


TEMPERATURE, K
0
50
100
150
200
250
300
350
400
SPECIFIC HEAT DIFFERENCE
Between
PARA & NORMAL HYDROGEN
(pCp−nCp & pCv−nCv)
for All Pressures
ΔCp or Cv, Btu/lb°R
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
ΔCp or Cv, J/g.K
0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
100
200
300
400
500
600
700
TEMPERATURE, °R


TEMPERATURE, K
0
50
100
150
200
250
300
350
400
THERMAL CONDUCTIVITY DIFFERENCE, Δλ Btu/ft-h-R
.018
.015
.012
.009
.006
.003
0
THERMAL CONDUCTIVITY DIFFERENCE, Δλ mW/cm-K
.30
.25
.20
.15
.10
.05
0
.01 MPA
2
5
10
70 MPA
40
20
THERMAL CONDUCTIVITY DIFFERENCE between PARA & NORMAL HYDROGEN
(Δλ for para-normal)
0
100
200
300
400
500
600
700
TEMPERATURE, °R


TEMPERATURE, K
0
50
100
150
200
250
300
350
400
HEAT of CONVERSION
for HYDROGEN
from NORMAL to PARA
($H_n - H_p$ or $U_n - U_p$)
for AllPressures
HEAT of CONVERSION, ΔH Btu/lb
225
200
175
150
125
100
75
50
25
0
HEAT of CONVERSION, ΔH J/g
500
400
300
200
100
0
0
100
200
300
400
500
600
700
TEMPERATURE, °R

9. SECTION C, TABLES

LIST OF TABLES

Thermodynamic Properties of Parahydrogen (Isobars, SI Units) C-2

Thermodynamic Properties of Parahydrogen (Isobars, English Units) . C-2b

Thermodynamic Properties of Normal Hydrogen (Isobars SI Units) (microfiche supplement) C-2a

Thermodynamic Properties of Normal Hydrogen (Isobars, English Units) (microfiche supplement) C-2c

Thermodynamic Properties of Coexisting Gaseous and Liquid Parahydrogen (SI Units) C-5

Thermodynamic Properties of Coexisting Gaseous and Liquid Parahydrogen (English Units) C-5b

Thermodynamic Properties of Coexisting Gaseous and Liquid Normal Hydrogen (SI Units) (microfiche supplement) C-5a

Thermodynamic Properties of Coexisting Gaseous and Liquid Normal Hydrogen (English Units) (microfiche supplement) C-5c

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Ortho-Para Concentrations at Equilibrium C-48

Heats of Conversion from Normal to Parahydrogen C-48a

Table C-5

Thermodynamic Properties of Coexisting Gaseous and Liquid Parahydrogen (SI Units)

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID PARAHYDROGEN

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.800	77.0235	622.6	0.25654	90.3401	0.01022	72.59	255.05	0.00053	1.25160	2.2359
* 13.800	0.1254	139.8	0.06684	0.0069	0.07523	12.43	7.36	0.03395	1.00038	0.6230
14	76.8554	619.2	0.25480	88.3211	0.01046	74.62	248.01	0.00054	1.25101	2.1517
14	0.1388	141.6	0.06684	0.0077	0.07441	12.54	7.48	0.03084	1.00042	0.6291
15	75.9963	621.9	0.24237	81.5880	0.01111	83.02	217.84	0.00057	1.24799	1.8128
15	0.2228	150.5	0.06683	0.0131	0.07089	13.08	8.08	0.01981	1.00067	0.6591
16	75.1030	623.0	0.23130	75.3083	0.01181	88.86	194.15	0.00058	1.24486	1.6074
16	0.3385	159.1	0.06680	0.0208	0.06820	13.66	8.68	0.01339	1.00102	0.6891
17	74.1710	613.1	0.22244	68.0612	0.01286	92.71	175.07	0.00057	1.24159	1.4884
17	0.4922	167.1	0.06674	0.0313	0.06624	14.27	9.28	0.00943	1.00148	0.7197
18	73.1950	604.3	0.21509	61.7874	0.01394	95.43	159.34	0.00056	1.23818	1.4063
18	0.6902	174.6	0.06669	0.0452	0.06495	14.97	9.88	0.00689	1.00208	0.7484
19	72.1693	601.0	0.20874	56.9619	0.01486	97.00	146.10	0.00054	1.23460	1.3451
19	0.9395	181.4	0.06665	0.0626	0.06427	15.72	10.49	0.00517	1.00283	0.7783
20	71.0870	596.1	0.20314	52.3516	0.01585	98.40	134.76	0.00053	1.23083	1.2942
20	1.2474	187.6	0.06666	0.0840	0.06420	16.64	11.11	0.00399	1.00376	0.8042
* 20.268	70.7864	587.9	0.20176	50.2079	0.01644	98.92	131.98	0.00052	1.22978	1.2893
* 20.268	1.3378	189.1	0.06667	0.0903	0.06424	16.94	11.28	0.00375	1.00404	0.8091
21	69.9403	577.8	0.19814	46.2935	0.01754	100.05	124.87	0.00051	1.22684	1.2648
21	1.6189	193.0	0.06672	0.1093	0.06471	17.79	11.74	0.00317	1.00489	0.8241
22	68.7200	563.1	0.19347	41.1835	0.01921	100.95	116.11	0.00049	1.22261	1.2444
22	2.0711	197.5	0.06686	0.1388	0.06597	19.02	12.38	0.00254	1.00625	0.8481
23	67.4149	540.5	0.18882	35.4854	0.02162	101.20	108.22	0.00046	1.21810	1.2499
23	2.6119	201.2	0.06708	0.1719	0.06804	20.36	13.04	0.00205	1.00789	0.8769
24	66.0112	523.0	0.18378	30.8574	0.02394	100.84	101.01	0.00044	1.21325	1.2543
24	3.2548	203.9	0.06739	0.2081	0.07108	21.81	13.73	0.00166	1.00984	0.9123
25	64.4917	504.2	0.17820	26.4945	0.02665	99.93	94.32	0.00042	1.20802	1.2682
25	4.0171	205.8	0.06777	0.2460	0.07540	23.43	14.44	0.00135	1.01216	0.9567
26	62.8337	475.1	0.17151	21.4244	0.03116	98.43	88.03	0.00038	1.20233	1.3240
26	4.9215	206.9	0.06822	0.2842	0.08144	25.24	15.19	0.00110	1.01491	1.0145
27	61.0065	451.1	0.16381	17.4346	0.03585	96.38	82.02	0.00035	1.19608	1.3764
27	5.9999	207.3	0.06868	0.3201	0.09002	27.36	16.00	0.00088	1.01820	1.0916
28	58.9665	418.4	0.15535	13.1188	0.04417	93.78	76.19	0.00031	1.18913	1.5012
28	7.2979	207.1	0.06912	0.3498	0.10259	29.91	16.89	0.00069	1.02216	1.1997
29	56.6460	382.6	0.14600	9.1967	0.05763	90.55	70.42	0.00026	1.18125	1.7146
29	8.8866	206.2	0.06947	0.3676	0.12220	33.18	17.91	0.00053	1.02703	1.3601
30	53.9303	350.6	0.13555	6.2743	0.07585	86.57	64.57	0.00022	1.17208	1.9834
30	10.8872	204.7	0.06965	0.3638	0.15631	37.87	19.17	0.00039	1.03319	1.6195
31	50.5892	310.8	0.12320	3.5282	0.11759	85.85	58.40	0.00017	1.16087	2.4865
31	13.5411	202.6	0.06952	0.3205	0.22979	46.48	20.89	0.00027	1.04140	2.0930
32	45.9927	265.8	0.10744	1.3886	0.24599	91.46	51.31	0.00011	1.14555	3.6672
32	17.4983	199.1	0.06952	0.2258	0.43710	66.77	23.79	0.00016	1.05373	3.1004
* 32.976	31.4285	199.0					35.43		1.09795	

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID PARAHYDROGEN

	TEMPERATURE DEG. K	PRESSURE MPA	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S	SURFACE TENSION$_3$ N/M X 10
*	13.800	0.0070	1.1729	0.9234	-309.0	-308.9	4.964	4.67	6.36	1264	2.9910
*	13.800	0.0070	0.0552	0.0005	84.2	140.3	37.520	6.21	10.52	306	
	14	0.0079	1.1492	0.9234	-307.6	-307.5	5.057	4.72	6.47	1256	2.9578
	14	0.0079	0.0558	0.0006	85.3	142.1	37.135	6.21	10.54	308	
	15	0.0134	1.0736	0.9064	-300.9	-300.7	5.525	4.92	6.91	1228	2.7921
	15	0.0134	0.0588	0.0009	90.7	151.1	35.648	6.24	10.67	317	
	16	0.0216	1.0027	0.8893	-293.7	-293.4	5.989	5.12	7.36	1200	2.6270
	16	0.0216	0.0615	0.0014	95.9	159.6	34.303	6.27	10.85	326	
	17	0.0329	0.9176	0.8750	-286.0	-285.6	6.453	5.30	7.88	1168	2.4625
	17	0.0329	0.0637	0.0021	100.7	167.6	33.111	6.32	11.07	334	
	18	0.0482	0.8441	0.8612	-277.9	-277.3	6.917	5.47	8.42	1140	2.2987
	18	0.0482	0.0654	0.0029	105.1	175.0	32.042	6.37	11.34	341	
	19	0.0682	0.7893	0.8465	-269.3	-268.4	7.382	5.62	8.93	1120	2.1356
	19	0.0682	0.0667	0.0040	109.1	181.7	31.073	6.43	11.66	348	
	20	0.0935	0.7364	0.8300	-260.2	-258.9	7.851	5.75	9.45	1100	1.9732
	20	0.0935	0.0674	0.0054	112.7	187.6	30.184	6.49	12.04	354	
*	20.268	0.1013	0.7093	0.8253	-257.7	-256.2	7.977	5.78	9.66	1089	1.9299
*	20.268	0.1013	0.0675	0.0058	113.6	189.3	29.967	6.50	12.15	355	
	21	0.1250	0.6619	0.8119	-250.5	-248.8	8.323	5.86	10.13	1070	1.8117
	21	0.1250	0.0675	0.0071	115.8	193.0	29.369	6.55	12.49	359	
	22	0.1634	0.5993	0.7913	-240.3	-237.9	8.802	5.95	10.82	1044	1.6510
	22	0.1634	0.0670	0.0092	118.3	197.2	28.592	6.61	13.03	363	
	23	0.2096	0.5264	0.7673	-229.4	-226.3	9.287	6.03	11.69	1010	1.4913
	23	0.2096	0.0658	0.0117	120.2	200.5	27.855	6.68	13.69	367	
	24	0.2645	0.4675	0.7389	-217.9	-213.8	9.783	6.09	12.52	980	1.3327
	24	0.2645	0.0639	0.0148	121.4	202.6	27.148	6.74	14.49	371	
	25	0.3288	0.4108	0.7060	-205.5	-200.4	10.291	6.14	13.44	948	1.1751
	25	0.3288	0.0613	0.0186	121.7	203.6	26.461	6.81	15.52	373	
	26	0.4035	0.3410	0.6676	-192.3	-185.9	10.813	6.20	14.80	903	1.0189
	26	0.4035	0.0578	0.0231	121.1	203.1	25.784	6.89	16.85	376	
	27	0.4892	0.2858	0.6251	-178.2	-170.1	11.356	6.26	16.17	860	0.8641
	27	0.4892	0.0533	0.0288	119.3	200.8	25.104	6.99	18.66	377	
	28	0.5871	0.2225	0.5794	-162.8	-152.8	11.926	6.33	18.48	806	0.7110
	28	0.5871	0.0479	0.0359	116.1	196.5	24.409	7.11	21.24	378	
	29	0.6978	0.1624	0.5300	-145.9	-133.6	12.535	6.41	22.05	747	0.5599
	29	0.6978	0.0414	0.0449	110.9	189.5	23.680	7.28	25.19	378	
	30	0.8225	0.1163	0.4759	-126.9	-111.7	13.200	6.51	26.59	689	0.4112
	30	0.8225	0.0334	0.0569	103.2	178.8	22.887	7.50	31.99	378	
	31	0.9627	0.0697	0.4149	-104.9	-85.8	13.960	6.66	36.55	619	0.2659
	31	0.9627	0.0237	0.0736	91.5	162.6	21.976	7.82	46.56	375	
	32	1.1198	0.0302	0.3416	-76.7	-52.4	14.917	6.91	65.37	534	0.1254
	32	1.1198	0.0129	0.0987	72.1	136.1	20.811	8.11	87.02	372	
*	32.976	1.2928		0.1898	-2.8	38.3	17.565				0.0000

Table C-2

Thermodynamic Properties of Parahydrogen (Isobars, SI Units)

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.01 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.804	0.01298	1.1628	0.9233	-308.9	-308.8	4.966	4.67	6.38	1260
14	0.01301	1.1302	0.9233	-307.6	-307.5	5.059	4.72	6.50	1248
* 14.430	0.01307	1.1173	0.9196	-304.8	-304.7	5.259	4.80	6.67	1245
* 14.430	5.83386	0.0571	0.0007	87.7	146.0	36.498	6.22	10.59	312
15	6.07554	0.0596	0.0007	91.3	152.1	36.907	6.22	10.56	318
16	6.49796	0.0640	0.0006	97.6	162.6	37.587	6.21	10.52	329
17	6.91887	0.0683	0.0006	103.9	173.1	38.224	6.20	10.49	340
18	7.33861	0.0725	0.0006	110.2	183.6	38.822	6.20	10.46	350
19	7.75743	0.0768	0.0005	116.4	194.0	39.388	6.20	10.44	360
20	8.17550	0.0810	0.0005	122.7	204.5	39.923	6.20	10.43	369
21	8.59295	0.0852	0.0005	128.9	214.9	40.431	6.20	10.42	379
22	9.00988	0.0895	0.0005	135.2	225.3	40.916	6.20	10.41	388
23	9.42636	0.0937	0.0004	141.4	235.7	41.378	6.20	10.40	396
24	9.84245	0.0979	0.0004	147.7	246.1	41.820	6.19	10.39	405
25	10.25822	0.1021	0.0004	153.9	256.5	42.244	6.19	10.38	414
26	10.67369	0.1062	0.0004	160.1	266.8	42.651	6.19	10.38	422
27	11.08891	0.1104	0.0004	166.3	277.2	43.043	6.19	10.37	430
28	11.50391	0.1146	0.0004	172.6	287.6	43.420	6.19	10.37	438
29	11.91870	0.1188	0.0003	178.8	298.0	43.784	6.19	10.36	446
30	12.33332	0.1229	0.0003	185.0	308.3	44.135	6.19	10.36	453
31	12.74778	0.1271	0.0003	191.2	318.7	44.475	6.19	10.36	461
32	13.16210	0.1313	0.0003	197.4	329.0	44.803	6.19	10.35	468
33	13.57629	0.1354	0.0003	203.6	339.4	45.122	6.19	10.35	476
34	13.99036	0.1396	0.0003	209.8	349.7	45.431	6.19	10.35	483
35	14.40432	0.1437	0.0003	216.0	360.1	45.731	6.19	10.35	490
36	14.81819	0.1479	0.0003	222.2	370.4	46.022	6.19	10.34	497
37	15.23198	0.1520	0.0003	228.4	380.8	46.306	6.19	10.34	504
38	15.64568	0.1562	0.0003	234.7	391.1	46.581	6.20	10.34	511
39	16.05931	0.1603	0.0003	240.9	401.5	46.850	6.20	10.34	517
40	16.47288	0.1645	0.0003	247.1	411.8	47.112	6.20	10.35	524
42	17.29983	0.1728	0.0002	259.5	432.5	47.617	6.21	10.35	537
44	18.12657	0.1811	0.0002	271.9	453.2	48.099	6.21	10.36	549
46	18.95313	0.1893	0.0002	284.4	473.9	48.559	6.23	10.37	561
48	19.77953	0.1976	0.0002	296.9	494.7	49.001	6.25	10.38	573
50	20.60580	0.2059	0.0002	309.4	515.5	49.425	6.27	10.41	585
52	21.43196	0.2142	0.0002	322.0	536.3	49.834	6.30	10.43	596
54	22.25800	0.2224	0.0002	334.6	557.2	50.228	6.33	10.47	606
56	23.08396	0.2307	0.0002	347.4	578.2	50.610	6.38	10.51	617
58	23.90983	0.2390	0.0002	360.2	599.3	50.979	6.43	10.56	627
60	24.73564	0.2472	0.0002	373.1	620.5	51.339	6.49	10.62	636
65	26.79987	0.2679	0.0002	406.0	674.0	52.196	6.68	10.82	658
70	28.86380	0.2886	0.0001	440.1	728.7	53.007	6.93	11.07	679
75	30.92747	0.3092	0.0001	475.5	784.8	53.780	7.24	11.37	697
80	32.99095	0.3299	0.0001	512.6	842.5	54.525	7.59	11.72	714
85	35.05427	0.3505	0.0001	551.5	902.1	55.247	7.99	12.11	729
90	37.11746	0.3711	0.0001	592.5	963.7	55.952	8.41	12.53	744
95	39.18054	0.3918	0.0001	635.6	1027.4	56.641	8.84	12.97	758
100	41.24353	0.4124	0.0001	680.9	1093.4	57.317	9.27	13.40	772
120	49.49480	0.4950	0.0001	882.6	1377.5	59.901	10.83	14.95	827
140	57.74534	0.5775	0.0001	1110.1	1687.5	62.288	11.82	15.94	883
160	65.99544	0.6600	0.0001	1351.2	2011.2	64.449	12.21	16.34	940
180	74.24525	0.7425	0.0001	1595.7	2338.2	66.375	12.19	16.31	997
200	82.49487	0.8250	0.0001	1837.2	2662.2	68.081	11.94	16.07	1053
220	90.74435	0.9075	0.0000	2073.0	2980.5	69.598	11.63	15.76	1109
240	98.99373	0.9900	0.0000	2302.5	3292.5	70.955	11.33	15.45	1162
260	107.24303	1.0725	0.0000	2526.5	3598.9	72.182	11.07	15.20	1213
280	115.49227	1.1550	0.0000	2745.8	3900.7	73.301	10.87	15.00	1262
300	123.73215	1.2374	0.0000	2961.7	4199.0	74.330	10.72	14.84	1309
350	144.35340	1.4436	0.0000	3491.6	4935.1	76.598	10.51	14.63	1418
400	164.97452	1.6498	0.0000	4014.6	5664.3	78.547	10.42	14.55	1517
450	185.59556	1.8560	0.0000	4534.8	6390.8	80.260	10.40	14.53	1610
500	206.21654	2.0622	0.0000	5055.1	7117.3	81.789	10.40	14.52	1697
550	226.83749	2.2685	0.0000	5575.1	7843.5	83.174	10.41	14.53	1780
600	247.45841	2.4747	0.0000	6096.1	8570.6	84.437	10.42	14.55	1858
700	288.70020	2.8871	0.0000	7141.0	10028.0	86.685	10.48	14.61	2006
800	329.94195	3.2995	0.0000	8193.4	11492.9	88.640	10.57	14.70	2142
900	371.18367	3.7119	0.0000	9256.8	12968.6	90.376	10.70	14.82	2268
1000	412.42538	4.1243	0.0000	10334.0	14458.2	91.949	10.86	14.98	2386
1200	494.90891	4.9492	0.0000	12544.2	17493.3	94.702	11.24	15.37	2601
1400	577.39658	5.7740	0.0000	14838.3	20612.3	97.110	11.70	15.83	2795
1600	659.93251	6.5988	0.0000	17233.3	23832.7	99.237	12.28	16.42	2970
1800	742.78144	7.4237	0.0000	19799.6	27227.4	101.197	13.46	17.66	3121
2000	826.97486	8.2485	0.0000	22778.4	31048.1	103.273	16.49	20.91	3235
2500	1072.23177	10.3106	0.0000	37496.2	48218.6	113.139	49.10	57.60	3476
3000	1538.60332	12.3727	0.0000	88375.8	103761.9	136.424	145.32	179.51	3904

* TWO-PHASE BOUNDARY

0.01 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.804	77.0167	618.8	0.25650	89.5531	0.01031	72.63	254.83	0.00053	1.25158	2.2385
14	76.8435	611.8	0.25478	86.8501	0.01063	74.61	247.76	0.00054	1.25097	2.1598
* 14.430	76.4900	620.0	0.25021	85.4586	0.01076	78.59	234.09	0.00055	1.24972	1.9873
* 14.430	0.1714	145.5	0.06684	0.0098	0.07279	12.77	7.74	0.02532	1.00052	0.6420
15	0.1646	151.5	0.06684	0.0098	0.06968	13.01	8.07	0.02696	1.00050	0.6546
16	0.1539	162.1	0.06684	0.0098	0.06488	13.45	8.64	0.02992	1.00046	0.6756
17	0.1445	172.6	0.06683	0.0099	0.06074	13.89	9.21	0.03300	1.00044	0.6949
18	0.1363	183.1	0.06681	0.0099	0.05713	14.40	9.77	0.03635	1.00041	0.7099
19	0.1289	193.6	0.06680	0.0099	0.05394	14.90	10.32	0.03985	1.00039	0.7235
20	0.1223	204.1	0.06679	0.0099	0.05109	15.53	10.87	0.04382	1.00037	0.7303
21	0.1164	214.6	0.06678	0.0099	0.04855	16.32	11.41	0.04846	1.00035	0.7286
22	0.1110	225.0	0.06677	0.0099	0.04625	17.11	11.95	0.05334	1.00033	0.7267
23	0.1061	235.4	0.06676	0.0099	0.04416	17.91	12.48	0.05844	1.00032	0.7247
24	0.1016	245.9	0.06675	0.0099	0.04226	18.70	13.01	0.06378	1.00031	0.7225
25	0.0975	256.3	0.06675	0.0099	0.04051	19.49	13.52	0.06934	1.00029	0.7202
26	0.0937	266.7	0.06674	0.0100	0.03891	20.28	14.04	0.07510	1.00028	0.7181
27	0.0902	277.1	0.06674	0.0100	0.03743	21.07	14.54	0.08109	1.00027	0.7159
28	0.0869	287.4	0.06673	0.0100	0.03606	21.85	15.04	0.08730	1.00026	0.7136
29	0.0839	297.8	0.06673	0.0100	0.03479	22.64	15.54	0.09374	1.00025	0.7112
30	0.0811	308.2	0.06672	0.0100	0.03361	23.42	16.03	0.10040	1.00024	0.7088
31	0.0784	318.6	0.06672	0.0100	0.03251	24.12	16.51	0.10690	1.00024	0.7089
32	0.0760	328.9	0.06671	0.0100	0.03147	24.82	16.99	0.11359	1.00023	0.7088
33	0.0737	339.3	0.06671	0.0100	0.03050	25.51	17.47	0.12049	1.00022	0.7085
34	0.0715	349.7	0.06670	0.0100	0.02959	26.22	17.93	0.12761	1.00022	0.7078
35	0.0694	360.1	0.06669	0.0100	0.02873	26.92	18.40	0.13494	1.00021	0.7070
36	0.0675	370.4	0.06668	0.0100	0.02793	27.63	18.86	0.14247	1.00020	0.7061
37	0.0657	380.8	0.06667	0.0100	0.02716	28.33	19.31	0.15020	1.00020	0.7051
38	0.0639	391.2	0.06665	0.0100	0.02644	29.04	19.76	0.15812	1.00019	0.7041
39	0.0623	401.7	0.06663	0.0100	0.02575	29.74	20.21	0.16624	1.00019	0.7029
40	0.0607	412.1	0.06660	0.0100	0.02510	30.45	20.65	0.17454	1.00018	0.7017
42	0.0578	433.1	0.06653	0.0100	0.02390	31.85	21.53	0.19166	1.00017	0.6994
44	0.0552	454.2	0.06643	0.0100	0.02280	33.25	22.38	0.20950	1.00017	0.6971
46	0.0528	475.5	0.06628	0.0100	0.02180	34.65	23.22	0.22802	1.00016	0.6949
48	0.0506	497.1	0.06609	0.0100	0.02089	36.05	24.05	0.24720	1.00015	0.6927
50	0.0485	519.1	0.06585	0.0100	0.02005	37.45	24.86	0.26696	1.00015	0.6908
52	0.0467	541.4	0.06554	0.0100	0.01927	38.85	25.66	0.28725	1.00014	0.6893
54	0.0449	564.2	0.06516	0.0100	0.01855	40.25	26.45	0.30803	1.00014	0.6880
56	0.0433	587.7	0.06471	0.0100	0.01789	41.65	27.22	0.32922	1.00013	0.6872
58	0.0418	611.7	0.06418	0.0100	0.01727	43.05	27.99	0.35074	1.00013	0.6869
60	0.0404	636.5	0.06357	0.0100	0.01669	44.51	28.74	0.37306	1.00012	0.6861
65	0.0373	702.2	0.06174	0.0100	0.01540	48.38	30.58	0.43162	1.00011	0.6836
70	0.0346	773.8	0.05950	0.0100	0.01430	52.26	32.36	0.49076	1.00010	0.6852
75	0.0323	852.1	0.05699	0.0100	0.01334	56.13	34.09	0.54968	1.00010	0.6905
80	0.0303	937.2	0.05433	0.0100	0.01251	60.04	35.77	0.60829	1.00009	0.6985
85	0.0285	1029.2	0.05166	0.0100	0.01177	65.00	37.41	0.67708	1.00009	0.6973
90	0.0269	1127.4	0.04909	0.0100	0.01112	69.96	39.01	0.74586	1.00008	0.6988
95	0.0255	1231.2	0.04668	0.0100	0.01053	74.91	40.57	0.81499	1.00008	0.7021
100	0.0242	1339.5	0.04450	0.0100	0.01000	89.50	45.74	0.99173	1.00007	0.6847
120	0.0202	1793.9	0.03811	0.0100	0.00833	117.12	54.09	1.39567	1.00006	0.6905
140	0.0173	2231.9	0.03491	0.0100	0.00714	136.14	59.20	1.77511	1.00005	0.6933
160	0.0152	2613.6	0.03378	0.0100	0.00625	148.29	63.00	2.15677	1.00005	0.6940
180	0.0135	2935.8	0.03385	0.0100	0.00556	155.64	66.17	2.55059	1.00004	0.6934
200	0.0121	3213.9	0.03453	0.0100	0.00500	160.18	69.01	2.96043	1.00004	0.6923
220	0.0110	3466.4	0.03546	0.0100	0.00455	163.39	71.65	3.38766	1.00003	0.6910
240	0.0101	3708.8	0.03641	0.0100	0.00417	166.20	74.18	3.83294	1.00003	0.6897
260	0.0093	3951.5	0.03725	0.0100	0.00385	169.11	76.63	4.29619	1.00003	0.6886
280	0.0087	4199.1	0.03794	0.0100	0.00357	172.33	79.03	4.77794	1.00003	0.6877
300	0.0081	4453.3	0.03848	0.0100	0.00333	175.87	81.39	5.27759	1.00002	0.6870
350	0.0069	5121.4	0.03925	0.0100	0.00286	186.08	87.21	6.60883	1.00002	0.6858
400	0.0061	5819.8	0.03956	0.0100	0.00250	197.39	92.95	8.05766	1.00002	0.6851
450	0.0054	6538.4	0.03964	0.0100	0.00222	209.27	98.62	9.62376	1.00002	0.6847
500	0.0048	7262.3	0.03966	0.0100	0.00200	221.21	104.23	11.30685	1.00001	0.6844
550	0.0044	7993.3	0.03962	0.0100	0.00182	233.22	109.79	13.10472	1.00001	0.6841
600	0.0040	8729.7	0.03956	0.0100	0.00167	245.22	115.28	15.01509	1.00001	0.6839
700	0.0035	10223.8	0.03935	0.0100	0.00143	269.30	126.07	19.16374	1.00001	0.6837
800	0.0030	11757.5	0.03901	0.0100	0.00125	293.66	136.61	23.73407	1.00001	0.6837
900	0.0027	13341.4	0.03855	0.0100	0.00111	318.47	146.90	28.70857	1.00001	0.6838
1000	0.0024	14983.1	0.03798	0.0100	0.00100	440.56	156.95	43.65775	1.00001	0.5338
1200	0.0020	18442.2	0.03668	0.0100	0.00083	511.19	176.42	59.26340	1.00001	0.5304
1400	0.0017	22156.4	0.03525	0.0100	0.00071	584.62	195.11	76.78658	1.00001	0.5282
1600	0.0015	26269.7	0.03358	0.0100	0.00063	668.03	213.14	96.65688	1.00000	0.5239
1800	0.0013	31767.5	0.03065	0.0100	0.00056	800.59	230.62	121.23303	1.00000	0.5087
2000	0.0012	41716.6	0.02508	0.0100	0.00050	1099.16	247.74	156.47369	1.00000	0.4713
2500	0.0009	138471.2	0.00874	0.0096	0.00042	4536.70	292.93	304.02305	1.00000	0.3719
3000	0.0006	433048.8	0.00353	0.0080	0.00041	15311.58	346.27	472.46613	1.00000	0.4059

* TWO-PHASE BOUNDARY

0.02 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.807	0.01298	1.1634	0.9234	-308.9	-308.7	4.966	4.67	6.38	1260
14	0.01301	1.1318	0.9234	-307.6	-307.4	5.058	4.72	6.50	1249
15	0.01315	1.0325	0.9076	-300.9	-300.7	5.520	4.92	6.99	1211
* 15.832	0.01329	1.0154	0.8919	-294.9	-294.7	5.911	5.09	7.28	1205
* 15.832	3.15931	0.0610	0.0013	95.0	158.2	34.518	6.27	10.81	325
16	3.19578	0.0618	0.0013	96.1	160.0	34.632	6.26	10.80	326
17	3.41127	0.0663	0.0012	102.5	170.8	35.284	6.24	10.71	337
18	3.62529	0.0708	0.0011	108.9	181.4	35.894	6.23	10.64	348
19	3.83822	0.0752	0.0011	115.3	192.1	36.468	6.22	10.59	358
20	4.05030	0.0795	0.0010	121.6	202.6	37.010	6.21	10.56	368
21	4.26168	0.0839	0.0010	128.0	213.2	37.525	6.21	10.53	377
22	4.47250	0.0882	0.0009	134.3	223.7	38.014	6.21	10.51	386
23	4.68285	0.0925	0.0009	140.5	234.2	38.481	6.21	10.49	395
24	4.89279	0.0967	0.0008	146.8	244.7	38.927	6.20	10.47	404
25	5.10238	0.1010	0.0008	153.1	255.1	39.354	6.20	10.46	413
26	5.31167	0.1052	0.0008	159.4	265.6	39.764	6.20	10.44	421
27	5.52070	0.1095	0.0008	165.6	276.0	40.157	6.20	10.43	429
28	5.72950	0.1137	0.0007	171.9	286.5	40.537	6.20	10.42	437
29	5.93809	0.1179	0.0007	178.1	296.9	40.902	6.20	10.41	445
30	6.14651	0.1221	0.0007	184.4	307.3	41.255	6.20	10.41	453
31	6.35476	0.1263	0.0007	190.6	317.7	41.596	6.20	10.40	460
32	6.56286	0.1305	0.0006	196.8	328.1	41.926	6.20	10.39	468
33	6.77084	0.1347	0.0006	203.1	338.5	42.246	6.20	10.39	475
34	6.97869	0.1389	0.0006	209.3	348.9	42.556	6.20	10.38	482
35	7.18644	0.1431	0.0006	215.5	359.2	42.857	6.20	10.38	490
36	7.39410	0.1473	0.0006	221.7	369.6	43.150	6.20	10.38	497
37	7.60166	0.1515	0.0005	228.0	380.0	43.434	6.20	10.37	504
38	7.80915	0.1556	0.0005	234.2	390.4	43.710	6.20	10.37	510
39	8.01656	0.1598	0.0005	240.4	400.7	43.980	6.20	10.37	517
40	8.22390	0.1640	0.0005	246.6	411.1	44.242	6.20	10.37	524
42	8.63841	0.1723	0.0005	259.1	431.9	44.748	6.21	10.37	537
44	9.05271	0.1806	0.0005	271.6	452.6	45.231	6.22	10.38	549
46	9.46683	0.1889	0.0004	284.0	473.4	45.692	6.23	10.39	561
48	9.88078	0.1973	0.0004	296.5	494.2	46.135	6.25	10.40	573
50	10.29461	0.2056	0.0004	309.1	515.0	46.560	6.27	10.42	584
52	10.70831	0.2139	0.0004	321.7	535.8	46.969	6.30	10.45	596
54	11.12192	0.2222	0.0004	334.3	556.8	47.364	6.34	10.48	606
56	11.53542	0.2304	0.0004	347.1	577.8	47.746	6.38	10.52	617
58	11.94885	0.2387	0.0003	359.9	598.9	48.116	6.43	10.57	627
60	12.36221	0.2470	0.0003	372.8	620.1	48.475	6.49	10.63	636
65	13.39533	0.2677	0.0003	405.8	673.7	49.334	6.68	10.82	658
70	14.42813	0.2884	0.0003	439.9	728.4	50.145	6.94	11.07	679
75	15.46069	0.3091	0.0003	475.3	784.5	50.919	7.24	11.38	697
80	16.49305	0.3298	0.0003	512.4	842.3	51.664	7.59	11.73	714
85	17.52525	0.3504	0.0002	551.4	901.9	52.386	7.99	12.12	729
90	18.55732	0.3711	0.0002	592.4	963.5	53.091	8.41	12.54	744
95	19.58928	0.3917	0.0002	635.5	1027.3	53.780	8.84	12.97	758
100	20.62115	0.4124	0.0002	680.8	1093.2	54.457	9.27	13.40	772
120	24.74793	0.4950	0.0002	882.4	1377.4	57.041	10.83	14.95	827
140	28.87400	0.5775	0.0001	1110.0	1687.4	59.428	11.82	15.94	883
160	32.99962	0.6601	0.0001	1351.2	2011.1	61.589	12.21	16.34	940
180	37.12496	0.7426	0.0001	1595.7	2338.2	63.516	12.19	16.31	997
200	41.25010	0.8251	0.0001	1837.2	2662.2	65.222	11.94	16.07	1054
220	45.37510	0.9076	0.0001	2073.0	2980.5	66.739	11.63	15.76	1109
240	49.50000	0.9901	0.0001	2302.5	3292.5	68.096	11.33	15.45	1162
260	53.62482	1.0726	0.0001	2526.4	3598.9	69.323	11.07	15.20	1213
280	57.74958	1.1551	0.0001	2745.8	3900.8	70.442	10.87	15.00	1262
300	61.86966	1.2375	0.0001	2961.7	4199.0	71.471	10.72	14.84	1309
350	72.18050	1.4438	0.0001	3491.6	4935.2	73.740	10.51	14.63	1418
400	82.49121	1.6500	0.0001	4014.6	5664.4	75.689	10.42	14.55	1517
450	92.80183	1.8562	0.0000	4534.8	6390.8	77.401	10.40	14.53	1610
500	103.11240	2.0624	0.0000	5055.1	7117.4	78.930	10.40	14.52	1697
550	113.42293	2.2686	0.0000	5575.1	7843.5	80.315	10.41	14.53	1780
600	123.73343	2.4748	0.0000	6096.0	8570.7	81.579	10.42	14.55	1858
700	144.35440	2.8873	0.0000	7141.0	10028.0	83.826	10.48	14.61	2006
800	164.97531	3.2997	0.0000	8193.4	11492.9	85.781	10.57	14.70	2142
900	185.59621	3.7121	0.0000	9256.8	12968.7	87.518	10.70	14.82	2268
1000	206.21708	4.1245	0.0000	10333.9	14458.3	89.090	10.86	14.98	2386
1200	247.45886	4.9494	0.0000	12544.2	17493.4	91.843	11.24	15.37	2601
1400	288.70208	5.7742	0.0000	14837.9	20611.9	94.251	11.69	15.82	2795
1600	329.96236	6.5990	0.0000	17227.8	23827.1	96.374	12.23	16.36	2971
1800	371.33330	7.4239	0.0000	19763.5	27190.1	98.316	13.17	17.34	3127
2000	413.17959	8.2487	0.0000	22614.2	30877.7	100.323	15.41	19.75	3251
2500	530.09558	10.3108	0.0000	34967.0	45568.9	109.124	38.86	45.95	3490
3000	726.79296	12.3729	0.0000	73552.5	88088.4	127.747	113.04	137.57	3875

* TWO-PHASE BOUNDARY

0.02 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.807	77.0224	619.1	0.25649	89.6087	0.01031	72.67	254.89	0.00053	1.25160	2.2378
14	76.8522	612.4	0.25479	86.9799	0.01062	74.62	247.94	0.00054	1.25100	2.1602
15	76.0247	604.6	0.24263	78.4985	0.01156	83.06	218.31	0.00056	1.24809	1.8373
* 15.832	75.2560	623.4	0.23300	76.4147	0.01167	88.03	197.78	0.00058	1.24539	1.6349
* 15.832	0.3165	157.7	0.06680	0.0193	0.06860	13.56	8.58	0.01426	1.00095	0.6841
16	0.3129	159.4	0.06682	0.0193	0.06771	13.63	8.67	0.01452	1.00094	0.6870
17	0.2931	170.1	0.06687	0.0194	0.06293	14.04	9.24	0.01611	1.00088	0.7043
18	0.2758	180.8	0.06689	0.0195	0.05887	14.52	9.80	0.01781	1.00083	0.7178
19	0.2605	191.4	0.06689	0.0196	0.05535	15.02	10.35	0.01958	1.00079	0.7304
20	0.2469	202.0	0.06689	0.0196	0.05227	15.63	10.90	0.02158	1.00074	0.7363
21	0.2346	212.6	0.06688	0.0197	0.04953	16.41	11.44	0.02391	1.00071	0.7339
22	0.2236	223.2	0.06686	0.0197	0.04708	17.20	11.98	0.02636	1.00067	0.7315
23	0.2135	233.7	0.06685	0.0197	0.04487	17.99	12.50	0.02892	1.00064	0.7290
24	0.2044	244.2	0.06684	0.0198	0.04287	18.78	13.03	0.03159	1.00062	0.7264
25	0.1960	254.7	0.06683	0.0198	0.04105	19.57	13.55	0.03438	1.00059	0.7238
26	0.1883	265.2	0.06682	0.0198	0.03938	20.35	14.06	0.03726	1.00057	0.7214
27	0.1811	275.7	0.06681	0.0198	0.03784	21.13	14.56	0.04026	1.00055	0.7189
28	0.1745	286.2	0.06680	0.0198	0.03642	21.91	15.06	0.04337	1.00053	0.7164
29	0.1684	296.6	0.06679	0.0199	0.03511	22.70	15.56	0.04659	1.00051	0.7138
30	0.1627	307.0	0.06679	0.0199	0.03389	23.48	16.05	0.04992	1.00049	0.7112
31	0.1574	317.5	0.06678	0.0199	0.03276	24.18	16.53	0.05318	1.00047	0.7111
32	0.1524	327.9	0.06677	0.0199	0.03170	24.87	17.01	0.05654	1.00046	0.7108
33	0.1477	338.3	0.06676	0.0199	0.03071	25.57	17.48	0.05999	1.00045	0.7104
34	0.1433	348.7	0.06675	0.0199	0.02978	26.27	17.95	0.06356	1.00043	0.7096
35	0.1392	359.2	0.06674	0.0199	0.02890	26.98	18.42	0.06724	1.00042	0.7086
36	0.1352	369.6	0.06673	0.0199	0.02808	27.68	18.88	0.07101	1.00041	0.7076
37	0.1316	380.0	0.06672	0.0199	0.02730	28.38	19.33	0.07487	1.00040	0.7065
38	0.1281	390.4	0.06670	0.0199	0.02656	29.09	19.78	0.07884	1.00039	0.7053
39	0.1247	400.9	0.06668	0.0199	0.02587	29.79	20.23	0.08291	1.00038	0.7041
40	0.1216	411.4	0.06665	0.0199	0.02521	30.50	20.67	0.08706	1.00037	0.7028
42	0.1158	432.4	0.06657	0.0199	0.02398	31.89	21.54	0.09563	1.00035	0.7004
44	0.1105	453.6	0.06647	0.0200	0.02288	33.29	22.40	0.10456	1.00033	0.6980
46	0.1056	474.9	0.06632	0.0200	0.02187	34.69	23.24	0.11384	1.00032	0.6956
48	0.1012	496.6	0.06613	0.0200	0.02094	36.09	24.06	0.12343	1.00030	0.6934
50	0.0971	518.6	0.06588	0.0200	0.02010	37.49	24.87	0.13332	1.00029	0.6915
52	0.0934	540.9	0.06557	0.0200	0.01931	38.88	25.67	0.14347	1.00028	0.6898
54	0.0899	563.8	0.06519	0.0200	0.01859	40.28	26.46	0.15388	1.00027	0.6885
56	0.0867	587.2	0.06474	0.0200	0.01792	41.68	27.24	0.16448	1.00026	0.6877
58	0.0837	611.3	0.06421	0.0200	0.01730	43.08	28.00	0.17524	1.00025	0.6873
60	0.0809	636.1	0.06360	0.0200	0.01672	44.54	28.75	0.18641	1.00024	0.6865
65	0.0747	701.8	0.06176	0.0200	0.01542	48.42	30.59	0.21571	1.00022	0.6839
70	0.0693	773.5	0.05953	0.0200	0.01431	52.29	32.37	0.24530	1.00021	0.6855
75	0.0647	851.8	0.05701	0.0200	0.01336	56.16	34.10	0.27477	1.00019	0.6908
80	0.0606	937.0	0.05435	0.0200	0.01252	60.07	35.78	0.30409	1.00018	0.6986
85	0.0571	1028.9	0.05168	0.0200	0.01178	65.02	37.42	0.33850	1.00017	0.6974
90	0.0539	1127.2	0.04910	0.0200	0.01112	69.98	39.02	0.37291	1.00016	0.6990
95	0.0510	1231.0	0.04670	0.0200	0.01054	74.94	40.58	0.40749	1.00015	0.7022
100	0.0485	1339.3	0.04451	0.0200	0.01001	89.50	45.74	0.49576	1.00015	0.6849
120	0.0404	1793.8	0.03812	0.0200	0.00834	117.11	54.09	0.69775	1.00012	0.6906
140	0.0346	2231.8	0.03491	0.0200	0.00714	136.14	59.20	0.88750	1.00010	0.6934
160	0.0303	2613.6	0.03379	0.0200	0.00625	148.29	63.00	1.07837	1.00009	0.6940
180	0.0269	2935.9	0.03386	0.0200	0.00556	155.64	66.17	1.27531	1.00008	0.6934
200	0.0242	3214.0	0.03454	0.0200	0.00500	160.18	69.01	1.48026	1.00007	0.6923
220	0.0220	3466.5	0.03547	0.0200	0.00455	163.39	71.65	1.69391	1.00007	0.6910
240	0.0202	3709.0	0.03642	0.0200	0.00417	166.20	74.18	1.91657	1.00006	0.6897
260	0.0186	3951.7	0.03726	0.0200	0.00385	169.12	76.63	2.14822	1.00006	0.6886
280	0.0173	4199.3	0.03794	0.0200	0.00357	172.33	79.03	2.38912	1.00005	0.6877
300	0.0162	4453.6	0.03848	0.0200	0.00333	175.88	81.39	2.63897	1.00005	0.6870
350	0.0139	5121.7	0.03925	0.0200	0.00286	186.09	87.21	3.30464	1.00004	0.6858
400	0.0121	5820.1	0.03957	0.0200	0.00250	197.40	92.95	4.02912	1.00004	0.6851
450	0.0108	6538.6	0.03964	0.0200	0.00222	209.28	98.62	4.81222	1.00003	0.6847
500	0.0097	7262.6	0.03966	0.0200	0.00200	221.22	104.24	5.65381	1.00003	0.6844
550	0.0088	7993.6	0.03963	0.0200	0.00182	233.23	109.79	6.55281	1.00003	0.6841
600	0.0081	8730.0	0.03956	0.0200	0.00167	245.23	115.28	7.50806	1.00002	0.6839
700	0.0069	10224.1	0.03935	0.0200	0.00143	269.31	126.07	9.58252	1.00002	0.6837
800	0.0061	11757.8	0.03901	0.0200	0.00125	293.67	136.61	11.86783	1.00002	0.6837
900	0.0054	13341.7	0.03855	0.0200	0.00111	318.48	146.90	14.35521	1.00002	0.6838
1000	0.0048	14983.4	0.03798	0.0200	0.00100	440.56	156.96	21.82932	1.00001	0.5338
1200	0.0040	18442.1	0.03668	0.0200	0.00083	511.17	176.43	29.63186	1.00001	0.5304
1400	0.0035	22147.0	0.03527	0.0200	0.00071	584.23	195.12	38.38501	1.00001	0.5283
1600	0.0030	26174.7	0.03373	0.0200	0.00063	664.26	213.15	48.23109	1.00001	0.5250
1800	0.0027	31207.2	0.03133	0.0200	0.00056	778.71	230.62	60.01969	1.00001	0.5136
2000	0.0024	39423.8	0.02681	0.0200	0.00050	1010.58	247.68	76.12031	1.00001	0.4840
2500	0.0019	111728.4	0.01091	0.0195	0.00041	3524.07	291.64	146.34712	1.00001	0.3803
3000	0.0014	351285.0	0.00429	0.0170	0.00039	12245.90	345.55	232.91357	1.00000	0.3882

* TWO-PHASE BOUNDARY

0.04 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.814	0.01298	1.1647	0.9237	-308.9	-308.4	4.967	4.68	6.38	1261
14	0.01301	1.1349	0.9236	-307.7	-307.2	5.055	4.72	6.50	1250
15	0.01315	1.0346	0.9083	-301.0	-300.5	5.517	4.92	6.99	1212
16	0.01331	0.9689	0.8905	-293.8	-293.2	5.984	5.12	7.44	1187
17	0.01348	0.9053	0.8754	-286.1	-285.5	6.450	5.30	7.92	1163
* 17.497	0.01357	0.8806	0.8682	-282.1	-281.5	6.683	5.39	8.15	1154
* 17.497	1.71035	0.0646	0.0025	102.9	171.3	32.566	6.34	11.20	338
18	1.76648	0.0670	0.0024	106.3	176.9	32.882	6.32	11.10	343
19	1.87705	0.0718	0.0022	112.9	188.0	33.478	6.28	10.96	354
20	1.98652	0.0764	0.0021	119.4	198.9	34.038	6.26	10.86	364
21	2.09514	0.0810	0.0020	125.9	209.7	34.566	6.25	10.79	374
22	2.20310	0.0855	0.0019	132.3	220.4	35.066	6.24	10.73	384
23	2.31052	0.0900	0.0018	138.7	231.2	35.542	6.23	10.68	393
24	2.41749	0.0944	0.0017	145.1	241.8	35.996	6.22	10.64	402
25	2.52409	0.0988	0.0017	151.5	252.4	36.430	6.22	10.61	411
26	2.63035	0.1032	0.0016	157.8	263.0	36.845	6.22	10.58	419
27	2.73634	0.1076	0.0015	164.2	273.6	37.244	6.21	10.56	427
28	2.84208	0.1119	0.0015	170.5	284.2	37.628	6.21	10.54	436
29	2.94761	0.1162	0.0014	176.8	294.7	37.998	6.21	10.52	444
30	3.05295	0.1205	0.0014	183.1	305.2	38.354	6.21	10.51	452
31	3.15812	0.1248	0.0013	189.4	315.7	38.698	6.21	10.49	459
32	3.26314	0.1291	0.0013	195.7	326.2	39.031	6.21	10.48	467
33	3.36802	0.1333	0.0012	201.9	336.7	39.353	6.21	10.47	474
34	3.47278	0.1376	0.0012	208.2	347.1	39.666	6.20	10.46	482
35	3.57744	0.1418	0.0012	214.5	357.6	39.969	6.20	10.45	489
36	3.68199	0.1461	0.0011	220.7	368.0	40.263	6.20	10.44	496
37	3.78646	0.1503	0.0011	227.0	378.5	40.549	6.20	10.43	503
38	3.89084	0.1545	0.0011	233.3	388.9	40.827	6.20	10.43	510
39	3.99515	0.1588	0.0010	239.5	399.3	41.098	6.21	10.42	516
40	4.09939	0.1630	0.0010	245.8	409.7	41.362	6.21	10.42	523
42	4.30768	0.1714	0.0010	258.3	430.6	41.870	6.21	10.42	536
44	4.51576	0.1798	0.0009	270.8	451.4	42.355	6.22	10.42	549
46	4.72366	0.1882	0.0009	283.3	472.2	42.818	6.23	10.42	561
48	4.93140	0.1965	0.0008	295.8	493.1	43.262	6.25	10.43	573
50	5.13901	0.2049	0.0008	308.4	514.0	43.688	6.27	10.45	584
52	5.34649	0.2132	0.0008	321.0	534.9	44.098	6.30	10.47	595
54	5.55387	0.2216	0.0007	333.7	555.9	44.494	6.34	10.51	606
56	5.76116	0.2299	0.0007	346.5	576.9	44.877	6.38	10.55	616
58	5.96837	0.2383	0.0007	359.3	598.1	45.248	6.43	10.60	626
60	6.17550	0.2466	0.0007	372.3	619.3	45.608	6.49	10.65	636
65	6.69306	0.2674	0.0006	405.3	673.0	46.468	6.69	10.84	658
70	7.21030	0.2881	0.0006	439.4	727.8	47.280	6.94	11.09	679
75	7.72730	0.3088	0.0005	474.9	784.0	48.054	7.24	11.39	697
80	8.24410	0.3296	0.0005	512.0	841.8	48.800	7.60	11.74	714
85	8.76074	0.3503	0.0005	551.0	901.5	49.524	7.99	12.13	729
90	9.27725	0.3710	0.0004	592.0	963.1	50.229	8.41	12.54	744
95	9.79365	0.3917	0.0004	635.2	1026.9	50.918	8.84	12.98	758
100	10.30996	0.4123	0.0004	680.5	1092.9	51.595	9.27	13.41	772
120	12.37451	0.4950	0.0003	882.2	1377.2	54.180	10.83	14.96	827
140	14.43833	0.5776	0.0003	1109.8	1687.3	56.568	11.82	15.95	883
160	16.50171	0.6602	0.0003	1351.0	2011.1	58.730	12.21	16.34	940
180	18.56481	0.7428	0.0002	1595.5	2338.1	60.656	12.19	16.31	997
200	20.62771	0.8253	0.0002	1837.1	2662.2	62.362	11.94	16.07	1054
220	22.69048	0.9079	0.0002	2072.9	2980.5	63.880	11.63	15.76	1109
240	24.75314	0.9904	0.0002	2302.4	3292.5	65.237	11.33	15.45	1162
260	26.81572	1.0729	0.0002	2526.3	3599.0	66.464	11.07	15.20	1213
280	28.87824	1.1554	0.0001	2745.7	3900.8	67.583	10.87	15.00	1262
300	30.93842	1.2378	0.0001	2961.6	4199.1	68.612	10.72	14.84	1309
350	36.09405	1.4441	0.0001	3491.5	4935.3	70.881	10.51	14.63	1418
400	41.24955	1.6503	0.0001	4014.5	5664.5	72.830	10.42	14.55	1518
450	46.40496	1.8565	0.0001	4534.8	6391.0	74.542	10.40	14.53	1610
500	51.56032	2.0627	0.0001	5055.1	7117.5	76.072	10.40	14.52	1697
550	56.71565	2.2690	0.0001	5575.1	7843.7	77.456	10.41	14.53	1780
600	61.87095	2.4752	0.0001	6096.0	8570.9	78.720	10.42	14.55	1859
700	72.18149	2.8876	0.0001	7140.9	10028.2	80.968	10.48	14.61	2006
800	82.49200	3.3000	0.0001	8193.4	11493.1	82.922	10.57	14.70	2142
900	92.80248	3.7124	0.0000	9256.7	12968.8	84.659	10.70	14.82	2268
1000	103.11294	4.1249	0.0000	10333.9	14458.5	86.231	10.86	14.98	2386
1200	123.73385	4.9497	0.0000	12544.2	17493.5	88.985	11.24	15.37	2601
1400	144.35526	5.7745	0.0000	14837.5	20611.7	91.392	11.69	15.81	2795
1600	164.98269	6.5994	0.0000	17223.9	23823.3	93.513	12.19	16.32	2972
1800	185.64924	7.4242	0.0000	19737.9	27163.9	95.442	12.96	17.12	3132
2000	206.48386	8.2490	0.0000	22498.0	30757.4	97.400	14.65	18.92	3264
2500	262.92037	10.3111	0.0000	33176.9	43693.8	105.447	31.54	37.70	3509
3000	347.85821	12.3732	0.0000	62713.5	76627.9	120.644	86.94	104.62	3853

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.04 MPA ISOBAR

	TEMPERATURE	DENSITY	$V(DH/DV)_P$	$V(DP/DU)_V$	$-V(DP/DV)_T$	$-(DV/DT)/V_P$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
	DEG. K	KG/CU M	KJ/KG	MPA-CU M/KJ X 10^2	MPA	1/DEG. K	W/K-M X 10^3	KG/M-S X 10^7	SQ M/HR		
*	13.814	77.0340	619.8	0.25646	89.7200	0.01029	72.76	255.02	0.00053	1.25164	2.2364
	14	76.8696	613.6	0.25483	87.2391	0.01059	74.63	248.30	0.00054	1.25106	2.1611
	15	76.0433	605.3	0.24280	78.6773	0.01154	83.08	218.62	0.00056	1.24816	1.8387
	16	75.1384	608.0	0.23158	72.8003	0.01223	88.91	194.63	0.00057	1.24498	1.6280
	17	74.1849	607.4	0.22254	67.1585	0.01304	92.73	175.22	0.00057	1.24164	1.4961
*	17.497	73.6915	608.9	0.21861	64.8894	0.01338	94.22	166.89	0.00056	1.23991	1.4431
*	17.497	0.5847	170.9	0.06672	0.0378	0.06552	14.61	9.58	0.00803	1.00176	0.7338
	18	0.5661	176.3	0.06682	0.0379	0.06297	14.83	9.86	0.00849	1.00171	0.7381
	19	0.5328	187.1	0.06694	0.0382	0.05858	15.27	10.41	0.00941	1.00161	0.7470
	20	0.5034	197.9	0.06700	0.0385	0.05487	15.86	10.95	0.01044	1.00152	0.7503
	21	0.4773	208.7	0.06702	0.0387	0.05167	16.62	11.49	0.01162	1.00144	0.7460
	22	0.4539	219.5	0.06702	0.0388	0.04887	17.39	12.03	0.01285	1.00137	0.7420
	23	0.4328	230.3	0.06701	0.0389	0.04639	18.16	12.55	0.01414	1.00130	0.7383
	24	0.4137	241.0	0.06700	0.0391	0.04416	18.94	13.07	0.01549	1.00125	0.7348
	25	0.3962	251.7	0.06698	0.0392	0.04216	19.72	13.59	0.01689	1.00119	0.7313
	26	0.3802	262.4	0.06697	0.0392	0.04034	20.49	14.10	0.01834	1.00115	0.7282
	27	0.3655	273.0	0.06695	0.0393	0.03869	21.27	14.61	0.01984	1.00110	0.7252
	28	0.3519	283.6	0.06694	0.0394	0.03717	22.04	15.10	0.02140	1.00106	0.7222
	29	0.3393	294.2	0.06692	0.0394	0.03577	22.82	15.60	0.02301	1.00102	0.7192
	30	0.3276	304.7	0.06691	0.0395	0.03447	23.59	16.09	0.02468	1.00099	0.7163
	31	0.3166	315.3	0.06690	0.0395	0.03328	24.29	16.57	0.02632	1.00095	0.7157
	32	0.3065	325.8	0.06688	0.0396	0.03216	24.98	17.05	0.02801	1.00092	0.7150
	33	0.2969	336.3	0.06687	0.0396	0.03112	25.68	17.52	0.02974	1.00089	0.7142
	34	0.2880	346.8	0.06686	0.0396	0.03015	26.38	17.99	0.03154	1.00087	0.7131
	35	0.2795	357.3	0.06685	0.0396	0.02924	27.08	18.45	0.03338	1.00084	0.7119
	36	0.2716	367.8	0.06683	0.0397	0.02838	27.78	18.91	0.03527	1.00082	0.7106
	37	0.2641	378.3	0.06681	0.0397	0.02758	28.48	19.36	0.03721	1.00080	0.7093
	38	0.2570	388.9	0.06679	0.0397	0.02682	29.19	19.81	0.03920	1.00077	0.7079
	39	0.2503	399.4	0.06677	0.0397	0.02610	29.89	20.26	0.04124	1.00075	0.7065
	40	0.2439	409.9	0.06674	0.0398	0.02542	30.59	20.70	0.04332	1.00074	0.7051
	42	0.2321	431.1	0.06666	0.0398	0.02416	31.98	21.57	0.04762	1.00070	0.7024
	44	0.2214	452.3	0.06655	0.0398	0.02303	33.38	22.42	0.05209	1.00067	0.6998
	46	0.2117	473.8	0.06640	0.0398	0.02200	34.77	23.26	0.05674	1.00064	0.6972
	48	0.2028	495.5	0.06620	0.0399	0.02106	36.17	24.09	0.06155	1.00061	0.6948
	50	0.1946	517.5	0.06595	0.0399	0.02019	37.56	24.90	0.06650	1.00059	0.6927
	52	0.1870	540.0	0.06564	0.0399	0.01940	38.96	25.70	0.07159	1.00056	0.6909
	54	0.1801	562.9	0.06526	0.0399	0.01866	40.36	26.48	0.07680	1.00054	0.6895
	56	0.1736	586.4	0.06480	0.0399	0.01799	41.75	27.26	0.08211	1.00052	0.6886
	58	0.1676	610.5	0.06427	0.0399	0.01735	43.15	28.02	0.08750	1.00050	0.6881
	60	0.1619	635.4	0.06366	0.0399	0.01677	44.61	28.78	0.09309	1.00049	0.6872
	65	0.1494	701.2	0.06182	0.0399	0.01546	48.48	30.61	0.10776	1.00045	0.6845
	70	0.1387	772.9	0.05957	0.0400	0.01434	52.35	32.39	0.12257	1.00042	0.6860
	75	0.1294	851.2	0.05705	0.0400	0.01338	56.21	34.12	0.13732	1.00039	0.6912
	80	0.1213	936.5	0.05439	0.0400	0.01253	60.12	35.80	0.15200	1.00037	0.6990
	85	0.1141	1028.5	0.05171	0.0400	0.01179	65.07	37.43	0.16922	1.00034	0.6977
	90	0.1078	1126.8	0.04913	0.0400	0.01113	70.03	39.03	0.18643	1.00032	0.6992
	95	0.1021	1230.6	0.04673	0.0400	0.01054	74.98	40.59	0.20374	1.00031	0.7024
	100	0.0970	1338.9	0.04453	0.0400	0.01001	89.51	45.74	0.24777	1.00029	0.6851
	120	0.0808	1793.6	0.03813	0.0400	0.00834	117.11	54.08	0.34878	1.00024	0.6908
	140	0.0693	2231.8	0.03493	0.0400	0.00715	136.14	59.20	0.44370	1.00021	0.6935
	160	0.0606	2613.6	0.03380	0.0400	0.00625	148.29	63.00	0.53917	1.00018	0.6941
	180	0.0539	2936.1	0.03387	0.0400	0.00556	155.64	66.17	0.63767	1.00016	0.6935
	200	0.0485	3214.3	0.03455	0.0400	0.00500	160.19	69.01	0.74018	1.00015	0.6924
	220	0.0441	3466.8	0.03548	0.0400	0.00455	163.39	71.66	0.84703	1.00013	0.6910
	240	0.0404	3709.3	0.03642	0.0400	0.00417	166.20	74.18	0.95838	1.00012	0.6898
	260	0.0373	3952.1	0.03726	0.0400	0.00385	169.12	76.63	1.07423	1.00011	0.6886
	280	0.0346	4199.7	0.03795	0.0400	0.00357	172.34	79.03	1.19471	1.00010	0.6877
	300	0.0323	4454.0	0.03849	0.0400	0.00333	175.89	81.40	1.31966	1.00010	0.6870
	350	0.0277	5122.2	0.03926	0.0400	0.00286	186.10	87.22	1.65255	1.00008	0.6858
	400	0.0242	5820.6	0.03957	0.0400	0.00250	197.41	92.96	2.01484	1.00007	0.6851
	450	0.0215	6539.2	0.03964	0.0400	0.00222	209.30	98.63	2.40645	1.00006	0.6847
	500	0.0194	7263.1	0.03966	0.0400	0.00200	221.23	104.24	2.82730	1.00006	0.6844
	550	0.0176	7994.2	0.03963	0.0400	0.00182	233.24	109.80	3.27686	1.00005	0.6841
	600	0.0162	8730.5	0.03957	0.0400	0.00167	245.25	115.29	3.75455	1.00005	0.6839
	700	0.0139	10224.7	0.03935	0.0400	0.00143	269.33	126.08	4.79190	1.00004	0.6837
	800	0.0121	11758.4	0.03901	0.0400	0.00125	293.70	136.62	5.93471	1.00004	0.6837
	900	0.0108	13342.3	0.03855	0.0400	0.00111	318.51	146.92	7.17853	1.00003	0.6838
	1000	0.0097	14984.0	0.03798	0.0400	0.00100	440.56	156.97	10.91511	1.00003	0.5338
	1200	0.0081	18442.4	0.03668	0.0400	0.00083	511.16	176.44	14.81632	1.00002	0.5305
	1400	0.0069	22140.9	0.03528	0.0400	0.00071	583.96	195.14	19.18995	1.00002	0.5285
	1600	0.0061	26108.0	0.03384	0.0400	0.00062	661.59	213.17	24.08132	1.00002	0.5258
	1800	0.0054	30811.3	0.03183	0.0400	0.00056	763.23	230.63	29.79266	1.00002	0.5174
	2000	0.0048	37799.5	0.02819	0.0400	0.00050	947.86	247.66	37.23361	1.00001	0.4944
	2500	0.0038	92396.5	0.01334	0.0392	0.00041	2791.89	290.67	70.10222	1.00001	0.3925
	3000	0.0029	279107.0	0.00533	0.0356	0.00037	9541.08	342.92	114.20189	1.00001	0.3760

* TWO-PHASE BOUNDARY

0.06 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.821	0.01298	1.1660	0.9239	-308.9	-308.1	4.967	4.68	6.38	1261
14	0.01301	1.1380	0.9239	-307.7	-306.9	5.052	4.71	6.49	1252
15	0.01315	1.0367	0.9090	-301.0	-300.2	5.514	4.92	6.99	1213
16	0.01331	0.9709	0.8912	-293.8	-293.0	5.980	5.12	7.43	1188
17	0.01348	0.9073	0.8761	-286.1	-285.3	6.447	5.30	7.91	1164
18	0.01366	0.8460	0.8616	-278.0	-277.2	6.914	5.47	8.42	1141
* 18.621	0.01378	0.8147	0.8524	-272.6	-271.8	7.205	5.56	8.72	1130
* 18.621	1.19270	0.0663	0.0036	107.6	179.2	31.430	6.41	11.53	345
19	1.22174	0.0682	0.0035	110.2	183.6	31.662	6.38	11.43	350
20	1.29743	0.0732	0.0033	117.0	194.9	32.243	6.33	11.23	360
21	1.37208	0.0780	0.0031	123.7	206.0	32.787	6.29	11.09	371
22	1.44595	0.0828	0.0029	130.3	217.1	33.300	6.27	10.98	381
23	1.51921	0.0875	0.0028	136.9	228.0	33.787	6.26	10.90	390
24	1.59196	0.0921	0.0026	143.4	238.9	34.249	6.25	10.83	400
25	1.66430	0.0966	0.0025	149.8	249.7	34.690	6.24	10.78	409
26	1.73629	0.1011	0.0024	156.3	260.4	35.112	6.23	10.73	417
27	1.80798	0.1056	0.0023	162.7	271.2	35.516	6.23	10.70	426
28	1.87941	0.1101	0.0022	169.1	281.8	35.905	6.23	10.66	434
29	1.95062	0.1145	0.0021	175.4	292.5	36.278	6.22	10.63	442
30	2.02162	0.1189	0.0021	181.8	303.1	36.639	6.22	10.61	450
31	2.09245	0.1232	0.0020	188.2	313.7	36.986	6.22	10.59	458
32	2.16313	0.1276	0.0019	194.5	324.3	37.322	6.22	10.57	466
33	2.23367	0.1319	0.0019	200.8	334.8	37.647	6.21	10.55	473
34	2.30408	0.1363	0.0018	207.1	345.4	37.961	6.21	10.53	481
35	2.37437	0.1406	0.0018	213.4	355.9	38.266	6.21	10.52	488
36	2.44457	0.1449	0.0017	219.7	366.4	38.563	6.21	10.51	495
37	2.51468	0.1492	0.0017	226.0	376.9	38.850	6.21	10.49	502
38	2.58470	0.1534	0.0016	232.3	387.4	39.130	6.21	10.49	509
39	2.65465	0.1577	0.0016	238.6	397.9	39.402	6.21	10.48	516
40	2.72452	0.1620	0.0015	244.9	408.4	39.668	6.21	10.47	522
42	2.86409	0.1705	0.0014	257.4	429.3	40.178	6.22	10.46	536
44	3.00344	0.1789	0.0014	270.0	450.2	40.665	6.23	10.46	548
46	3.14260	0.1874	0.0013	282.6	471.1	41.129	6.24	10.46	561
48	3.28161	0.1958	0.0013	295.1	492.0	41.575	6.25	10.47	572
50	3.42047	0.2042	0.0012	307.8	513.0	42.002	6.28	10.48	584
52	3.55922	0.2126	0.0012	320.4	534.0	42.414	6.30	10.50	595
54	3.69786	0.2210	0.0011	333.1	555.0	42.811	6.34	10.53	606
56	3.83641	0.2294	0.0011	345.9	576.1	43.194	6.38	10.57	616
58	3.97487	0.2378	0.0010	358.8	597.3	43.566	6.44	10.62	626
60	4.11327	0.2461	0.0010	371.8	618.6	43.927	6.50	10.67	636
65	4.45897	0.2670	0.0009	404.8	672.4	44.788	6.69	10.86	658
70	4.80437	0.2878	0.0009	439.0	727.3	45.601	6.94	11.10	679
75	5.14951	0.3086	0.0008	474.5	783.5	46.377	7.24	11.40	697
80	5.49446	0.3294	0.0008	511.3	841.3	47.124	7.60	11.75	714
85	5.83924	0.3501	0.0007	550.7	901.0	47.847	7.99	12.14	729
90	6.18390	0.3709	0.0007	591.7	962.8	48.553	8.41	12.55	744
95	6.52845	0.3916	0.0006	634.9	1026.6	49.243	8.84	12.98	758
100	6.87291	0.4123	0.0006	680.2	1092.6	49.920	9.27	13.41	772
120	8.25003	0.4951	0.0005	882.0	1377.0	52.506	10.83	14.96	827
140	9.62644	0.5777	0.0004	1109.6	1687.2	54.895	11.82	15.95	883
160	11.00241	0.6604	0.0004	1350.8	2011.0	57.056	12.21	16.34	940
180	12.37810	0.7430	0.0003	1595.4	2338.1	58.983	12.19	16.31	997
200	13.75359	0.8255	0.0003	1837.0	2662.2	60.690	11.94	16.07	1054
220	15.12893	0.9081	0.0003	2072.8	2980.5	62.207	11.63	15.76	1109
240	16.50418	0.9906	0.0003	2302.3	3292.6	63.565	11.33	15.45	1163
260	17.87935	1.0732	0.0002	2526.3	3599.0	64.791	11.07	15.20	1214
280	19.25446	1.1557	0.0002	2745.6	3900.9	65.910	10.87	15.00	1263
300	20.62801	1.2381	0.0002	2961.5	4199.2	66.940	10.72	14.85	1309
350	24.06523	1.4444	0.0002	3491.5	4935.4	69.208	10.51	14.63	1418
400	27.50233	1.6506	0.0002	4014.5	5664.6	71.157	10.42	14.55	1518
450	30.93934	1.8568	0.0001	4534.7	6391.1	72.870	10.40	14.53	1610
500	34.37630	2.0631	0.0001	5055.1	7117.7	74.399	10.40	14.52	1697
550	37.81322	2.2693	0.0001	5575.0	7843.8	75.784	10.41	14.53	1780
600	41.25012	2.4755	0.0001	6096.0	8571.0	77.048	10.42	14.55	1859
700	48.12386	2.8879	0.0001	7140.9	10028.4	79.295	10.48	14.61	2006
800	54.99756	3.3004	0.0001	8193.4	11493.3	81.250	10.57	14.70	2142
900	61.87123	3.7128	0.0001	9256.7	12969.0	82.987	10.70	14.82	2268
1000	68.74489	4.1252	0.0001	10333.9	14458.6	84.559	10.86	14.98	2386
1200	82.49218	4.9501	0.0001	12544.2	17493.7	87.312	11.24	15.37	2601
1400	96.23973	5.7749	0.0000	14837.3	20611.7	89.720	11.69	15.81	2795
1600	109.99056	6.5997	0.0000	17222.2	23821.7	91.840	12.17	16.30	2973
1800	123.76268	7.4246	0.0000	19726.6	27152.3	93.763	12.87	17.02	3134
2000	137.62628	8.2494	0.0000	22446.6	30704.2	95.699	14.31	18.56	3271
2500	174.65337	10.3115	0.0000	32383.6	42862.8	103.412	28.28	34.03	3521
3000	227.24916	12.3736	0.0000	57839.5	71474.4	117.065	74.57	39.35	3845

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.06 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.821	77.0455	620.4	0.25644	89.8314	0.01028	72.84	255.14	0.00053	1.25168	2.2350
14	76.8869	614.7	0.25486	87.4981	0.01056	74.65	248.65	0.00054	1.25112	2.1620
15	76.0618	606.0	0.24296	78.8559	0.01153	83.11	218.92	0.00056	1.24822	1.8401
16	75.1582	608.7	0.23173	72.9692	0.01221	88.95	194.90	0.00057	1.24505	1.6289
17	74.2067	608.1	0.22269	67.3243	0.01301	92.77	175.47	0.00057	1.24172	1.4968
18	73.2096	605.0	0.21517	61.9320	0.01391	95.46	159.47	0.00056	1.23823	1.4062
* 18.521	72.5645	604.7	0.21108	59.1157	0.01442	96.52	150.87	0.00055	1.23598	1.3628
* 18.621	0.8384	178.9	0.06666	0.0556	0.06446	15.43	10.26	0.00574	1.00253	0.7667
19	0.8185	183.1	0.06678	0.0558	0.06246	15.58	10.47	0.00599	1.00247	0.7681
20	0.7708	194.0	0.06699	0.0564	0.05790	16.11	11.01	0.00670	1.00232	0.7673
21	0.7288	205.0	0.06709	0.0569	0.05410	16.84	11.55	0.00750	1.00220	0.7600
22	0.6916	215.9	0.06714	0.0573	0.05086	17.59	12.08	0.00834	1.00209	0.7539
23	0.6582	226.9	0.06715	0.0576	0.04804	18.35	12.60	0.00921	1.00198	0.7486
24	0.6282	237.8	0.06714	0.0578	0.04556	19.11	13.12	0.01011	1.00189	0.7438
25	0.6009	248.6	0.06713	0.0581	0.04335	19.88	13.64	0.01105	1.00181	0.7394
26	0.5759	259.5	0.06711	0.0582	0.04137	20.65	14.15	0.01202	1.00174	0.7355
27	0.5531	270.3	0.06709	0.0584	0.03958	21.41	14.65	0.01303	1.00167	0.7318
28	0.5321	281.0	0.06707	0.0586	0.03794	22.18	15.15	0.01407	1.00160	0.7283
29	0.5127	291.7	0.06705	0.0587	0.03645	22.94	15.64	0.01515	1.00155	0.7249
30	0.4947	302.4	0.06703	0.0588	0.03508	23.71	16.13	0.01627	1.00149	0.7215
31	0.4779	313.1	0.06701	0.0589	0.03381	24.40	16.61	0.01737	1.00144	0.7204
32	0.4623	323.7	0.06700	0.0590	0.03264	25.10	17.08	0.01850	1.00139	0.7193
33	0.4477	334.3	0.06698	0.0591	0.03155	25.79	17.56	0.01966	1.00135	0.7181
34	0.4340	344.9	0.06697	0.0591	0.03053	26.49	18.02	0.02086	1.00131	0.7167
35	0.4212	355.5	0.06695	0.0592	0.02958	27.19	18.49	0.02209	1.00127	0.7152
36	0.4091	366.1	0.06693	0.0593	0.02870	27.89	18.94	0.02336	1.00123	0.7137
37	0.3977	376.7	0.06691	0.0593	0.02786	28.58	19.40	0.02466	1.00120	0.7122
38	0.3869	387.3	0.06689	0.0594	0.02707	29.28	19.85	0.02599	1.00117	0.7106
39	0.3767	397.9	0.06686	0.0594	0.02633	29.98	20.29	0.02735	1.00114	0.7090
40	0.3670	408.5	0.06683	0.0594	0.02563	30.68	20.73	0.02874	1.00111	0.7074
42	0.3492	429.7	0.06674	0.0595	0.02434	32.07	21.60	0.03161	1.00105	0.7044
44	0.3330	451.1	0.06663	0.0596	0.02318	33.47	22.45	0.03460	1.00100	0.7015
46	0.3182	472.6	0.06648	0.0596	0.02213	34.86	23.29	0.03771	1.00096	0.6988
48	0.3047	494.4	0.06628	0.0597	0.02117	36.25	24.12	0.04092	1.00092	0.6962
50	0.2924	516.5	0.06602	0.0597	0.02029	37.64	24.93	0.04423	1.00088	0.6940
52	0.2810	539.0	0.06571	0.0597	0.01948	39.03	25.72	0.04762	1.00085	0.6921
54	0.2704	562.0	0.06532	0.0598	0.01874	40.43	26.51	0.05110	1.00081	0.6906
56	0.2607	585.6	0.06486	0.0598	0.01805	41.82	27.28	0.05465	1.00079	0.6895
58	0.2516	609.7	0.06433	0.0598	0.01741	43.22	28.05	0.05825	1.00076	0.6890
60	0.2431	634.6	0.06372	0.0598	0.01682	44.68	28.80	0.06198	1.00073	0.6880
65	0.2243	700.5	0.06187	0.0599	0.01550	48.54	30.63	0.07177	1.00068	0.6851
70	0.2081	772.3	0.05962	0.0599	0.01437	52.41	32.41	0.08166	1.00063	0.6865
75	0.1942	850.7	0.05709	0.0599	0.01340	56.26	34.14	0.09150	1.00059	0.6916
80	0.1820	936.0	0.05443	0.0599	0.01255	60.17	35.82	0.10130	1.00055	0.6994
85	0.1713	1028.0	0.05175	0.0600	0.01181	65.12	37.45	0.11279	1.00052	0.6980
90	0.1617	1126.3	0.04916	0.0600	0.01114	70.07	39.05	0.12428	1.00049	0.6995
95	0.1532	1230.2	0.04675	0.0600	0.01055	75.03	40.61	0.13582	1.00046	0.7026
100	0.1455	1338.5	0.04456	0.0600	0.01002	89.52	45.74	0.16511	1.00044	0.6854
120	0.1212	1793.3	0.03815	0.0600	0.00834	117.11	54.08	0.23246	1.00037	0.6909
140	0.1039	2231.7	0.03494	0.0600	0.00715	136.13	59.20	0.29577	1.00031	0.6936
160	0.0909	2613.7	0.03381	0.0600	0.00625	148.29	63.00	0.35944	1.00027	0.6942
180	0.0808	2936.2	0.03388	0.0600	0.00556	155.64	66.17	0.42513	1.00024	0.6936
200	0.0727	3214.5	0.03456	0.0600	0.00500	160.19	69.01	0.49348	1.00022	0.6924
220	0.0661	3467.1	0.03548	0.0600	0.00455	163.40	71.66	0.56473	1.00020	0.6911
240	0.0606	3709.7	0.03643	0.0600	0.00417	166.21	74.18	0.63899	1.00018	0.6898
260	0.0559	3952.5	0.03727	0.0600	0.00385	169.13	76.63	0.71624	1.00017	0.6887
280	0.0519	4200.1	0.03796	0.0600	0.00357	172.35	79.04	0.79657	1.00016	0.6878
300	0.0485	4454.5	0.03849	0.0600	0.00333	175.90	81.40	0.87989	1.00015	0.6870
350	0.0416	5122.7	0.03926	0.0600	0.00286	186.11	87.22	1.10185	1.00013	0.6858
400	0.0364	5821.2	0.03957	0.0600	0.00250	197.42	92.96	1.34342	1.00011	0.6851
450	0.0323	6539.7	0.03965	0.0600	0.00222	209.31	98.63	1.60452	1.00010	0.6847
500	0.0291	7263.7	0.03967	0.0600	0.00200	221.25	104.25	1.88513	1.00009	0.6844
550	0.0264	7994.7	0.03963	0.0600	0.00182	233.26	109.80	2.18488	1.00008	0.6841
600	0.0242	8731.1	0.03957	0.0600	0.00167	245.27	115.30	2.50338	1.00007	0.6839
700	0.0208	10225.3	0.03936	0.0600	0.00143	269.35	126.09	3.19503	1.00006	0.6837
800	0.0182	11759.0	0.03902	0.0600	0.00125	293.72	136.64	3.95699	1.00005	0.6837
900	0.0162	13343.0	0.03855	0.0600	0.00111	318.54	146.93	4.78632	1.00005	0.6838
1000	0.0145	14984.6	0.03799	0.0600	0.00100	440.56	156.99	7.27704	1.00004	0.5339
1200	0.0121	18442.9	0.03669	0.0600	0.00083	511.15	176.46	9.87786	1.00004	0.5305
1400	0.0104	22138.5	0.03529	0.0600	0.00071	583.83	195.16	12.79276	1.00003	0.5285
1600	0.0091	26078.9	0.03389	0.0600	0.00062	660.41	213.19	16.04431	1.00003	0.5261
1800	0.0081	30636.3	0.03206	0.0600	0.00056	756.37	230.65	19.79668	1.00002	0.5191
2000	0.0073	37079.7	0.02885	0.0599	0.00050	920.05	247.66	24.56292	1.00002	0.4996
2500	0.0057	83721.9	0.01482	0.0590	0.00041	2463.29	290.23	45.50813	1.00002	0.4010
3000	0.0044	243245.4	0.00610	0.0544	0.00037	8196.95	341.07	75.05428	1.00001	0.3718

* TWO-PHASE BOUNDARY

0.08 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.828	0.01298	1.1672	0.9241	-308.9	-307.9	4.968	4.68	6.38	1262
14	0.01300	1.1411	0.9241	-307.8	-306.7	5.050	4.71	6.49	1253
15	0.01314	1.0388	0.9097	-301.1	-300.0	5.511	4.92	6.98	1214
16	0.01330	0.9729	0.8919	-293.9	-292.8	5.977	5.12	7.43	1189
17	0.01347	0.9092	0.8768	-286.2	-285.1	6.444	5.30	7.91	1165
18	0.01366	0.8480	0.8623	-278.0	-276.9	6.911	5.47	8.41	1142
19	0.01385	0.7833	0.8470	-269.4	-268.3	7.379	5.62	8.96	1117
* 19.495	0.01396	0.7643	0.8384	-264.9	-263.8	7.614	5.69	9.18	1111
* 19.496	0.92223	0.0671	0.0047	110.9	184.7	30.623	6.46	11.84	351
20	0.95189	0.0698	0.0045	114.5	190.7	30.923	6.41	11.68	356
21	1.00981	0.0750	0.0042	121.4	202.2	31.487	6.35	11.44	367
22	1.06682	0.0800	0.0040	128.2	213.6	32.015	6.32	11.27	378
23	1.12311	0.0849	0.0038	134.9	224.8	32.513	6.29	11.14	388
24	1.17885	0.0897	0.0036	141.5	235.9	32.985	6.27	11.04	397
25	1.23413	0.0944	0.0034	148.1	246.9	33.434	6.26	10.96	406
26	1.28903	0.0990	0.0033	154.7	257.8	33.863	6.25	10.89	415
27	1.34361	0.1036	0.0031	161.2	268.7	34.273	6.25	10.84	424
28	1.39792	0.1082	0.0030	167.6	279.5	34.666	6.24	10.79	433
29	1.45199	0.1127	0.0029	174.1	290.2	35.044	6.24	10.75	441
30	1.50585	0.1172	0.0028	180.5	301.0	35.408	6.23	10.72	449
31	1.55953	0.1217	0.0027	186.9	311.7	35.759	6.23	10.68	457
32	1.61305	0.1261	0.0026	193.3	322.3	36.098	6.23	10.66	465
33	1.66642	0.1305	0.0025	199.7	333.0	36.425	6.22	10.63	472
34	1.71967	0.1349	0.0024	206.0	343.6	36.742	6.22	10.61	480
35	1.77280	0.1393	0.0024	212.4	354.2	37.050	6.22	10.59	487
36	1.82582	0.1437	0.0023	218.7	364.8	37.348	6.22	10.57	494
37	1.87875	0.1480	0.0022	225.1	375.4	37.637	6.22	10.56	501
38	1.93160	0.1523	0.0022	231.4	385.9	37.919	6.22	10.54	508
39	1.98437	0.1567	0.0021	237.7	396.4	38.192	6.22	10.53	515
40	2.03707	0.1610	0.0020	244.0	407.0	38.459	6.22	10.52	522
42	2.14228	0.1695	0.0019	256.6	428.0	38.972	6.22	10.51	535
44	2.24726	0.1781	0.0018	269.2	449.0	39.460	6.23	10.50	548
46	2.35206	0.1866	0.0018	281.8	470.0	39.927	6.24	10.49	560
48	2.45670	0.1951	0.0017	294.5	491.0	40.374	6.26	10.50	572
50	2.56120	0.2036	0.0016	307.1	512.0	40.803	6.28	10.51	584
52	2.66558	0.2120	0.0016	319.8	533.0	41.215	6.31	10.53	595
54	2.76985	0.2205	0.0015	332.5	554.1	41.613	6.34	10.56	606
56	2.87403	0.2289	0.0014	345.4	575.3	41.998	6.39	10.59	616
58	2.97813	0.2373	0.0014	358.3	596.5	42.370	6.44	10.64	626
60	3.08215	0.2457	0.0013	371.3	617.8	42.732	6.50	10.69	636
65	3.34194	0.2666	0.0012	404.4	671.7	43.594	6.69	10.87	658
70	3.60140	0.2875	0.0011	438.6	726.7	44.408	6.94	11.11	679
75	3.86062	0.3084	0.0011	474.1	783.0	45.185	7.24	11.41	697
80	4.11964	0.3292	0.0010	511.3	840.9	45.932	7.60	11.76	714
85	4.37850	0.3500	0.0009	550.3	900.6	46.657	7.99	12.15	729
90	4.63723	0.3708	0.0009	591.4	962.4	47.363	8.41	12.56	744
95	4.89585	0.3915	0.0008	634.6	1026.2	48.053	8.84	12.99	758
100	5.15438	0.4123	0.0008	679.9	1092.3	48.730	9.27	13.42	772
120	6.18780	0.4951	0.0007	881.8	1376.8	51.318	10.83	14.97	827
140	7.22050	0.5779	0.0006	1109.4	1687.0	53.707	11.82	15.95	883
160	8.25276	0.6605	0.0005	1350.7	2010.9	55.869	12.21	16.34	940
180	9.28474	0.7432	0.0004	1595.3	2338.0	57.796	12.19	16.32	997
200	10.31652	0.8257	0.0004	1836.8	2662.2	59.502	11.95	16.07	1054
220	11.34817	0.9083	0.0004	2072.7	2980.5	61.020	11.63	15.76	1109
240	12.37971	0.9909	0.0003	2302.2	3292.6	62.378	11.33	15.46	1163
260	13.41117	1.0734	0.0003	2526.2	3599.1	63.605	11.07	15.20	1214
280	14.44257	1.1560	0.0003	2745.6	3901.0	64.724	10.87	15.00	1263
300	15.47280	1.2384	0.0003	2961.5	4199.3	65.753	10.72	14.85	1310
350	18.05083	1.4447	0.0002	3491.4	4935.5	68.022	10.51	14.63	1418
400	20.62872	1.6509	0.0002	4014.5	5664.8	69.971	10.42	14.55	1518
450	23.20653	1.8572	0.0002	4534.7	6391.2	71.683	10.41	14.53	1610
500	25.78429	2.0634	0.0002	5055.1	7117.8	73.213	10.40	14.52	1698
550	28.36201	2.2696	0.0001	5575.0	7844.0	74.597	10.41	14.53	1780
600	30.93970	2.4759	0.0001	6096.0	8571.2	75.861	10.42	14.55	1859
700	36.09504	2.8883	0.0001	7140.9	10028.5	78.109	10.48	14.61	2006
800	41.25034	3.3007	0.0001	8193.4	11493.4	80.064	10.57	14.70	2142
900	46.40561	3.7131	0.0001	9256.7	12969.2	81.800	10.70	14.82	2268
1000	51.56086	4.1256	0.0001	10333.9	14458.8	83.372	10.86	14.98	2386
1200	61.87135	4.9504	0.0001	12544.2	17493.9	86.126	11.24	15.37	2601
1400	72.18199	5.7753	0.0001	14837.2	20611.8	88.533	11.69	15.81	2795
1600	82.49476	6.6001	0.0001	17221.2	23820.8	90.652	12.16	16.29	2973
1800	92.82135	7.4249	0.0000	19719.8	27145.5	92.572	12.61	16.96	3135
2000	103.20737	8.2498	0.0000	22415.9	30672.5	94.495	14.11	18.34	3275
2500	130.71063	10.3119	0.0000	31910.6	42367.5	102.009	26.33	31.85	3531
3000	168.34401	12.3739	0.0000	54917.2	68384.7	114.736	66.97	80.08	3841

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.08 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.828	77.0570	621.0	0.25641	89.9428	0.01027	72.92	255.26	0.00053	1.25172	2.2336
14	76.9043	615.9	0.25489	87.7567	0.01053	74.67	249.01	0.00054	1.25118	2.1630
15	76.0803	606.6	0.24313	79.0342	0.01151	83.13	219.23	0.00056	1.24829	1.8415
16	75.1781	609.4	0.23189	73.1378	0.01219	88.98	195.17	0.00057	1.24512	1.6299
17	74.2283	608.8	0.22283	67.4898	0.01299	92.81	175.71	0.00057	1.24179	1.4974
18	73.2332	605.8	0.21531	62.1031	0.01388	95.51	159.70	0.00056	1.23831	1.4065
19	72.1879	598.0	0.20884	56.5441	0.01498	97.04	146.25	0.00054	1.23466	1.3500
* 19.496	71.6402	599.5	0.20583	54.7548	0.01531	97.43	140.27	0.00053	1.23276	1.3216
* 19.495	1.0843	184.6	0.06665	0.0727	0.06416	16.11	10.80	0.00452	1.00327	0.7938
20	1.0505	190.1	0.06684	0.0733	0.06144	16.41	11.07	0.00481	1.00317	0.7879
21	0.9903	201.2	0.06708	0.0742	0.05686	17.10	11.60	0.00543	1.00299	0.7764
22	0.9374	212.4	0.06720	0.0750	0.05307	17.81	12.13	0.00607	1.00283	0.7675
23	0.8904	223.5	0.06726	0.0756	0.04986	18.55	12.65	0.00673	1.00269	0.7601
24	0.8483	234.6	0.06727	0.0761	0.04707	19.30	13.17	0.00742	1.00256	0.7538
25	0.8103	245.6	0.06726	0.0765	0.04463	20.05	13.69	0.00813	1.00244	0.7481
26	0.7758	256.6	0.06725	0.0768	0.04246	20.80	14.19	0.00886	1.00234	0.7433
27	0.7443	267.5	0.06722	0.0771	0.04051	21.56	14.69	0.00962	1.00224	0.7388
28	0.7153	278.4	0.06720	0.0774	0.03876	22.31	15.19	0.01041	1.00216	0.7347
29	0.6887	289.3	0.06718	0.0776	0.03716	23.07	15.68	0.01122	1.00208	0.7307
30	0.6641	300.1	0.06715	0.0778	0.03570	23.83	16.17	0.01206	1.00200	0.7270
31	0.6412	310.9	0.06713	0.0780	0.03436	24.52	16.65	0.01289	1.00193	0.7253
32	0.6199	321.7	0.06711	0.0782	0.03313	25.21	17.12	0.01374	1.00187	0.7237
33	0.6001	332.4	0.06709	0.0783	0.03199	25.90	17.59	0.01462	1.00181	0.7222
34	0.5815	343.1	0.06707	0.0785	0.03093	26.60	18.06	0.01552	1.00175	0.7204
35	0.5641	353.7	0.06705	0.0786	0.02994	27.29	18.52	0.01645	1.00170	0.7186
36	0.5477	364.4	0.06703	0.0787	0.02901	27.99	18.98	0.01740	1.00165	0.7169
37	0.5323	375.0	0.06701	0.0788	0.02815	28.69	19.43	0.01838	1.00160	0.7151
38	0.5177	385.7	0.06698	0.0789	0.02734	29.38	19.88	0.01938	1.00156	0.7133
39	0.5039	396.3	0.06695	0.0789	0.02657	30.08	20.32	0.02040	1.00152	0.7115
40	0.4909	407.0	0.06692	0.0790	0.02585	30.78	20.76	0.02145	1.00148	0.7098
42	0.4668	428.4	0.06683	0.0791	0.02453	32.17	21.63	0.02361	1.00141	0.7065
44	0.4450	449.8	0.06671	0.0792	0.02334	33.55	22.48	0.02586	1.00134	0.7033
46	0.4252	471.5	0.06656	0.0793	0.02226	34.94	23.32	0.02819	1.00128	0.7004
48	0.4070	493.3	0.06635	0.0794	0.02128	36.33	24.14	0.03060	1.00123	0.6977
50	0.3904	515.5	0.06610	0.0795	0.02039	37.72	24.95	0.03309	1.00118	0.6952
52	0.3752	538.1	0.06578	0.0795	0.01957	39.11	25.75	0.03564	1.00113	0.6932
54	0.3610	561.1	0.06539	0.0796	0.01881	40.50	26.53	0.03826	1.00109	0.6916
56	0.3479	584.7	0.06493	0.0796	0.01812	41.89	27.31	0.04092	1.00105	0.6904
58	0.3358	608.9	0.06439	0.0797	0.01747	43.29	28.07	0.04362	1.00101	0.6898
60	0.3244	633.9	0.06378	0.0797	0.01687	44.74	28.82	0.04643	1.00098	0.6887
65	0.2992	699.8	0.06192	0.0798	0.01554	48.60	30.65	0.05378	1.00090	0.6857
70	0.2777	771.7	0.05967	0.0798	0.01440	52.47	32.43	0.06121	1.00084	0.6869
75	0.2590	850.1	0.05714	0.0799	0.01342	56.32	34.16	0.06859	1.00078	0.6921
80	0.2427	935.4	0.05446	0.0799	0.01257	60.22	35.83	0.07595	1.00073	0.6997
85	0.2284	1027.5	0.05178	0.0799	0.01182	65.17	37.47	0.08457	1.00069	0.6983
90	0.2156	1125.9	0.04920	0.0800	0.01116	70.12	39.06	0.09320	1.00065	0.6997
95	0.2043	1229.7	0.04678	0.0800	0.01056	75.07	40.62	0.10186	1.00062	0.7028
100	0.1940	1338.1	0.04459	0.0800	0.01003	89.53	45.74	0.12378	1.00058	0.6856
120	0.1616	1793.1	0.03817	0.0800	0.00835	117.11	54.08	0.17430	1.00049	0.6911
140	0.1385	2231.6	0.03495	0.0800	0.00715	136.13	59.20	0.22180	1.00042	0.6937
160	0.1212	2613.7	0.03382	0.0800	0.00625	148.29	63.00	0.26957	1.00037	0.6943
180	0.1077	2936.4	0.03389	0.0800	0.00556	155.65	66.17	0.31885	1.00032	0.6937
200	0.0969	3214.7	0.03456	0.0800	0.00500	160.19	69.01	0.37014	1.00029	0.6925
220	0.0881	3467.4	0.03549	0.0800	0.00455	163.40	71.66	0.42359	1.00027	0.6911
240	0.0808	3710.0	0.03644	0.0800	0.00417	166.22	74.19	0.47929	1.00024	0.6898
260	0.0746	3952.9	0.03728	0.0800	0.00385	169.14	76.64	0.53724	1.00022	0.6887
280	0.0692	4200.6	0.03796	0.0800	0.00357	172.36	79.04	0.59750	1.00021	0.6878
300	0.0646	4454.9	0.03850	0.0800	0.00333	175.90	81.40	0.66000	1.00019	0.6870
350	0.0554	5123.2	0.03927	0.0800	0.00286	186.12	87.23	0.82650	1.00017	0.6858
400	0.0485	5821.7	0.03958	0.0800	0.00250	197.43	92.97	1.00770	1.00015	0.6851
450	0.0431	6540.3	0.03965	0.0800	0.00222	209.32	98.64	1.20356	1.00013	0.6847
500	0.0388	7264.3	0.03967	0.0800	0.00200	221.26	104.26	1.41405	1.00012	0.6844
550	0.0353	7995.3	0.03964	0.0800	0.00182	233.28	109.81	1.63888	1.00011	0.6841
600	0.0323	8731.7	0.03957	0.0800	0.00167	245.28	115.31	1.87779	1.00010	0.6839
700	0.0277	10225.9	0.03936	0.0800	0.00143	269.37	126.10	2.39660	1.00008	0.6837
800	0.0242	11759.6	0.03902	0.0800	0.00125	293.75	136.65	2.96814	1.00007	0.6837
900	0.0215	13343.6	0.03855	0.0800	0.00111	318.57	146.94	3.59021	1.00006	0.6837
1000	0.0194	14985.3	0.03799	0.0800	0.00100	440.56	157.00	5.45800	1.00006	0.5339
1200	0.0162	18443.5	0.03669	0.0800	0.00083	511.15	176.47	7.40863	1.00005	0.5306
1400	0.0139	22137.4	0.03530	0.0800	0.00071	583.76	195.18	9.59445	1.00004	0.5286
1600	0.0121	25961.8	0.03392	0.0800	0.00062	659.70	213.21	12.02892	1.00004	0.5264
1800	0.0108	30532.2	0.03219	0.0800	0.00056	752.28	230.67	14.81827	1.00003	0.5202
2000	0.0097	36650.8	0.02926	0.0799	0.00050	903.47	247.67	18.30263	1.00003	0.5028
2500	0.0077	78519.0	0.01589	0.0789	0.00041	2266.17	289.97	33.48168	1.00002	0.4075
3000	0.0059	220733.0	0.00670	0.0735	0.00036	7352.97	339.76	55.64640	1.00002	0.3700

* TWO-PHASE BOUNDARY

0.10 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.834	0.01298	1.1685	0.9244	-308.9	-307.6	4.968	4.68	6.38	1262
14	0.01300	1.1442	0.9243	-307.8	-306.5	5.047	4.71	6.48	1254
15	0.01314	1.0409	0.9104	-301.1	-299.8	5.509	4.92	6.98	1216
16	0.01330	0.9748	0.8925	-293.9	-292.6	5.974	5.12	7.43	1190
17	0.01347	0.9112	0.8774	-286.3	-284.9	6.440	5.30	7.91	1166
18	0.01365	0.8501	0.8630	-278.1	-276.7	6.907	5.47	8.41	1143
19	0.01385	0.7853	0.8476	-269.5	-268.1	7.375	5.62	8.95	1119
20	0.01406	0.7221	0.8304	-260.3	-258.9	7.848	5.75	9.53	1094
* 20.224	0.01412	0.7122	0.8261	-258.1	-256.7	7.956	5.77	9.64	1090
* 20.224	0.75454	0.0675	0.0057	113.4	188.9	29.994	6.50	12.14	355
21	0.79178	0.0717	0.0054	119.0	198.2	30.445	6.43	11.86	364
22	0.83883	0.0770	0.0051	126.0	209.9	30.991	6.37	11.60	375
23	0.88507	0.0822	0.0048	132.9	221.4	31.502	6.33	11.41	385
24	0.93068	0.0872	0.0046	139.7	232.8	31.985	6.30	11.27	395
25	0.97579	0.0921	0.0043	146.4	244.0	32.442	6.29	11.16	404
26	1.02048	0.0969	0.0041	153.0	255.1	32.878	6.27	11.07	413
27	1.06484	0.1016	0.0040	159.6	266.1	33.294	6.26	10.99	422
28	1.10890	0.1063	0.0038	166.2	277.1	33.693	6.26	10.93	431
29	1.15271	0.1110	0.0036	172.7	288.0	34.075	6.25	10.87	439
30	1.19630	0.1156	0.0035	179.2	298.8	34.443	6.25	10.83	448
31	1.23970	0.1201	0.0034	185.7	309.6	34.798	6.24	10.79	456
32	1.28294	0.1246	0.0033	192.1	320.4	35.140	6.24	10.75	463
33	1.32603	0.1291	0.0032	198.5	331.1	35.470	6.23	10.72	471
34	1.36898	0.1336	0.0031	204.9	341.8	35.789	6.23	10.69	479
35	1.41181	0.1380	0.0030	211.3	352.5	36.099	6.23	10.66	486
36	1.45454	0.1425	0.0029	217.7	363.2	36.399	6.23	10.64	493
37	1.49717	0.1469	0.0028	224.1	373.8	36.690	6.22	10.62	501
38	1.53972	0.1512	0.0027	230.4	384.4	36.973	6.22	10.60	508
39	1.58218	0.1556	0.0026	236.8	395.0	37.248	6.22	10.59	514
40	1.62458	0.1600	0.0026	243.1	405.6	37.516	6.22	10.57	521
42	1.70918	0.1686	0.0024	255.8	426.7	38.032	6.23	10.55	535
44	1.79355	0.1772	0.0023	268.4	447.8	38.522	6.23	10.54	547
46	1.87774	0.1858	0.0022	281.1	468.9	38.991	6.25	10.53	560
48	1.96176	0.1944	0.0021	293.8	489.9	39.439	6.26	10.53	572
50	2.04564	0.2029	0.0020	306.4	511.0	39.869	6.28	10.54	583
52	2.12940	0.2114	0.0020	319.2	532.1	40.283	6.31	10.56	595
54	2.21305	0.2199	0.0019	331.9	553.2	40.682	6.35	10.58	606
56	2.29661	0.2284	0.0018	344.8	574.4	41.067	6.39	10.62	616
58	2.38009	0.2368	0.0017	357.7	595.7	41.440	6.44	10.66	626
60	2.46349	0.2452	0.0017	370.7	617.1	41.803	6.50	10.71	636
65	2.67172	0.2663	0.0016	403.9	671.1	42.667	6.69	10.89	658
70	2.87963	0.2872	0.0014	438.1	726.1	43.482	6.94	11.13	679
75	3.08729	0.3081	0.0013	473.7	782.4	44.259	7.25	11.42	697
80	3.29475	0.3290	0.0013	510.9	840.4	45.007	7.60	11.77	714
85	3.50206	0.3498	0.0012	550.0	900.2	45.732	7.99	12.15	729
90	3.70923	0.3706	0.0011	591.1	962.0	46.439	8.41	12.57	744
95	3.91630	0.3914	0.0011	634.3	1025.9	47.130	8.84	13.00	759
100	4.12327	0.4122	0.0010	679.6	1092.0	47.807	9.27	13.43	773
120	4.95046	0.4952	0.0008	881.5	1376.6	50.396	10.83	14.97	827
140	5.77694	0.5780	0.0007	1109.2	1686.9	52.785	11.82	15.96	883
160	6.60298	0.6607	0.0006	1350.5	2010.8	54.947	12.21	16.35	940
180	7.42873	0.7433	0.0006	1595.1	2338.0	56.875	12.19	16.32	998
200	8.25429	0.8260	0.0005	1836.7	2662.1	58.582	11.95	16.08	1054
220	9.07970	0.9086	0.0005	2072.6	2980.5	60.099	11.63	15.76	1110
240	9.90502	0.9911	0.0004	2302.1	3292.6	61.457	11.33	15.46	1163
260	10.73026	1.0737	0.0004	2526.1	3599.1	62.684	11.07	15.20	1214
280	11.55544	1.1562	0.0004	2745.5	3901.0	63.803	10.87	15.00	1263
300	12.37968	1.2387	0.0003	2961.4	4199.4	64.832	10.72	14.85	1310
350	14.44218	1.4450	0.0003	3491.4	4935.6	67.101	10.51	14.63	1419
400	16.50455	1.6512	0.0003	4014.4	5664.9	69.050	10.43	14.55	1518
450	18.56684	1.8575	0.0002	4534.7	6391.4	70.763	10.41	14.53	1611
500	20.62908	2.0637	0.0002	5055.0	7117.9	72.292	10.40	14.52	1698
550	22.69128	2.2700	0.0002	5575.0	7844.1	73.677	10.41	14.53	1780
600	24.75345	2.4762	0.0002	6096.0	8571.3	74.941	10.42	14.55	1859
700	28.87775	2.8886	0.0001	7140.9	10028.7	77.189	10.48	14.61	2006
800	33.00201	3.3011	0.0001	8193.4	11493.6	79.143	10.57	14.70	2142
900	37.12624	3.7135	0.0001	9256.7	12969.3	80.880	10.70	14.82	2268
1000	41.25045	4.1259	0.0001	10333.9	14459.0	82.452	10.86	14.98	2386
1200	49.49885	4.9508	0.0001	12544.2	17494.0	85.206	11.24	15.37	2601
1400	57.74736	5.7756	0.0001	14837.2	20611.9	87.613	11.68	15.81	2795
1600	65.99738	6.6004	0.0001	17220.5	23820.2	89.732	12.15	16.28	2974
1800	74.25729	7.4253	0.0001	19715.2	27140.9	91.649	12.78	16.92	3136
2000	82.55973	8.2501	0.0001	22395.0	30651.0	93.563	13.97	18.19	3277
2500	104.41653	10.3122	0.0000	31587.8	42029.5	100.941	24.99	30.36	3538
3000	133.52968	12.3743	0.0000	52916.7	66269.7	113.034	61.69	73.70	3839

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.10 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.834	77.0685	621.7	0.25639	90.0543	0.01026	73.01	255.39	0.00053	1.25176	2.2323
14	76.9216	617.1	0.25492	88.0151	0.01050	74.68	249.37	0.00054	1.25124	2.1639
15	76.0988	607.3	0.24330	79.2124	0.01149	83.15	219.54	0.00056	1.24835	1.8428
16	75.1978	610.0	0.23204	73.3062	0.01218	89.01	195.44	0.00057	1.24519	1.6308
17	74.2500	609.5	0.22298	67.6550	0.01297	92.85	175.96	0.00057	1.24187	1.4981
18	73.2568	606.6	0.21545	62.2739	0.01386	95.55	159.92	0.00056	1.23840	1.4069
19	72.2131	598.8	0.20897	56.7088	0.01495	97.09	146.46	0.00054	1.23475	1.3501
20	71.1039	588.9	0.20322	51.3422	0.01617	98.44	134.88	0.00052	1.23089	1.3051
* 20.224	70.8360	588.4	0.20198	50.4463	0.01638	98.84	132.43	0.00052	1.22996	1.2911
* 20.224	1.3253	188.9	0.06666	0.0894	0.06427	16.89	11.25	0.00378	1.00400	0.8085
21	1.2630	197.5	0.06698	0.0906	0.06004	17.38	11.66	0.00418	1.00381	0.7956
22	1.1921	208.8	0.06722	0.0918	0.05556	18.06	12.19	0.00470	1.00360	0.7829
23	1.1299	220.1	0.06733	0.0929	0.05186	18.76	12.71	0.00524	1.00341	0.7729
24	1.0745	231.3	0.06738	0.0937	0.04872	19.49	13.22	0.00579	1.00324	0.7646
25	1.0248	242.5	0.06739	0.0944	0.04600	20.23	13.73	0.00637	1.00309	0.7576
26	0.9799	253.7	0.06738	0.0950	0.04362	20.97	14.24	0.00696	1.00296	0.7516
27	0.9391	264.8	0.06736	0.0955	0.04151	21.71	14.74	0.00757	1.00283	0.7463
28	0.9018	275.9	0.06733	0.0959	0.03961	22.46	15.23	0.00820	1.00272	0.7414
29	0.8675	286.9	0.06730	0.0963	0.03791	23.20	15.72	0.00885	1.00262	0.7369
30	0.8359	297.8	0.06727	0.0966	0.03636	23.95	16.21	0.00953	1.00252	0.7326
31	0.8066	308.7	0.06725	0.0969	0.03494	24.64	16.69	0.01020	1.00243	0.7304
32	0.7795	319.6	0.06722	0.0971	0.03364	25.33	17.16	0.01088	1.00235	0.7283
33	0.7541	330.4	0.06720	0.0974	0.03244	26.02	17.63	0.01159	1.00227	0.7264
34	0.7305	341.2	0.06718	0.0976	0.03133	26.71	18.10	0.01231	1.00220	0.7242
35	0.7083	351.9	0.06715	0.0978	0.03030	27.40	18.56	0.01306	1.00214	0.7221
36	0.6875	362.7	0.06713	0.0979	0.02934	28.10	19.01	0.01383	1.00207	0.7201
37	0.6679	373.4	0.06711	0.0981	0.02844	28.79	19.47	0.01461	1.00201	0.7180
38	0.6495	384.1	0.06708	0.0982	0.02760	29.49	19.91	0.01541	1.00196	0.7160
39	0.6320	394.8	0.06704	0.0983	0.02682	30.18	20.36	0.01624	1.00191	0.7141
40	0.6155	405.5	0.06701	0.0985	0.02607	30.88	20.79	0.01708	1.00186	0.7121
42	0.5851	427.0	0.06692	0.0987	0.02471	32.26	21.66	0.01881	1.00176	0.7086
44	0.5576	448.6	0.06679	0.0988	0.02349	33.64	22.51	0.02061	1.00168	0.7052
46	0.5326	470.3	0.06663	0.0990	0.02239	35.03	23.35	0.02248	1.00161	0.7020
48	0.5097	492.3	0.06643	0.0991	0.02140	36.41	24.17	0.02442	1.00154	0.6991
50	0.4888	514.5	0.06617	0.0992	0.02049	37.80	24.98	0.02641	1.00147	0.6965
52	0.4696	537.2	0.06585	0.0993	0.01965	39.19	25.77	0.02845	1.00142	0.6944
54	0.4519	560.2	0.06545	0.0994	0.01889	40.58	26.56	0.03055	1.00136	0.6926
56	0.4354	583.9	0.06499	0.0994	0.01818	41.96	27.33	0.03268	1.00131	0.6914
58	0.4202	608.2	0.06445	0.0995	0.01753	43.35	28.09	0.03485	1.00127	0.6907
60	0.4059	633.1	0.06384	0.0995	0.01692	44.81	28.84	0.03710	1.00122	0.6895
65	0.3743	699.2	0.06198	0.0997	0.01557	48.67	30.67	0.04299	1.00113	0.6863
70	0.3473	771.1	0.05972	0.0997	0.01443	52.52	32.45	0.04894	1.00105	0.6874
75	0.3239	849.6	0.05718	0.0998	0.01345	56.37	34.17	0.05485	1.00098	0.6925
80	0.3035	934.9	0.05450	0.0999	0.01259	60.27	35.85	0.06074	1.00091	0.7001
85	0.2855	1027.1	0.05182	0.0999	0.01183	65.22	37.48	0.06765	1.00086	0.6986
90	0.2696	1125.4	0.04923	0.0999	0.01117	70.17	39.08	0.07455	1.00081	0.6999
95	0.2553	1229.3	0.04681	0.1000	0.01057	75.12	40.63	0.08149	1.00077	0.7030
100	0.2425	1337.7	0.04461	0.1000	0.01004	89.54	45.74	0.09898	1.00073	0.6859
120	0.2020	1792.9	0.03819	0.1000	0.00835	117.11	54.08	0.13941	1.00061	0.6913
140	0.1731	2231.5	0.03497	0.1000	0.00715	136.13	59.19	0.17742	1.00052	0.6939
160	0.1514	2613.7	0.03383	0.1001	0.00625	148.29	63.00	0.21565	1.00046	0.6944
180	0.1346	2936.5	0.03390	0.1001	0.00556	155.65	66.17	0.25509	1.00041	0.6937
200	0.1211	3215.0	0.03457	0.1001	0.00500	160.20	69.01	0.29613	1.00037	0.6925
220	0.1101	3467.7	0.03550	0.1001	0.00454	163.41	71.66	0.33890	1.00033	0.6912
240	0.1010	3710.4	0.03645	0.1001	0.00417	166.22	74.19	0.38347	1.00030	0.6899
260	0.0932	3953.2	0.03728	0.1001	0.00385	169.14	76.64	0.42984	1.00028	0.6887
280	0.0865	4201.0	0.03797	0.1001	0.00357	172.36	79.04	0.47806	1.00026	0.6878
300	0.0808	4455.4	0.03850	0.1001	0.00333	175.91	81.41	0.52807	1.00024	0.6870
350	0.0692	5123.7	0.03927	0.1001	0.00286	186.13	87.23	0.66129	1.00021	0.6858
400	0.0606	5822.2	0.03958	0.1000	0.00250	197.45	92.97	0.80628	1.00018	0.6851
450	0.0539	6540.8	0.03966	0.1000	0.00222	209.34	98.65	0.96298	1.00016	0.6847
500	0.0485	7264.8	0.03967	0.1000	0.00200	221.28	104.26	1.13139	1.00015	0.6844
550	0.0441	7995.9	0.03964	0.1000	0.00182	233.29	109.82	1.31129	1.00013	0.6841
600	0.0404	8732.3	0.03958	0.1000	0.00167	245.30	115.31	1.50244	1.00012	0.6840
700	0.0346	10226.5	0.03936	0.1000	0.00143	269.39	126.11	1.91754	1.00010	0.6837
800	0.0303	11760.2	0.03902	0.1000	0.00125	293.77	136.66	2.37483	1.00009	0.6837
900	0.0269	13344.2	0.03856	0.1000	0.00111	318.59	146.95	2.87254	1.00008	0.6837
1000	0.0242	14985.9	0.03799	0.1000	0.00100	440.56	157.01	4.36658	1.00007	0.5340
1200	0.0202	18444.1	0.03669	0.1000	0.00083	511.15	176.49	5.92711	1.00006	0.5306
1400	0.0173	22136.8	0.03530	0.1000	0.00071	583.71	195.19	7.67556	1.00005	0.5287
1600	0.0152	26050.3	0.03395	0.1000	0.00062	659.22	213.23	9.62086	1.00005	0.5266
1800	0.0135	30461.4	0.03229	0.1000	0.00056	749.49	230.69	11.83865	1.00004	0.5209
2000	0.0121	36358.3	0.02954	0.0999	0.00050	892.15	247.69	14.57561	1.00004	0.5051
2500	0.0096	74954.9	0.01671	0.0988	0.00041	2131.13	289.81	26.38781	1.00003	0.4128
3000	0.0075	204885.4	0.00721	0.0927	0.00035	6758.73	338.77	44.08577	1.00002	0.3694

* TWO-PHASE BOUNDARY

0.101325 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.835	0.01298	1.1686	0.9244	-308.9	-307.6	4.968	4.68	6.38	1263
14	0.01300	1.1444	0.9243	-307.8	-306.5	5.047	4.71	6.48	1254
15	0.01314	1.0411	0.9105	-301.1	-299.8	5.508	4.92	6.98	1216
16	0.01330	0.9750	0.8926	-293.9	-292.6	5.974	5.12	7.43	1190
17	0.01347	0.9113	0.8775	-286.3	-284.9	6.440	5.30	7.90	1166
18	0.01365	0.8502	0.8630	-278.1	-276.7	6.906	5.47	8.41	1143
19	0.01385	0.7854	0.8477	-269.5	-268.1	7.375	5.62	8.95	1119
20	0.01406	0.7222	0.8305	-260.3	-258.8	7.848	5.75	9.52	1094
* 20.268	0.01413	0.7093	0.8253	-257.7	-256.2	7.977	5.78	9.66	1089
* 20.268	0.74739	0.0675	0.0058	113.6	189.3	29.967	6.50	12.15	355
21	0.78035	0.0715	0.0055	118.8	197.9	30.383	6.44	11.89	363
22	0.82689	0.0768	0.0052	125.9	209.7	30.929	6.37	11.62	374
23	0.87260	0.0820	0.0049	132.8	221.2	31.442	6.33	11.43	385
24	0.91769	0.0870	0.0046	139.6	232.5	31.925	6.31	11.29	395
25	0.96226	0.0919	0.0044	146.3	243.8	32.383	6.29	11.17	404
26	1.00643	0.0968	0.0042	152.9	254.9	32.819	6.27	11.08	413
27	1.05025	0.1015	0.0040	159.5	265.9	33.236	6.26	11.00	422
28	1.09378	0.1062	0.0039	166.1	276.9	33.635	6.26	10.94	431
29	1.13705	0.1109	0.0037	172.6	287.8	34.018	6.25	10.88	439
30	1.18011	0.1154	0.0036	179.1	298.7	34.386	6.25	10.83	448
31	1.22297	0.1200	0.0034	185.6	309.5	34.741	6.24	10.79	456
32	1.26567	0.1245	0.0033	192.0	320.3	35.083	6.24	10.76	463
33	1.30822	0.1290	0.0032	198.4	331.0	35.413	6.23	10.72	471
34	1.35063	0.1335	0.0031	204.9	341.7	35.733	6.23	10.69	479
35	1.39293	0.1379	0.0030	211.3	352.4	36.043	6.23	10.67	486
36	1.43512	0.1424	0.0029	217.6	363.0	36.343	6.23	10.65	493
37	1.47721	0.1468	0.0028	224.0	373.7	36.634	6.23	10.62	501
38	1.51922	0.1512	0.0027	230.4	384.3	36.917	6.22	10.61	508
39	1.56115	0.1555	0.0027	236.7	394.9	37.193	6.22	10.59	514
40	1.60300	0.1599	0.0026	243.1	405.5	37.461	6.22	10.58	521
42	1.68652	0.1686	0.0025	255.7	426.6	37.976	6.23	10.56	535
44	1.76982	0.1772	0.0024	268.4	447.7	38.467	6.23	10.54	547
46	1.85292	0.1858	0.0022	281.0	468.8	38.935	6.25	10.53	560
48	1.93587	0.1943	0.0021	293.7	489.9	39.384	6.26	10.53	572
50	2.01867	0.2029	0.0021	306.4	510.9	39.814	6.28	10.54	583
52	2.10135	0.2114	0.0020	319.1	532.0	40.228	6.31	10.56	595
54	2.18393	0.2199	0.0019	331.9	553.2	40.626	6.35	10.58	606
56	2.26641	0.2283	0.0018	344.7	574.4	41.012	6.39	10.62	616
58	2.34880	0.2368	0.0018	357.7	595.7	41.385	6.44	10.66	626
60	2.43113	0.2452	0.0017	370.7	617.0	41.748	6.50	10.71	636
65	2.63666	0.2662	0.0016	403.9	671.0	42.612	6.69	10.89	658
70	2.84187	0.2872	0.0015	438.1	726.0	43.427	6.94	11.13	679
75	3.04684	0.3081	0.0014	473.7	782.4	44.205	7.25	11.42	697
80	3.25161	0.3290	0.0013	510.9	840.4	44.953	7.60	11.77	714
85	3.45621	0.3498	0.0012	550.0	900.2	45.678	7.99	12.16	730
90	3.66069	0.3706	0.0011	591.1	962.0	46.384	8.41	12.57	744
95	3.86506	0.3914	0.0011	634.3	1025.9	47.075	8.84	13.00	759
100	4.06933	0.4122	0.0010	679.6	1091.9	47.753	9.27	13.43	773
120	4.88574	0.4952	0.0008	881.5	1376.6	50.341	10.83	14.97	827
140	5.70143	0.5780	0.0007	1109.2	1686.9	52.731	11.82	15.96	883
160	6.51668	0.6607	0.0006	1350.5	2010.8	54.893	12.21	16.35	940
180	7.33165	0.7434	0.0006	1595.1	2338.0	56.820	12.19	16.32	998
200	8.14642	0.8260	0.0005	1836.7	2662.1	58.527	11.95	16.08	1054
220	8.96105	0.9086	0.0005	2072.5	2980.5	60.045	11.63	15.76	1110
240	9.77558	9911	0.0004	2302.1	3292.6	61.403	11.33	15.46	1163
260	10.59003	0737	0.0004	2526.1	3599.1	62.630	11.07	15.20	1214
280	11.40442	1563	0.0004	2745.5	3901.0	63.749	10.87	15.00	1263
300	12.21788	2387	0.0003	2961.4	4199.4	64.778	10.72	14.85	1310
350	14.25342	1.4450	0.0003	3491.4	4935.6	67.047	10.51	14.63	1419
400	16.28883	1.6513	0.0003	4014.4	5664.9	68.996	10.43	14.55	1518
450	18.32416	1.8575	0.0002	4534.7	6391.4	70.708	10.41	14.53	1611
500	20.35943	2.0638	0.0002	5055.0	7117.9	72.238	10.40	14.52	1698
550	22.39466	2.2700	0.0002	5575.0	7844.1	73.623	10.41	14.53	1780
600	24.42987	2.4762	0.0002	6096.0	8571.3	74.887	10.42	14.55	1859
700	28.50024	2.8887	0.0001	7140.9	10028.7	77.134	10.48	14.61	2006
800	32.57056	3.3011	0.0001	8193.4	11493.6	79.089	10.57	14.70	2142
900	36.64086	3.7135	0.0001	9256.7	12969.3	80.826	10.70	14.82	2268
1000	40.71114	4.1259	0.0001	10333.9	14459.0	82.398	10.86	14.98	2386
1200	48.85168	4.9508	0.0001	12544.2	17494.1	85.151	11.24	15.37	2601
1400	56.99233	5.7756	0.0001	14837.2	20611.9	87.558	11.68	15.81	2795
1600	65.13445	6.6005	0.0001	17220.5	23820.2	89.677	12.15	16.28	2974
1800	73.28628	7.4253	0.0001	19714.9	27140.7	91.594	12.77	16.92	3136
2000	81.47980	8.2501	0.0001	22393.8	30649.8	93.508	13.97	18.18	3277
2500	103.04279	10.3122	0.0000	31569.9	42010.7	100.879	24.92	30.28	3539
3000	131.72066	12.3743	0.0000	52805.4	66152.0	112.936	61.40	73.34	3839

* TWO-PHASE BOUNDARY

0.101325 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.835	77.0693	621.7	0.25638	90.0617	0.01026	73.01	255.40	0.00053	1.25176	2.2322
14	76.9227	617.2	0.25493	88.0322	0.01050	74.68	249.39	0.00054	1.25125	2.1640
15	76.1000	607.3	0.24331	79.2241	0.01149	83.16	219.56	0.00056	1.24835	1.8429
16	75.1991	610.1	0.23205	73.3174	0.01217	89.01	195.46	0.00057	1.24519	1.6309
17	74.2514	609.6	0.22299	67.6660	0.01297	92.85	175.98	0.00057	1.24187	1.4981
18	73.2583	606.7	0.21546	62.2852	0.01386	95.56	159.94	0.00056	1.23840	1.4069
19	72.2148	598.9	0.20898	56.7197	0.01494	97.10	146.47	0.00054	1.23476	1.3501
20	71.1057	589.0	0.20322	51.3532	0.01617	98.44	134.89	0.00052	1.23089	1.3051
* 20.268	70.7859	587.9	0.20175	50.2056	0.01644	98.92	131.98	0.00052	1.22978	1.2893
* 20.268	1.3380	189.1	0.06667	0.0903	0.06424	16.94	11.28	0.00375	1.00404	0.8091
21	1.2815	197.3	0.06697	0.0916	0.06027	17.40	11.67	0.00411	1.00387	0.7970
22	1.2094	208.6	0.06721	0.0929	0.05573	18.08	12.19	0.00463	1.00365	0.7840
23	1.1460	219.8	0.06734	0.0940	0.05200	18.78	12.71	0.00516	1.00346	0.7738
24	1.0897	231.1	0.06739	0.0948	0.04883	19.50	13.23	0.00571	1.00329	0.7654
25	1.0392	242.3	0.06740	0.0955	0.04610	20.24	13.74	0.00628	1.00313	0.7582
26	0.9936	253.5	0.06739	0.0961	0.04370	20.98	14.24	0.00686	1.00300	0.7522
27	0.9522	264.6	0.06736	0.0967	0.04157	21.72	14.74	0.00746	1.00287	0.7468
28	0.9143	275.7	0.06734	0.0971	0.03967	22.47	15.24	0.00809	1.00276	0.7418
29	0.8795	286.7	0.06731	0.0975	0.03796	23.21	15.73	0.00873	1.00265	0.7373
30	0.8474	297.7	0.06728	0.0978	0.03640	23.96	16.21	0.00940	1.00256	0.7330
31	0.8177	308.6	0.06725	0.0981	0.03498	24.65	16.69	0.01006	1.00247	0.7308
32	0.7901	319.4	0.06723	0.0984	0.03367	25.34	17.16	0.01073	1.00238	0.7286
33	0.7644	330.3	0.06720	0.0986	0.03247	26.02	17.63	0.01143	1.00230	0.7266
34	0.7404	341.0	0.06718	0.0988	0.03136	26.72	18.10	0.01215	1.00223	0.7245
35	0.7179	351.8	0.06716	0.0990	0.03032	27.41	18.56	0.01288	1.00216	0.7224
36	0.6968	362.5	0.06714	0.0992	0.02936	28.10	19.02	0.01364	1.00210	0.7203
37	0.6770	373.3	0.06711	0.0994	0.02846	28.80	19.47	0.01441	1.00204	0.7182
38	0.6582	384.0	0.06708	0.0995	0.02762	29.49	19.91	0.01521	1.00198	0.7162
39	0.6406	394.7	0.06705	0.0996	0.02683	30.19	20.36	0.01602	1.00193	0.7142
40	0.6238	405.4	0.06701	0.0997	0.02609	30.88	20.80	0.01685	1.00188	0.7123
42	0.5929	426.9	0.06692	0.0999	0.02472	32.27	21.66	0.01856	1.00179	0.7087
44	0.5650	448.5	0.06680	0.1001	0.02350	33.65	22.51	0.02034	1.00170	0.7053
46	0.5397	470.2	0.06664	0.1003	0.02240	35.03	23.35	0.02218	1.00163	0.7021
48	0.5166	492.2	0.06643	0.1004	0.02140	36.42	24.17	0.02409	1.00156	0.6992
50	0.4954	514.5	0.06617	0.1005	0.02049	37.81	24.98	0.02606	1.00149	0.6966
52	0.4759	537.1	0.06585	0.1006	0.01966	39.19	25.78	0.02808	1.00143	0.6944
54	0.4579	560.2	0.06546	0.1007	0.01889	40.58	26.56	0.03015	1.00138	0.6927
56	0.4412	583.8	0.06499	0.1007	0.01819	41.97	27.33	0.03225	1.00133	0.6914
58	0.4257	608.1	0.06446	0.1008	0.01753	43.36	28.09	0.03439	1.00128	0.6907
60	0.4113	633.1	0.06384	0.1009	0.01692	44.81	28.84	0.03661	1.00124	0.6896
65	0.3793	699.1	0.06198	0.1010	0.01558	48.67	30.68	0.04242	1.00114	0.6864
70	0.3519	771.0	0.05972	0.1011	0.01443	52.53	32.45	0.04829	1.00106	0.6875
75	0.3282	849.5	0.05718	0.1011	0.01345	56.37	34.17	0.05413	1.00099	0.6925
80	0.3075	934.9	0.05451	0.1012	0.01259	60.27	35.85	0.05994	1.00093	0.7001
85	0.2893	1027.0	0.05182	0.1012	0.01184	65.22	37.48	0.06676	1.00087	0.6986
90	0.2732	1125.4	0.04923	0.1012	0.01117	70.17	39.08	0.07357	1.00082	0.7000
95	0.2587	1229.3	0.04681	0.1013	0.01057	75.12	40.64	0.08042	1.00078	0.7031
100	0.2457	1337.7	0.04461	0.1013	0.01004	89.54	45.74	0.09769	1.00074	0.6859
120	0.2047	1792.9	0.03819	0.1013	0.00835	117.11	54.08	0.13758	1.00062	0.6913
140	0.1754	2231.5	0.03497	0.1014	0.00715	136.13	59.19	0.17510	1.00053	0.6939
160	0.1535	2613.8	0.03384	0.1014	0.00625	148.29	63.00	0.21283	1.00046	0.6944
180	0.1364	2936.5	0.03390	0.1014	0.00556	155.65	66.17	0.25176	1.00041	0.6937
200	0.1228	3215.0	0.03457	0.1014	0.00500	160.20	69.01	0.29226	1.00037	0.6925
220	0.1116	3467.8	0.03550	0.1014	0.00454	163.41	71.66	0.33447	1.00034	0.6912
240	0.1023	3710.4	0.03645	0.1014	0.00417	166.22	74.19	0.37846	1.00031	0.6899
260	0.0944	3953.3	0.03728	0.1014	0.00385	169.14	76.64	0.42423	1.00028	0.6887
280	0.0877	4201.0	0.03797	0.1014	0.00357	172.36	79.04	0.47181	1.00026	0.6878
300	0.0818	4455.4	0.03850	0.1014	0.00333	175.91	81.41	0.52117	1.00025	0.6870
350	0.0702	5123.7	0.03927	0.1014	0.00286	186.13	87.23	0.65265	1.00021	0.6858
400	0.0614	5822.2	0.03958	0.1014	0.00250	197.45	92.97	0.79574	1.00018	0.6851
450	0.0546	6540.9	0.03966	0.1014	0.00222	209.34	98.65	0.95040	1.00016	0.6847
500	0.0491	7264.9	0.03967	0.1014	0.00200	221.28	104.26	1.11661	1.00015	0.6844
550	0.0447	7995.9	0.03964	0.1014	0.00182	233.29	109.82	1.29415	1.00013	0.6841
600	0.0409	8732.3	0.03958	0.1014	0.00167	245.30	115.31	1.48280	1.00012	0.6840
700	0.0351	10226.5	0.03936	0.1014	0.00143	269.40	126.11	1.89248	1.00011	0.6837
800	0.0307	11760.3	0.03902	0.1014	0.00125	293.77	136.66	2.34379	1.00009	0.6837
900	0.0273	13344.2	0.03856	0.1013	0.00111	318.59	146.95	2.83500	1.00008	0.6837
1000	0.0246	14985.9	0.03799	0.1013	0.00100	440.56	157.01	4.30949	1.00007	0.5340
1200	0.0205	18444.1	0.03669	0.1013	0.00083	511.15	176.49	5.84961	1.00006	0.5306
1400	0.0175	22136.8	0.03530	0.1013	0.00071	583.71	195.19	7.57520	1.00005	0.5287
1600	0.0154	26049.7	0.03395	0.1013	0.00062	659.20	213.23	9.49493	1.00005	0.5266
1800	0.0136	30457.5	0.03229	0.1013	0.00056	749.33	230.69	11.68297	1.00004	0.5210
2000	0.0123	36342.1	0.02956	0.1013	0.00050	891.52	247.69	14.38133	1.00004	0.5052
2500	0.0097	74756.5	0.01676	0.1001	0.00040	2123.61	289.80	26.01980	1.00003	0.4132
3000	0.0076	203993.2	0.00725	0.0939	0.00036	6725.27	338.71	43.48332	1.00002	0.3694

* TWO-PHASE BOUNDARY

0.15 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.851	0.01297	1.1717	0.9250	-308.9	-306.9	4.969	4.68	6.38	1264
14	0.01299	1.1520	0.9249	-307.9	-305.9	5.040	4.71	6.47	1257
15	0.01313	1.0461	0.9122	-301.2	-299.3	5.501	4.92	6.97	1218
16	0.01329	0.9798	0.8942	-294.0	-292.1	5.966	5.11	7.42	1192
17	0.01346	0.9161	0.8791	-286.4	-284.4	6.431	5.30	7.89	1168
18	0.01364	0.8552	0.8646	-278.3	-276.2	6.897	5.46	8.39	1146
19	0.01384	0.7903	0.8493	-269.7	-267.6	7.365	5.61	8.93	1121
20	0.01405	0.7272	0.8321	-260.5	-258.4	7.837	5.74	9.50	1097
21	0.01429	0.6668	0.8128	-250.7	-248.5	8.316	5.86	10.14	1070
* 21.672	0.01447	0.6202	0.7984	-243.7	-241.6	8.644	5.92	10.58	1053
* 21.672	0.52255	0.0673	0.0084	117.6	196.0	28.842	6.59	12.84	362
22	0.53312	0.0692	0.0082	120.1	200.0	29.028	6.55	12.67	366
23	0.56539	0.0751	0.0077	127.5	212.5	29.582	6.46	12.25	378
24	0.59879	0.0807	0.0072	134.7	224.6	30.096	6.40	11.95	388
25	0.63055	0.0861	0.0068	141.8	236.4	30.579	6.36	11.73	399
26	0.66180	0.0914	0.0065	148.8	248.0	31.036	6.33	11.55	408
27	0.69263	0.0965	0.0062	155.6	259.5	31.469	6.31	11.42	418
28	0.72313	0.1015	0.0059	162.4	270.9	31.882	6.30	11.30	427
29	0.75333	0.1065	0.0056	169.1	282.1	32.277	6.29	11.21	436
30	0.78329	0.1113	0.0054	175.8	293.3	32.656	6.28	11.13	444
31	0.81304	0.1161	0.0052	182.4	304.4	33.020	6.27	11.06	453
32	0.84260	0.1209	0.0050	189.0	315.4	33.370	6.26	11.00	461
33	0.87200	0.1256	0.0048	195.6	326.4	33.708	6.26	10.94	469
34	0.90126	0.1302	0.0047	202.1	337.3	34.034	6.25	10.90	476
35	0.93039	0.1348	0.0045	208.6	348.2	34.349	6.25	10.86	484
36	0.95940	0.1394	0.0044	215.1	359.0	34.654	6.25	10.82	491
37	0.98832	0.1439	0.0043	221.6	369.8	34.950	6.24	10.79	499
38	1.01714	0.1485	0.0041	228.0	380.6	35.237	6.24	10.76	506
39	1.04588	0.1530	0.0040	234.5	391.3	35.516	6.24	10.73	513
40	1.07455	0.1574	0.0039	240.9	402.1	35.788	6.24	10.71	520
42	1.13168	0.1663	0.0037	253.7	423.4	36.309	6.24	10.67	533
44	1.18858	0.1751	0.0035	266.5	444.8	36.805	6.25	10.64	546
46	1.24528	0.1839	0.0034	279.2	466.0	37.278	6.25	10.63	559
48	1.30182	0.1926	0.0032	292.0	487.3	37.730	6.27	10.62	571
50	1.35822	0.2013	0.0031	304.8	508.5	38.163	6.29	10.62	583
52	1.41449	0.2099	0.0029	317.6	529.8	38.580	6.32	10.63	594
54	1.47065	0.2185	0.0028	330.4	551.0	38.981	6.35	10.65	605
56	1.52672	0.2271	0.0027	343.3	572.3	39.369	6.39	10.67	616
58	1.58270	0.2356	0.0026	356.3	593.7	39.744	6.45	10.71	626
60	1.63861	0.2441	0.0025	369.4	615.2	40.108	6.50	10.76	636
65	1.77810	0.2654	0.0023	402.7	669.4	40.976	6.69	10.93	658
70	1.91727	0.2865	0.0022	437.0	724.6	41.794	6.94	11.16	679
75	2.05619	0.3075	0.0020	472.7	781.1	42.574	7.25	11.45	697
80	2.19491	0.3285	0.0019	510.0	839.2	43.324	7.60	11.79	714
85	2.33348	0.3495	0.0018	549.1	899.2	44.050	7.99	12.18	730
90	2.47191	0.3704	0.0017	590.3	961.1	44.758	8.41	12.59	745
95	2.61023	0.3913	0.0016	633.5	1025.1	45.449	8.84	13.01	759
100	2.74846	0.4121	0.0015	678.9	1091.2	46.128	9.28	13.44	773
120	3.30069	0.4953	0.0013	881.0	1376.1	48.719	10.83	14.98	828
140	3.85219	0.5782	0.0011	1108.8	1686.6	51.110	11.82	15.96	884
160	4.40326	0.6611	0.0009	1350.1	2010.6	53.273	12.21	16.35	941
180	4.95405	0.7438	0.0008	1594.8	2337.9	55.201	12.19	16.32	998
200	5.50464	0.8265	0.0008	1836.4	2662.1	56.908	11.95	16.08	1055
220	6.05509	0.9091	0.0007	2072.3	2980.6	58.426	11.63	15.76	1110
240	6.60544	0.9918	0.0006	2301.9	3292.7	59.784	11.33	15.46	1163
260	7.15571	1.0744	0.0006	2525.9	3599.2	61.011	11.07	15.20	1214
280	7.70593	1.1569	0.0005	2745.3	3901.2	62.130	10.87	15.00	1263
300	8.25551	1.2394	0.0005	2961.2	4199.6	63.160	10.72	14.85	1310
350	9.63066	1.4457	0.0004	3491.3	4935.9	65.429	10.51	14.63	1419
400	11.00567	1.6520	0.0004	4014.3	5665.2	67.378	10.43	14.55	1518
450	12.38060	1.8583	0.0003	4534.6	6391.7	69.090	10.41	14.53	1611
500	13.75547	2.0646	0.0003	5055.0	7118.3	70.620	10.40	14.53	1698
550	15.13031	2.2708	0.0003	5574.9	7844.5	72.004	10.41	14.53	1781
600	16.50512	2.4770	0.0003	6095.9	8571.7	73.268	10.42	14.55	1859
700	19.25470	2.8895	0.0002	7140.9	10029.1	75.516	10.48	14.61	2007
800	22.00423	3.3019	0.0002	8193.4	11494.0	77.471	10.57	14.70	2142
900	24.75374	3.7144	0.0002	9256.7	12969.7	79.208	10.70	14.82	2268
1000	27.50323	4.1268	0.0002	10333.9	14459.4	80.780	10.86	14.98	2386
1200	33.00218	4.9517	0.0001	12544.1	17494.5	83.533	11.24	15.37	2602
1400	38.50118	5.7765	0.0001	14837.1	20612.3	85.940	11.68	15.81	2796
1600	44.00101	6.6013	0.0001	17219.4	23819.5	88.059	12.14	16.27	2974
1800	49.50621	7.4262	0.0001	19708.0	27133.9	89.972	12.72	16.86	3138
2000	55.03455	8.2510	0.0001	22362.5	30617.7	91.873	13.76	17.96	3282
2500	69.45464	10.3131	0.0001	31085.9	41504.1	99.039	22.91	28.04	3552
3000	87.83039	12.3752	0.0001	49798.0	62972.6	110.142	53.35	63.69	3839

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.15 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.851	77.0972	623.3	0.25632	90.3332	0.01024	73.22	255.70	0.00054	1.25186	2.2289
14	76.9648	620.0	0.25501	88.6598	0.01043	74.72	250.26	0.00054	1.25139	2.1663
15	76.1448	609.0	0.24371	79.6566	0.01145	83.21	220.31	0.00056	1.24851	1.8463
16	75.2472	611.7	0.23242	73.7262	0.01213	89.09	196.11	0.00057	1.24536	1.6332
17	74.3038	611.3	0.22334	68.0668	0.01292	92.95	176.57	0.00057	1.24206	1.4998
18	73.3154	608.6	0.21579	62.6992	0.01379	95.67	160.49	0.00056	1.23860	1.4078
19	72.2750	600.8	0.20930	57.1192	0.01487	97.23	146.98	0.00054	1.23497	1.3505
20	71.1714	591.1	0.20352	51.7551	0.01608	98.59	135.36	0.00052	1.23112	1.3048
21	69.9823	577.2	0.19830	46.2470	0.01758	100.14	125.13	0.00051	1.22699	1.2675
* 21.672	69.1286	568.4	0.19499	42.8767	0.01862	100.73	118.87	0.00050	1.22403	1.2490
* 21.672	1.9137	196.1	0.06680	0.1287	0.06547	18.61	12.17	0.00273	1.00578	0.8398
22	1.8757	199.9	0.06699	0.1299	0.06337	18.79	12.34	0.00285	1.00566	0.8319
23	1.7656	211.6	0.06737	0.1326	0.05790	19.39	12.85	0.00323	1.00533	0.8119
24	1.6700	223.2	0.06757	0.1348	0.05353	20.04	13.36	0.00361	1.00504	0.7967
25	1.5859	234.9	0.06765	0.1366	0.04993	20.72	13.86	0.00401	1.00479	0.7847
26	1.5110	246.5	0.06768	0.1381	0.04688	21.41	14.36	0.00442	1.00456	0.7751
27	1.4438	258.0	0.06767	0.1394	0.04426	22.12	14.86	0.00483	1.00436	0.7669
28	1.3829	269.4	0.06764	0.1404	0.04196	22.83	15.35	0.00526	1.00417	0.7598
29	1.3274	280.8	0.06760	0.1413	0.03992	23.55	15.83	0.00570	1.00401	0.7535
30	1.2767	292.0	0.06757	0.1421	0.03810	24.28	16.31	0.00615	1.00385	0.7478
31	1.2300	303.2	0.06753	0.1428	0.03647	24.96	16.79	0.00661	1.00371	0.7439
32	1.1868	314.4	0.06749	0.1434	0.03498	25.64	17.26	0.00707	1.00358	0.7405
33	1.1468	325.5	0.06746	0.1440	0.03363	26.32	17.73	0.00755	1.00346	0.7373
34	1.1096	336.5	0.06744	0.1445	0.03239	27.00	18.19	0.00804	1.00335	0.7342
35	1.0748	347.4	0.06741	0.1449	0.03124	27.68	18.65	0.00854	1.00324	0.7312
36	1.0423	358.4	0.06738	0.1453	0.03019	28.37	19.10	0.00906	1.00314	0.7284
37	1.0118	369.3	0.06735	0.1456	0.02921	29.06	19.55	0.00959	1.00305	0.7257
38	0.9831	380.2	0.06732	0.1460	0.02829	29.75	20.00	0.01013	1.00297	0.7231
39	0.9561	391.0	0.06728	0.1462	0.02744	30.43	20.44	0.01068	1.00288	0.7206
40	0.9306	401.9	0.06724	0.1465	0.02664	31.12	20.88	0.01124	1.00281	0.7182
42	0.8836	423.7	0.06713	0.1470	0.02519	32.49	21.74	0.01241	1.00266	0.7139
44	0.8413	445.5	0.06700	0.1473	0.02389	33.87	22.58	0.01361	1.00254	0.7098
46	0.8030	467.4	0.06683	0.1477	0.02273	35.24	23.42	0.01487	1.00242	0.7061
48	0.7682	489.6	0.06662	0.1479	0.02169	36.62	24.24	0.01616	1.00232	0.7027
50	0.7363	512.0	0.06635	0.1482	0.02074	38.00	25.04	0.01750	1.00222	0.6997
52	0.7070	534.8	0.06602	0.1484	0.01987	39.38	25.84	0.01887	1.00213	0.6973
54	0.6800	558.1	0.06562	0.1486	0.01908	40.76	26.62	0.02027	1.00205	0.6952
56	0.6550	581.8	0.06515	0.1487	0.01835	42.14	27.39	0.02170	1.00197	0.6937
58	0.6318	606.2	0.06460	0.1489	0.01767	43.53	28.15	0.02315	1.00190	0.6928
60	0.6103	631.3	0.06398	0.1490	0.01705	44.98	28.90	0.02465	1.00184	0.6914
65	0.5624	697.5	0.06211	0.1492	0.01567	48.82	30.73	0.02859	1.00170	0.6879
70	0.5216	769.6	0.05984	0.1494	0.01450	52.67	32.50	0.03257	1.00157	0.6887
75	0.4863	848.2	0.05729	0.1496	0.01350	56.50	34.22	0.03652	1.00147	0.6936
80	0.4556	933.7	0.05460	0.1497	0.01263	60.39	35.89	0.04046	1.00137	0.7010
85	0.4285	1025.9	0.05190	0.1498	0.01187	65.34	37.52	0.04507	1.00129	0.6993
90	0.4045	1124.4	0.04931	0.1498	0.01120	70.28	39.12	0.04969	1.00122	0.7005
95	0.3831	1228.3	0.04688	0.1499	0.01059	75.23	40.67	0.05432	1.00115	0.7035
100	0.3638	1336.8	0.04468	0.1499	0.01006	89.56	45.74	0.06592	1.00110	0.6865
120	0.3030	1792.3	0.03823	0.1501	0.00836	117.10	54.07	0.09288	1.00091	0.6917
140	0.2596	2231.3	0.03500	0.1501	0.00715	136.12	59.19	0.11825	1.00078	0.6942
160	0.2271	2613.9	0.03386	0.1501	0.00626	148.28	63.00	0.14376	1.00068	0.6947
180	0.2019	2936.9	0.03392	0.1501	0.00556	155.65	66.17	0.17007	1.00061	0.6939
200	0.1817	3215.6	0.03460	0.1501	0.00500	160.21	69.02	0.19745	1.00055	0.6927
220	0.1652	3468.5	0.03552	0.1501	0.00454	163.42	71.67	0.22598	1.00050	0.6913
240	0.1514	3711.3	0.03646	0.1501	0.00417	166.24	74.20	0.25572	1.00046	0.6900
260	0.1397	3954.2	0.03730	0.1501	0.00384	169.16	76.65	0.28665	1.00042	0.6888
280	0.1298	4202.0	0.03799	0.1501	0.00357	172.38	79.05	0.31881	1.00039	0.6879
300	0.1211	4456.5	0.03852	0.1501	0.00333	175.94	81.42	0.35216	1.00036	0.6871
350	0.1038	5124.9	0.03929	0.1501	0.00286	186.16	87.24	0.44102	1.00031	0.6859
400	0.0909	5823.5	0.03960	0.1501	0.00250	197.48	92.98	0.53771	1.00027	0.6851
450	0.0808	6542.2	0.03967	0.1501	0.00222	209.37	98.66	0.64221	1.00024	0.6847
500	0.0727	7266.2	0.03968	0.1501	0.00200	221.32	104.28	0.75453	1.00022	0.6844
550	0.0661	7997.3	0.03965	0.1501	0.00182	233.34	109.84	0.87450	1.00020	0.6841
600	0.0606	8733.7	0.03958	0.1501	0.00167	245.35	115.33	1.00197	1.00018	0.6840
700	0.0519	10228.0	0.03937	0.1501	0.00143	269.45	126.14	1.27879	1.00016	0.6837
800	0.0454	11761.7	0.03903	0.1501	0.00125	293.83	136.68	1.58374	1.00014	0.6837
900	0.0404	13345.8	0.03856	0.1501	0.00111	318.66	146.98	1.91565	1.00012	0.6837
1000	0.0364	14987.5	0.03799	0.1500	0.00100	440.56	157.05	2.91135	1.00011	0.5341
1200	0.0303	18445.6	0.03669	0.1500	0.00083	511.14	176.53	3.95174	1.00009	0.5307
1400	0.0260	22136.6	0.03531	0.1500	0.00071	583.63	195.24	5.11720	1.00008	0.5288
1600	0.0227	26033.2	0.03398	0.1500	0.00062	658.47	213.28	6.41171	1.00007	0.5269
1800	0.0202	30352.1	0.03244	0.1500	0.00056	745.15	230.74	7.87596	1.00006	0.5221
2000	0.0182	35904.1	0.03000	0.1499	0.00050	874.55	247.74	9.64689	1.00005	0.5088
2500	0.0144	69392.8	0.01819	0.1485	0.00040	1920.33	289.57	17.12389	1.00004	0.4228
3000	0.0114	179472.6	0.00823	0.1409	0.00035	5805.59	337.08	28.82253	1.00003	0.3698

* TWO-PHASE BOUNDARY

0.20 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.868	0.01297	1.1749	0.9255	-308.9	-306.3	4.971	4.68	6.38	1265
14	0.01299	1.1597	0.9255	-308.0	-305.4	5.034	4.71	6.46	1260
15	0.01312	1.0513	0.9140	-301.3	-298.7	5.494	4.91	6.97	1221
16	0.01328	0.9847	0.8959	-294.2	-291.5	5.959	5.11	7.41	1195
17	0.01345	0.9209	0.8807	-286.5	-283.9	6.423	5.29	7.88	1171
18	0.01363	0.8603	0.8662	-278.4	-275.7	6.888	5.46	8.38	1149
19	0.01382	0.7953	0.8509	-269.8	-267.1	7.355	5.61	8.92	1124
20	0.01404	0.7323	0.8337	-260.7	-257.9	7.826	5.74	9.48	1100
21	0.01427	0.6661	0.8146	-251.0	-248.1	8.304	5.85	10.12	1073
22	0.01454	0.5995	0.7928	-240.5	-237.6	8.790	5.95	10.82	1044
* 22.805	0.01478	0.5396	0.7723	-231.6	-228.6	9.192	6.01	11.52	1017
* 22.805	0.40014	0.0661	0.0112	119.9	199.9	27.996	6.66	13.55	367
23	0.40532	0.0674	0.0110	121.5	202.5	28.110	6.63	13.41	369
24	0.43157	0.0738	0.0102	129.3	215.6	28.668	6.52	12.84	381
25	0.45696	0.0799	0.0096	136.9	228.3	29.183	6.45	12.44	392
26	0.48170	0.0856	0.0090	144.2	240.6	29.665	6.40	12.15	403
27	0.50594	0.0912	0.0086	151.4	252.6	30.119	6.37	11.92	413
28	0.52976	0.0966	0.0081	158.5	264.4	30.549	6.35	11.74	423
29	0.55326	0.1018	0.0078	165.4	276.1	30.958	6.33	11.59	432
30	0.57647	0.1070	0.0074	172.3	287.6	31.349	6.32	11.46	441
31	0.59944	0.1121	0.0071	179.1	299.0	31.723	6.30	11.36	449
32	0.62222	0.1170	0.0069	185.9	310.3	32.083	6.29	11.27	458
33	0.64481	0.1219	0.0066	192.6	321.6	32.428	6.29	11.19	466
34	0.66725	0.1268	0.0064	199.3	332.7	32.761	6.28	11.12	474
35	0.68955	0.1316	0.0062	205.9	343.8	33.083	6.27	11.06	482
36	0.71173	0.1363	0.0060	212.5	354.8	33.393	6.26	11.01	489
37	0.73380	0.1410	0.0058	219.1	365.8	33.694	6.26	10.96	497
38	0.75578	0.1457	0.0056	225.6	376.7	33.986	6.26	10.92	504
39	0.77766	0.1503	0.0054	232.1	387.6	34.269	6.25	10.88	511
40	0.79948	0.1549	0.0053	238.6	398.5	34.544	6.25	10.85	518
42	0.84289	0.1640	0.0050	251.6	420.2	35.072	6.25	10.79	532
44	0.88607	0.1730	0.0047	264.5	441.7	35.573	6.26	10.75	545
46	0.92904	0.1819	0.0045	277.4	463.2	36.051	6.26	10.72	558
48	0.97185	0.1908	0.0043	290.2	484.6	36.506	6.28	10.70	570
50	1.01450	0.1996	0.0041	303.1	506.0	36.943	6.30	10.70	582
52	1.05704	0.2084	0.0040	316.0	527.4	37.363	6.32	10.70	594
54	1.09946	0.2171	0.0038	328.9	548.8	37.767	6.36	10.71	605
56	1.14178	0.2258	0.0037	341.9	570.2	38.157	6.40	10.73	615
58	1.18402	0.2344	0.0035	354.9	591.7	38.534	6.45	10.77	626
60	1.22618	0.2430	0.0034	368.1	613.3	38.900	6.51	10.81	635
65	1.33130	0.2645	0.0031	401.5	667.8	39.771	6.70	10.97	658
70	1.43610	0.2858	0.0029	435.9	723.2	40.592	6.95	11.20	679
75	1.54066	0.3069	0.0027	471.7	779.8	41.374	7.25	11.48	697
80	1.64501	0.3281	0.0025	509.1	838.1	42.126	7.60	11.82	714
85	1.74920	0.3491	0.0024	548.3	898.1	42.853	7.99	12.20	730
90	1.85326	0.3701	0.0022	589.5	960.1	43.562	8.41	12.61	745
95	1.95721	0.3911	0.0021	632.8	1024.2	44.255	8.84	13.03	759
100	2.06107	0.4120	0.0020	678.2	1090.4	44.934	9.28	13.46	773
120	2.47580	0.4954	0.0017	880.4	1375.6	47.528	10.83	14.99	828
140	2.88982	0.5785	0.0014	1108.3	1686.3	49.920	11.82	15.97	884
160	3.30341	0.6615	0.0013	1349.7	2010.4	52.084	12.21	16.36	941
180	3.71671	0.7443	0.0011	1594.4	2337.8	54.012	12.19	16.33	999
200	4.12982	0.8270	0.0010	1836.1	2662.1	55.720	11.95	16.08	1055
220	4.54279	0.9097	0.0009	2072.0	2980.6	57.238	11.63	15.77	1110
240	4.95565	0.9924	0.0008	2301.7	3292.8	58.596	11.33	15.46	1164
260	5.36844	1.0750	0.0008	2525.7	3599.4	59.824	11.07	15.20	1215
280	5.78117	1.1576	0.0007	2745.1	3901.4	60.943	10.87	15.00	1264
300	6.19343	1.2401	0.0007	2961.1	4199.8	61.973	10.72	14.85	1311
350	7.22489	1.4465	0.0006	3491.1	4936.1	64.242	10.51	14.64	1419
400	8.25622	1.6528	0.0005	4014.2	5665.5	66.191	10.43	14.55	1519
450	9.28747	1.8591	0.0004	4534.5	6392.0	67.904	10.41	14.53	1611
500	10.31867	2.0654	0.0004	5054.9	7118.6	69.433	10.40	14.53	1698
550	11.34982	2.2716	0.0004	5574.9	7844.9	70.818	10.41	14.53	1781
600	12.38096	2.4779	0.0003	6095.9	8572.1	72.082	10.42	14.55	1860
700	14.44317	2.8904	0.0003	7140.8	10029.5	74.330	10.48	14.61	2007
800	16.50534	3.3028	0.0003	8193.3	11494.4	76.285	10.57	14.70	2143
900	18.56749	3.7152	0.0002	9256.7	12970.2	78.021	10.70	14.82	2269
1000	20.62962	4.1277	0.0002	10333.9	14459.8	79.593	10.86	14.98	2386
1200	24.75385	4.9525	0.0002	12544.1	17494.9	82.347	11.24	15.37	2602
1400	28.87810	5.7774	0.0001	14837.0	20612.6	84.754	11.68	15.81	2796
1600	33.00288	6.6022	0.0001	17218.7	23819.3	86.872	12.13	16.26	2974
1800	37.13116	7.4271	0.0001	19703.7	27130.0	88.783	12.68	16.82	3139
2000	41.27447	8.2519	0.0001	22343.1	30598.0	90.676	13.63	17.82	3285
2500	52.02197	10.3140	0.0001	30786.7	41191.1	97.716	21.67	26.66	3561
3000	65.34074	12.3761	0.0001	47934.6	61002.7	108.228	48.29	57.68	3840

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.20 MPA ISOBAR

	TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
*	13.868	77.1259	624.9	0.25626	90.6124	0.01021	73.43	256.01	0.00054	1.25196	2.2255
	14	77.0078	622.9	0.25509	89.3027	0.01036	74.76	251.16	0.00054	1.25155	2.1687
	15	76.1907	610.6	0.24412	80.0995	0.01141	83.27	221.08	0.00056	1.24867	1.8499
	16	75.2962	613.4	0.23280	74.1448	0.01208	89.17	196.79	0.00058	1.24553	1.6356
	17	74.3574	613.0	0.22370	68.4766	0.01286	93.05	177.19	0.00057	1.24224	1.5014
	18	73.3736	610.5	0.21613	63.1221	0.01372	95.79	161.05	0.00056	1.23880	1.4087
	19	72.3384	602.9	0.20963	57.5276	0.01479	97.36	147.49	0.00054	1.23519	1.3510
	20	71.2386	593.3	0.20383	52.1662	0.01598	98.74	135.84	0.00053	1.23136	1.3046
	21	70.0571	579.6	0.19860	46.6655	0.01746	100.31	125.59	0.00051	1.22725	1.2666
	22	68.7873	563.1	0.19370	41.2384	0.01923	101.11	116.47	0.00049	1.22284	1.2469
*	22.805	67.6762	544.6	0.18973	36.5158	0.02115	101.20	109.69	0.00047	1.21900	1.2486
*	22.805	2.4991	200.5	0.06703	0.1652	0.06756	20.09	12.91	0.00214	1.00755	0.8709
	23	2.4672	202.9	0.06715	0.1663	0.06610	20.18	13.01	0.00220	1.00745	0.8646
	24	2.3171	215.0	0.06761	0.1710	0.05973	20.70	13.51	0.00250	1.00700	0.8380
	25	2.1884	227.1	0.06784	0.1747	0.05478	21.29	14.00	0.00282	1.00661	0.8183
	26	2.0760	239.1	0.06793	0.1778	0.05079	21.92	14.50	0.00313	1.00627	0.8032
	27	1.9765	251.1	0.06795	0.1802	0.04747	22.58	14.98	0.00345	1.00597	0.7910
	28	1.8876	262.9	0.06793	0.1823	0.04464	23.25	15.47	0.00378	1.00570	0.7808
	29	1.8075	274.6	0.06790	0.1841	0.04219	23.94	15.95	0.00411	1.00546	0.7722
	30	1.7347	286.3	0.06785	0.1856	0.04005	24.63	16.43	0.00446	1.00524	0.7646
	31	1.6682	297.8	0.06781	0.1869	0.03815	25.30	16.90	0.00481	1.00504	0.7588
	32	1.6072	309.2	0.06776	0.1881	0.03645	25.96	17.37	0.00516	1.00485	0.7537
	33	1.5508	320.5	0.06772	0.1891	0.03491	26.63	17.83	0.00552	1.00468	0.7492
	34	1.4987	331.8	0.06769	0.1900	0.03352	27.30	18.29	0.00590	1.00452	0.7449
	35	1.4502	342.9	0.06767	0.1908	0.03225	27.98	18.74	0.00628	1.00438	0.7409
	36	1.4050	354.1	0.06763	0.1915	0.03108	28.65	19.19	0.00667	1.00424	0.7372
	37	1.3628	365.2	0.06760	0.1922	0.03001	29.33	19.64	0.00707	1.00411	0.7338
	38	1.3231	376.2	0.06756	0.1927	0.02902	30.01	20.08	0.00748	1.00399	0.7305
	39	1.2859	387.3	0.06752	0.1933	0.02809	30.69	20.52	0.00790	1.00388	0.7275
	40	1.2508	398.3	0.06747	0.1937	0.02723	31.38	20.96	0.00832	1.00377	0.7246
	42	1.1864	420.3	0.06735	0.1946	0.02568	32.74	21.82	0.00920	1.00358	0.7193
	44	1.1286	442.4	0.06721	0.1953	0.02430	34.10	22.66	0.01012	1.00340	0.7146
	46	1.0764	464.6	0.06703	0.1958	0.02308	35.46	23.49	0.01106	1.00325	0.7103
	48	1.0290	486.9	0.06681	0.1963	0.02198	36.83	24.31	0.01204	1.00310	0.7064
	50	0.9857	509.6	0.06653	0.1968	0.02099	38.20	25.11	0.01304	1.00297	0.7030
	52	0.9460	532.5	0.06619	0.1971	0.02009	39.57	25.90	0.01408	1.00285	0.7002
	54	0.9095	555.9	0.06579	0.1975	0.01927	40.95	26.68	0.01513	1.00274	0.6979
	56	0.8758	579.8	0.06531	0.1977	0.01851	42.33	27.45	0.01621	1.00264	0.6961
	58	0.8446	604.3	0.06476	0.1980	0.01782	43.70	28.21	0.01730	1.00255	0.6950
	60	0.8155	629.5	0.06413	0.1982	0.01718	45.15	28.95	0.01843	1.00246	0.6934
	65	0.7511	695.9	0.06224	0.1986	0.01577	48.98	30.78	0.02140	1.00226	0.6894
	70	0.6963	768.2	0.05996	0.1990	0.01458	52.82	32.55	0.02439	1.00210	0.6899
	75	0.6491	846.9	0.05740	0.1992	0.01356	56.63	34.26	0.02736	1.00196	0.6947
	80	0.6079	932.5	0.05470	0.1994	0.01268	60.52	35.93	0.03032	1.00183	0.7019
	85	0.5717	1024.7	0.05199	0.1996	0.01190	65.46	37.56	0.03379	1.00172	0.7001
	90	0.5396	1123.3	0.04939	0.1997	0.01122	70.40	39.15	0.03726	1.00163	0.7011
	95	0.5109	1227.3	0.04695	0.1998	0.01062	75.34	40.71	0.04074	1.00154	0.7040
	100	0.4852	1335.9	0.04474	0.1999	0.01007	89.58	45.74	0.04939	1.00146	0.6871
	120	0.4039	1791.8	0.03827	0.2001	0.00837	117.10	54.06	0.06962	1.00122	0.6922
	140	0.3460	2231.1	0.03503	0.2002	0.00716	136.12	59.19	0.08866	1.00104	0.6945
	160	0.3027	2614.0	0.03389	0.2002	0.00626	148.28	63.00	0.10781	1.00091	0.6949
	180	0.2691	2937.3	0.03394	0.2003	0.00556	155.65	66.18	0.12756	1.00081	0.6941
	200	0.2421	3216.2	0.03462	0.2003	0.00500	160.21	69.02	0.14811	1.00073	0.6928
	220	0.2201	3469.3	0.03554	0.2003	0.00454	163.43	71.67	0.16953	1.00066	0.6914
	240	0.2018	3712.1	0.03648	0.2003	0.00417	166.26	74.20	0.19184	1.00061	0.6901
	260	0.1863	3955.2	0.03732	0.2002	0.00384	169.18	76.65	0.21505	1.00056	0.6889
	280	0.1730	4203.1	0.03800	0.2002	0.00357	172.41	79.06	0.23918	1.00052	0.6879
	300	0.1615	4457.7	0.03853	0.2002	0.00333	175.96	81.42	0.26421	1.00049	0.6871
	350	0.1384	5126.2	0.03930	0.2002	0.00286	186.18	87.25	0.33088	1.00042	0.6859
	400	0.1211	5824.8	0.03961	0.2002	0.00250	197.51	93.00	0.40342	1.00036	0.6852
	450	0.1077	6543.5	0.03968	0.2002	0.00222	209.41	98.67	0.48183	1.00032	0.6847
	500	0.0969	7267.6	0.03969	0.2002	0.00200	221.36	104.29	0.56609	1.00029	0.6844
	550	0.0881	7998.7	0.03966	0.2001	0.00182	233.38	109.86	0.65610	1.00027	0.6841
	600	0.0808	8735.2	0.03959	0.2001	0.00167	245.40	115.35	0.75173	1.00024	0.6840
	700	0.0692	10229.5	0.03937	0.2001	0.00143	269.50	126.16	0.95942	1.00021	0.6837
	800	0.0606	11763.3	0.03903	0.2001	0.00125	293.89	136.71	1.18820	1.00018	0.6837
	900	0.0539	13347.3	0.03857	0.2001	0.00111	318.73	147.01	1.43721	1.00016	0.6837
	1000	0.0485	14989.1	0.03800	0.2001	0.00100	440.56	157.08	2.18374	1.00015	0.5342
	1200	0.0404	18447.2	0.03670	0.2001	0.00083	511.14	176.57	2.96406	1.00012	0.5309
	1400	0.0346	22137.1	0.03531	0.2001	0.00071	583.59	195.28	3.83808	1.00010	0.5290
	1600	0.0303	26023.6	0.03400	0.2001	0.00062	658.03	213.33	4.80793	1.00009	0.5272
	1800	0.0269	30287.6	0.03253	0.2000	0.00056	742.56	230.80	5.89970	1.00008	0.5229
	2000	0.0242	35634.1	0.03028	0.1999	0.00050	864.05	247.79	7.20329	1.00007	0.5111
	2500	0.0192	66065.2	0.01921	0.1983	0.00040	1794.18	289.46	12.60473	1.00006	0.4301
	3000	0.0153	163878.2	0.00902	0.1894	0.00035	5220.51	336.01	21.28967	1.00005	0.3713

* TWO-PHASE BOUNDARY

0.25 MPA ISOBAR

	TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP KJ / KG-K	VELOCITY OF SOUND M/S
*	13.885	0.01296	1.1781	0.9261	-308.8	-305.6	4.972	4.69	6.38	1267
	14	0.01298	1.1673	0.9261	-308.1	-304.8	5.027	4.71	6.44	1264
	15	0.01312	1.0565	0.9158	-301.4	-298.2	5.487	4.91	6.96	1224
	16	0.01327	0.9896	0.8975	-294.3	-291.0	5.951	5.11	7.40	1197
	17	0.01344	0.9257	0.8824	-286.7	-283.3	6.414	5.29	7.87	1174
	18	0.01362	0.8653	0.8678	-278.6	-275.2	6.879	5.46	8.37	1151
	19	0.01381	0.8002	0.8526	-270.0	-266.6	7.345	5.61	8.90	1127
	20	0.01402	0.7373	0.8354	-260.9	-257.4	7.815	5.74	9.46	1103
	21	0.01426	0.6713	0.8163	-251.2	-247.6	8.292	5.85	10.09	1076
	22	0.01452	0.6051	0.7946	-240.8	-237.2	8.776	5.95	10.79	1048
	23	0.01482	0.5340	0.7690	-229.7	-226.0	9.275	6.03	11.62	1015
*	23.751	0.01507	0.4836	0.7464	-220.8	-217.0	9.659	6.08	12.29	989
*	23.751	0.32422	0.0645	0.0140	121.2	202.2	27.322	6.73	14.28	370
	24	0.32992	0.0663	0.0137	123.3	205.8	27.471	6.69	14.05	373
	25	0.35185	0.0731	0.0127	131.5	219.5	28.029	6.56	13.36	386
	26	0.37292	0.0795	0.0119	139.3	232.6	28.543	6.49	12.87	397
	27	0.39336	0.0856	0.0112	146.9	245.2	29.022	6.44	12.52	408
	28	0.41331	0.0914	0.0106	154.3	257.6	29.472	6.40	12.24	418
	29	0.43286	0.0971	0.0100	161.5	269.7	29.898	6.38	12.02	428
	30	0.45210	0.1026	0.0096	168.7	281.7	30.302	6.36	11.84	437
	31	0.47106	0.1079	0.0092	175.7	293.4	30.688	6.34	11.69	446
	32	0.48980	0.1131	0.0088	182.6	305.1	31.057	6.33	11.57	455
	33	0.50834	0.1183	0.0084	189.5	316.6	31.412	6.32	11.46	463
	34	0.52671	0.1233	0.0081	196.3	328.0	31.752	6.30	11.36	471
	35	0.54494	0.1283	0.0078	203.1	339.3	32.080	6.29	11.28	479
	36	0.56303	0.1332	0.0076	209.8	350.6	32.397	6.28	11.21	487
	37	0.58101	0.1380	0.0073	216.5	361.7	32.703	6.28	11.14	495
	38	0.59889	0.1429	0.0071	223.1	372.8	33.000	6.27	11.09	502
	39	0.61668	0.1476	0.0069	229.7	383.9	33.287	6.27	11.04	510
	40	0.63439	0.1523	0.0067	236.3	394.9	33.566	6.27	10.99	517
	42	0.66959	0.1617	0.0063	249.4	416.8	34.100	6.26	10.92	531
	44	0.70454	0.1709	0.0060	262.5	438.6	34.607	6.27	10.86	544
	46	0.73928	0.1800	0.0057	275.5	460.3	35.089	6.27	10.82	557
	48	0.77385	0.1890	0.0054	288.4	481.9	35.549	6.29	10.79	570
	50	0.80827	0.1980	0.0052	301.4	503.5	35.989	6.31	10.78	582
	52	0.84256	0.2069	0.0050	314.4	525.0	36.412	6.33	10.77	593
	54	0.87674	0.2157	0.0048	327.4	546.6	36.818	6.36	10.78	604
	56	0.91082	0.2245	0.0046	340.4	568.1	37.210	6.41	10.79	615
	58	0.94481	0.2332	0.0044	353.6	589.8	374590	6.46	10.82	625
	60	0.97873	0.2419	0.0043	366.8	611.4	37.957	6.51	10.86	635
	65	1.06323	0.2636	0.0039	400.3	666.1	38.832	6.70	11.01	658
	70	1.14741	0.2850	0.0036	434.8	721.7	39.656	6.95	11.23	679
	75	1.23134	0.3064	0.0034	470.7	778.5	40.440	7.25	11.51	697
	80	1.31507	0.3276	0.0032	508.1	836.9	41.194	7.61	11.85	714
	85	1.39864	0.3488	0.0030	547.4	897.1	41.923	8.00	12.22	730
	90	1.48207	0.3699	0.0028	588.7	959.2	42.633	8.41	12.63	745
	95	1.56540	0.3909	0.0027	632.0	1023.4	43.327	8.84	13.05	759
	100	1.64864	0.4119	0.0025	677.5	1089.7	44.007	9.28	13.47	773
	120	1.98088	0.4955	0.0021	879.8	1375.1	46.603	10.83	15.00	828
	140	2.31241	0.5788	0.0018	1107.8	1685.9	48.996	11.82	15.98	884
	160	2.64350	0.6618	0.0016	1349.3	2010.2	51.161	12.21	16.36	942
	180	2.97431	0.7448	0.0014	1594.1	2337.7	53.090	12.19	16.33	999
	200	3.30493	0.8276	0.0013	1835.8	2662.1	54.798	11.95	16.09	1056
	220	3.63540	0.9103	0.0011	2071.8	2980.6	56.317	11.63	15.77	1111
	240	3.96578	0.9930	0.0010	2301.4	3292.9	57.675	11.33	15.46	1164
	260	4.29608	1.0757	0.0010	2525.5	3599.5	58.903	11.07	15.21	1215
	280	4.62632	1.1583	0.0009	2744.9	3901.5	60.022	10.87	15.00	1264
	300	4.95618	1.2408	0.0008	2960.9	4200.0	61.052	10.72	14.85	1311
	350	5.78144	1.4473	0.0007	3491.0	4936.4	63.321	10.51	14.64	1420
	400	6.60656	1.6536	0.0006	4014.1	5665.8	65.271	10.43	14.55	1519
	450	7.43160	1.8599	0.0006	4534.4	6392.3	66.983	10.41	14.53	1612
	500	8.25658	2.0662	0.0005	5054.8	7119.0	68.513	10.40	14.53	1699
	550	9.08153	2.2725	0.0005	5574.8	7845.2	69.897	10.41	14.53	1781
	600	9.90646	2.4787	0.0004	6095.8	8572.4	71.162	10.42	14.55	1860
	700	11.55625	2.8912	0.0004	7140.8	10029.9	73.409	10.48	14.61	2007
	800	13.20601	3.3037	0.0003	8193.3	11494.8	75.364	10.57	14.70	2143
	900	14.85574	3.7161	0.0003	9256.6	12970.6	77.101	10.70	14.82	2269
	1000	16.50545	4.1286	0.0003	10333.9	14460.2	78.673	10.86	14.98	2387
	1200	19.80485	4.9534	0.0002	12544.1	17495.3	81.427	11.24	15.37	2602
	1400	23.10426	5.7783	0.0002	14837.0	20613.0	83.833	11.68	15.81	2796
	1600	26.40404	6.6031	0.0002	17218.3	23819.3	85.951	12.13	16.26	2975
	1800	29.70632	7.4280	0.0001	19700.8	27127.4	87.861	12.66	16.80	3139
	2000	33.01935	8.2528	0.0001	22329.8	30584.7	89.748	13.55	17.73	3287
	2500	41.58048	10.3149	0.0001	30582.5	40977.6	96.702	20.82	25.71	3568
	3000	51.98234	12.3770	0.0001	46661.3	59656.9	106.810	44.80	53.57	3842

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.25 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.885	77.1545	626.5	0.25619	90.8919	0.01019	73.63	256.32	0.00054	1.25206	2.2222
14	77.0506	625.7	0.25517	89.9438	0.01030	74.79	252.05	0.00054	1.25170	2.1711
15	76.2363	612.3	0.24452	80.5409	0.01137	83.33	221.85	0.00057	1.24883	1.8534
16	75.3451	615.0	0.23317	74.5620	0.01204	89.24	197.46	0.00058	1.24571	1.6381
17	74.4107	614.8	0.22406	68.8847	0.01281	93.14	177.80	0.00057	1.24243	1.5032
18	73.4314	612.5	0.21646	63.5428	0.01366	95.90	161.61	0.00056	1.23901	1.4097
19	72.4005	604.9	0.20995	57.9339	0.01472	97.49	148.01	0.00054	1.23541	1.3514
20	71.3054	595.5	0.20413	52.5755	0.01589	98.89	136.31	0.00053	1.23159	1.3044
21	70.1314	582.0	0.19889	47.0814	0.01734	100.49	126.05	0.00051	1.22751	1.2657
22	68.8698	565.8	0.19399	41.6725	0.01907	101.30	116.92	0.00049	1.22313	1.2451
23	67.4908	544.5	0.18907	36.0382	0.02134	101.38	108.58	0.00047	1.21836	1.2443
* 23.751	66.3708	528.3	0.18510	32.0967	0.02325	100.99	102.75	0.00045	1.21449	1.2500
* 23.751	3.0843	203.3	0.06730	0.1988	0.07022	21.44	13.56	0.00175	1.00932	0.9028
24	3.0310	206.5	0.06747	0.2009	0.06806	21.53	13.68	0.00182	1.00916	0.8928
25	2.8422	219.1	0.06792	0.2078	0.06097	21.98	14.16	0.00208	1.00859	0.8607
26	2.6816	231.6	0.06813	0.2132	0.05558	22.51	14.64	0.00235	1.00810	0.8374
27	2.5422	244.1	0.06820	0.2176	0.05129	23.09	15.12	0.00261	1.00768	0.8195
28	2.4195	256.3	0.06821	0.2212	0.04776	23.71	15.60	0.00288	1.00731	0.8051
29	2.3102	268.5	0.06818	0.2243	0.04478	24.35	16.07	0.00316	1.00698	0.7934
30	2.2119	280.4	0.06813	0.2268	0.04223	25.01	16.54	0.00344	1.00668	0.7834
31	2.1229	292.3	0.06808	0.2290	0.04000	25.66	17.01	0.00372	1.00641	0.7752
32	2.0417	304.0	0.06803	0.2310	0.03804	26.31	17.47	0.00401	1.00616	0.7681
33	1.9672	315.6	0.06797	0.2326	0.03630	26.96	17.93	0.00431	1.00594	0.7620
34	1.8986	327.1	0.06795	0.2341	0.03473	27.62	18.39	0.00461	1.00573	0.7563
35	1.8351	338.5	0.06792	0.2354	0.03332	28.28	18.84	0.00492	1.00554	0.7512
36	1.7761	349.8	0.06789	0.2366	0.03203	28.95	19.29	0.00524	1.00536	0.7466
37	1.7211	361.1	0.06785	0.2376	0.03086	29.62	19.73	0.00556	1.00520	0.7423
38	1.6697	372.3	0.06780	0.2385	0.02978	30.29	20.17	0.00589	1.00504	0.7383
39	1.6216	383.5	0.06776	0.2394	0.02878	30.96	20.61	0.00623	1.00489	0.7346
40	1.5763	394.7	0.06770	0.2401	0.02785	31.64	21.04	0.00657	1.00476	0.7311
42	1.4935	417.0	0.06758	0.2415	0.02618	32.98	21.90	0.00728	1.00451	0.7250
44	1.4194	439.4	0.06743	0.2426	0.02473	34.33	22.74	0.00802	1.00428	0.7195
46	1.3527	461.8	0.06724	0.2435	0.02344	35.69	23.56	0.00878	1.00408	0.7146
48	1.2922	484.3	0.06700	0.2443	0.02228	37.04	24.38	0.00956	1.00390	0.7102
50	1.2372	507.1	0.06672	0.2450	0.02125	38.41	25.18	0.01037	1.00373	0.7064
52	1.1869	530.2	0.06637	0.2455	0.02031	39.77	25.97	0.01120	1.00358	0.7032
54	1.1406	553.8	0.06596	0.2460	0.01946	41.14	26.74	0.01205	1.00344	0.7006
56	1.0979	577.8	0.06547	0.2465	0.01868	42.51	27.51	0.01291	1.00331	0.6985
58	1.0584	602.4	0.06491	0.2469	0.01797	43.88	28.26	0.01379	1.00319	0.6971
60	1.0217	627.7	0.06428	0.2472	0.01731	45.32	29.01	0.01470	1.00308	0.6954
65	0.9405	694.3	0.06238	0.2479	0.01586	49.14	30.83	0.01708	1.00284	0.6909
70	0.8715	766.7	0.06008	0.2484	0.01465	52.97	32.59	0.01948	1.00263	0.6911
75	0.8121	845.6	0.05751	0.2488	0.01361	56.76	34.31	0.02186	1.00245	0.6958
80	0.7604	931.3	0.05480	0.2491	0.01272	60.64	35.98	0.02424	1.00229	0.7028
85	0.7150	1023.6	0.05208	0.2494	0.01194	65.58	37.60	0.02702	1.00216	0.7008
90	0.6747	1122.3	0.04946	0.2496	0.01125	70.52	39.19	0.02980	1.00203	0.7017
95	0.6388	1226.4	0.04702	0.2497	0.01064	75.46	40.74	0.03259	1.00193	0.7045
100	0.6066	1335.0	0.04481	0.2498	0.01009	80.60	45.74	0.03947	1.00183	0.6878
120	0.5048	1791.2	0.03832	0.2502	0.00838	117.10	54.06	0.05566	1.00152	0.6926
140	0.4324	2230.9	0.03507	0.2503	0.00716	136.11	59.19	0.07091	1.00130	0.6948
160	0.3783	2614.1	0.03392	0.2504	0.00626	148.28	63.00	0.08624	1.00114	0.6951
180	0.3362	2937.7	0.03397	0.2504	0.00556	155.66	66.18	0.10206	1.00101	0.6943
200	0.3026	3216.8	0.03464	0.2504	0.00500	160.22	69.03	0.11851	1.00091	0.6930
220	0.2751	3470.0	0.03556	0.2504	0.00454	163.44	71.68	0.13565	1.00083	0.6915
240	0.2522	3713.0	0.03650	0.2504	0.00416	166.27	74.21	0.15351	1.00076	0.6901
260	0.2328	3956.2	0.03733	0.2504	0.00384	169.20	76.66	0.17209	1.00070	0.6890
280	0.2162	4204.2	0.03802	0.2504	0.00357	172.43	79.07	0.19140	1.00065	0.6880
300	0.2018	4458.8	0.03855	0.2504	0.00333	175.98	81.43	0.21144	1.00061	0.6872
350	0.1730	5127.4	0.03931	0.2503	0.00265	186.21	87.26	0.26479	1.00052	0.6859
400	0.1514	5826.1	0.03962	0.2503	0.00250	197.54	93.01	0.32285	1.00046	0.6852
450	0.1346	6544.9	0.03969	0.2503	0.00222	209.44	98.69	0.38560	1.00041	0.6847
500	0.1211	7269.0	0.03970	0.2503	0.00200	221.39	104.31	0.45303	1.00036	0.6844
550	0.1101	8000.2	0.03966	0.2502	0.00182	233.42	109.87	0.52506	1.00033	0.6841
600	0.1009	8736.6	0.03960	0.2502	0.00167	245.44	115.37	0.60159	1.00030	0.6840
700	0.0865	10231.0	0.03938	0.2502	0.00143	269.55	126.18	0.76779	1.00026	0.6837
800	0.0757	11764.8	0.03904	0.2502	0.00125	293.95	136.74	0.95088	1.00023	0.6837
900	0.0673	13348.9	0.03857	0.2501	0.00111	318.80	147.04	1.15014	1.00020	0.6837
1000	0.0606	14990.6	0.03800	0.2501	0.00100	440.56	157.11	1.74717	1.00018	0.5343
1200	0.0505	18448.8	0.03670	0.2501	0.00083	511.14	176.61	2.37145	1.00015	0.5310
1400	0.0433	22138.0	0.03532	0.2501	0.00071	583.56	195.33	3.07064	1.00013	0.5291
1600	0.0379	26017.7	0.03401	0.2501	0.00062	657.72	213.38	3.84596	1.00011	0.5274
1800	0.0337	30244.2	0.03259	0.2500	0.00056	740.80	230.85	4.71587	1.00010	0.5235
2000	0.0303	35450.3	0.03047	0.2499	0.00050	856.89	247.84	5.74509	1.00009	0.5128
2500	0.0240	63789.6	0.01997	0.2481	0.00040	1707.89	289.40	9.94206	1.00007	0.4357
3000	0.0192	153046.9	0.00967	0.2381	0.00035	4814.04	335.26	16.81836	1.00006	0.3730

* TWO-PHASE BOUNDARY

0.30 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.901	0.01296	1.1812	0.9267	-308.8	-304.9	4.973	4.69	6.38	1268
14	0.01297	1.1750	0.9266	-308.2	-304.3	5.020	4.71	6.43	1267
15	0.01311	1.0616	0.9176	-301.5	-297.6	5.480	4.91	6.96	1226
16	0.01326	0.9945	0.8992	-294.4	-290.4	5.943	5.11	7.40	1200
17	0.01343	0.9305	0.8840	-286.8	-282.8	6.406	5.29	7.86	1176
18	0.01361	0.8704	0.8694	-278.8	-274.7	6.869	5.46	8.35	1154
19	0.01380	0.8051	0.8542	-270.2	-266.1	7.335	5.61	8.89	1130
20	0.01401	0.7424	0.8370	-261.1	-256.9	7.804	5.74	9.44	1105
21	0.01424	0.6765	0.8180	-251.5	-247.2	8.279	5.85	10.06	1079
22	0.01450	0.6106	0.7964	-241.1	-236.8	8.763	5.95	10.75	1051
23	0.01480	0.5414	0.7710	-230.1	-225.6	9.259	6.02	11.55	1019
24	0.01513	0.4708	0.7406	-218.2	-213.6	9.770	6.09	12.49	983
* 24.571	0.01535	0.4345	0.7207	-210.9	-206.3	10.071	6.12	13.04	962
* 24.571	0.27220	0.0625	0.0168	121.7	203.3	26.754	6.78	15.05	372
25	0.28074	0.0658	0.0162	125.5	209.7	27.012	6.71	14.59	378
26	0.29965	0.0730	0.0150	134.0	223.9	27.568	6.59	13.80	391
27	0.31775	0.0797	0.0140	142.1	237.4	28.078	6.52	13.25	403
28	0.33525	0.0861	0.0132	149.9	250.5	28.552	6.47	12.84	413
29	0.35227	0.0921	0.0125	157.4	263.1	28.997	6.43	12.52	424
30	0.36892	0.0980	0.0119	164.8	275.5	29.417	6.40	12.27	433
31	0.38526	0.1036	0.0113	172.1	287.7	29.816	6.38	12.07	443
32	0.40135	0.1091	0.0108	179.3	299.7	30.196	6.36	11.89	452
33	0.41722	0.1145	0.0104	186.3	311.6	30.560	6.35	11.75	460
34	0.43291	0.1198	0.0100	193.3	323.2	30.909	6.33	11.62	469
35	0.44844	0.1250	0.0096	200.2	334.7	31.244	6.32	11.51	477
36	0.46382	0.1300	0.0093	207.1	346.2	31.567	6.31	11.42	485
37	0.47909	0.1351	0.0090	213.8	357.6	31.879	6.30	11.33	493
38	0.49425	0.1400	0.0087	220.6	368.9	32.180	6.29	11.26	501
39	0.50932	0.1449	0.0084	227.3	380.1	32.472	6.28	11.20	508
40	0.52429	0.1498	0.0081	234.0	391.3	32.755	6.28	11.14	515
42	0.55403	0.1593	0.0077	247.3	413.5	33.296	6.28	11.05	530
44	0.58350	0.1688	0.0073	260.4	435.5	33.809	6.28	10.98	543
46	0.61277	0.1781	0.0069	273.6	457.4	34.295	6.28	10.92	556
48	0.64185	0.1873	0.0066	286.6	479.2	34.759	6.30	10.88	569
50	0.67078	0.1964	0.0063	299.7	500.9	35.203	6.31	10.86	581
52	0.69958	0.2054	0.0060	312.8	522.6	35.629	6.34	10.84	593
54	0.72827	0.2143	0.0058	325.9	544.3	36.038	6.37	10.84	604
56	0.75685	0.2232	0.0056	339.0	566.0	36.433	6.41	10.86	615
58	0.78535	0.2321	0.0054	352.2	587.8	36.814	6.46	10.88	625
60	0.81376	0.2409	0.0052	365.4	609.6	37.183	6.52	10.91	635
65	0.88453	0.2627	0.0047	399.1	664.5	38.062	6.71	11.06	658
70	0.95496	0.2843	0.0044	433.7	720.2	38.889	6.95	11.27	679
75	1.02514	0.3058	0.0041	469.7	777.2	39.675	7.26	11.54	697
80	1.09512	0.3272	0.0038	507.2	835.8	40.430	7.61	11.87	715
85	1.16494	0.3484	0.0036	546.5	896.0	41.161	8.00	12.24	730
90	1.23463	0.3696	0.0034	587.9	958.2	41.872	8.41	12.65	745
95	1.30420	0.3907	0.0032	631.3	1022.5	42.567	8.85	13.07	760
100	1.37369	0.4118	0.0030	676.8	1088.9	43.248	9.28	13.49	774
120	1.65094	0.4956	0.0025	879.3	1374.6	45.846	10.83	15.01	829
140	1.92747	0.5791	0.0022	1107.4	1685.6	48.241	11.82	15.99	885
160	2.20356	0.6622	0.0019	1349.0	2010.0	50.407	12.21	16.37	942
180	2.47938	0.7452	0.0017	1593.8	2337.6	52.336	12.19	16.34	999
200	2.75500	0.8281	0.0015	1835.5	2662.0	54.045	11.95	16.09	1056
220	3.03048	0.9109	0.0014	2071.5	2980.7	55.564	11.63	15.77	1111
240	3.30587	0.9937	0.0013	2301.2	3293.0	56.922	11.33	15.47	1165
260	3.58117	1.0763	0.0012	2525.3	3599.6	58.150	11.07	15.21	1216
280	3.85642	1.1590	0.0011	2744.8	3901.7	59.269	10.87	15.01	1265
300	4.13135	1.2416	0.0010	2960.8	4200.2	60.299	10.72	14.85	1311
350	4.81913	1.4480	0.0009	3490.9	4936.6	62.569	10.51	14.64	1420
400	5.50678	1.6544	0.0008	4014.0	5666.1	64.518	10.43	14.55	1520
450	6.19435	1.8607	0.0007	4534.4	6392.7	66.231	10.41	14.53	1612
500	6.88186	2.0670	0.0006	5054.8	7119.3	67.761	10.40	14.53	1699
550	7.56934	2.2733	0.0005	5574.8	7845.6	69.145	10.41	14.53	1782
600	8.25679	2.4796	0.0005	6095.8	8572.8	70.410	10.43	14.55	1860
700	9.63164	2.8921	0.0004	7140.8	10030.2	72.657	10.48	14.61	2008
800	11.00645	3.3045	0.0004	8193.3	11495.2	74.612	10.57	14.70	2143
900	12.38124	3.7170	0.0003	9256.6	12971.0	76.349	10.70	14.82	2269
1000	13.75601	4.1294	0.0003	10333.8	14460.6	77.921	10.86	14.98	2387
1200	16.50551	4.9543	0.0003	12544.1	17495.7	80.675	11.24	15.37	2602
1400	19.25502	5.7792	0.0002	14836.9	20613.4	83.081	11.68	15.81	2796
1600	22.00482	6.6040	0.0002	17217.9	23819.4	85.199	12.13	16.25	2975
1800	24.75651	7.4289	0.0002	19698.7	27125.6	87.108	12.64	16.78	3140
2000	27.51638	8.2537	0.0002	22320.1	30575.0	88.990	13.48	17.66	3288
2500	34.62797	10.3158	0.0001	30431.8	40820.2	95.882	20.19	25.02	3574
3000	43.14034	12.3779	0.0001	45720.7	58662.8	105.690	42.21	50.52	3844

* TWO-PHASE BOUNDARY

0.30 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.901	77.1830	628.1	0.25612	91.1717	0.01016	73.84	256.63	0.00054	1.25216	2.2189
14	77.0933	628.6	0.25525	90.5832	0.01023	74.83	252.95	0.00054	1.25185	2.1737
15	76.2817	613.9	0.24492	80.9809	0.01133	83.39	222.62	0.00057	1.24899	1.8570
16	75.3938	616.7	0.23354	74.9777	0.01199	89.32	198.14	0.00058	1.24588	1.6405
17	74.4636	616.5	0.22441	69.2910	0.01276	93.24	178.41	0.00057	1.24262	1.5049
18	73.4888	614.4	0.21680	63.9613	0.01359	96.02	162.17	0.00056	1.23921	1.4107
19	72.4621	606.9	0.21028	58.3382	0.01464	97.62	148.52	0.00055	1.23562	1.3519
20	71.3718	597.7	0.20443	52.9831	0.01580	99.03	136.79	0.00053	1.23182	1.3042
21	70.2051	584.3	0.19917	47.4947	0.01722	100.66	126.51	0.00051	1.22776	1.2649
22	68.9515	568.4	0.19426	42.1036	0.01892	101.50	117.36	0.00049	1.22341	1.2434
23	67.5828	548.3	0.18937	36.5865	0.02107	101.60	109.02	0.00047	1.21868	1.2398
24	66.0882	524.8	0.18403	31.1119	0.02380	101.03	101.33	0.00044	1.21352	1.2529
* 24.571	65.1597	512.3	0.18067	28.3138	0.02545	100.39	97.14	0.00043	1.21032	1.2616
* 24.571	3.6738	205.1	0.06760	0.2296	0.07336	22.71	14.13	0.00148	1.01111	0.9363
25	3.5621	210.8	0.06787	0.2344	0.06921	22.83	14.33	0.00158	1.01077	0.9161
26	3.3372	224.0	0.06825	0.2437	0.06162	23.20	14.80	0.00181	1.01009	0.8801
27	3.1471	236.9	0.06842	0.2509	0.05592	23.69	15.27	0.00205	1.00951	0.8537
28	2.9829	249.7	0.06846	0.2568	0.05142	24.23	15.74	0.00228	1.00902	0.8336
29	2.8387	262.2	0.06844	0.2616	0.04775	24.81	16.20	0.00251	1.00858	0.8177
30	2.7106	274.6	0.06840	0.2656	0.04469	25.42	16.67	0.00275	1.00819	0.8045
31	2.5956	286.8	0.06834	0.2690	0.04207	26.05	17.13	0.00299	1.00784	0.7934
32	2.4916	298.8	0.06828	0.2719	0.03980	26.68	17.59	0.00324	1.00753	0.7840
33	2.3968	310.7	0.06822	0.2745	0.03781	27.31	18.04	0.00349	1.00724	0.7760
34	2.3100	322.4	0.06820	0.2767	0.03604	27.96	18.49	0.00375	1.00698	0.7687
35	2.2300	334.0	0.06818	0.2786	0.03446	28.61	18.94	0.00401	1.00673	0.7622
36	2.1560	345.5	0.06814	0.2804	0.03304	29.26	19.39	0.00428	1.00651	0.7564
37	2.0873	357.0	0.06810	0.2819	0.03175	29.92	19.83	0.00455	1.00630	0.7512
38	2.0233	368.4	0.06805	0.2833	0.03057	30.58	20.26	0.00483	1.00611	0.7465
39	1.9634	379.8	0.06800	0.2846	0.02949	31.24	20.70	0.00511	1.00593	0.7421
40	1.9073	391.1	0.06794	0.2857	0.02849	31.91	21.13	0.00540	1.00576	0.7380
42	1.8050	413.8	0.06781	0.2876	0.02671	33.23	21.98	0.00600	1.00545	0.7308
44	1.7138	436.3	0.06764	0.2892	0.02516	34.57	22.81	0.00661	1.00517	0.7245
46	1.6319	459.0	0.06744	0.2906	0.02380	35.91	23.64	0.00725	1.00493	0.7190
48	1.5580	481.7	0.06720	0.2917	0.02259	37.26	24.45	0.00791	1.00470	0.7141
50	1.4908	504.7	0.06690	0.2927	0.02151	38.62	25.25	0.00859	1.00450	0.7098
52	1.4294	528.0	0.06655	0.2936	0.02054	39.97	26.03	0.00928	1.00431	0.7063
54	1.3731	551.6	0.06613	0.2943	0.01966	41.33	26.81	0.00999	1.00414	0.7033
56	1.3213	575.8	0.06563	0.2949	0.01885	42.69	27.57	0.01072	1.00399	0.7010
58	1.2733	600.5	0.06507	0.2955	0.01812	44.06	28.32	0.01145	1.00384	0.6993
60	1.2289	625.9	0.06443	0.2960	0.01744	45.49	29.07	0.01221	1.00371	0.6974
65	1.1305	692.7	0.06251	0.2970	0.01596	49.30	30.88	0.01420	1.00341	0.6925
70	1.0472	765.3	0.06020	0.2977	0.01472	53.12	32.64	0.01621	1.00316	0.6924
75	0.9755	844.3	0.05761	0.2983	0.01367	56.90	34.36	0.01819	1.00294	0.6969
80	0.9131	930.1	0.05489	0.2987	0.01276	60.77	36.02	0.02018	1.00275	0.7037
85	0.8584	1022.5	0.05217	0.2991	0.01197	65.70	37.64	0.02250	1.00259	0.7015
90	0.8100	1121.2	0.04954	0.2994	0.01128	70.64	39.23	0.02483	1.00244	0.7023
95	0.7668	1225.4	0.04710	0.2996	0.01066	75.57	40.78	0.02716	1.00231	0.7050
100	0.7280	1334.1	0.04487	0.2998	0.01011	89.62	45.74	0.03286	1.00219	0.6884
120	0.6057	1790.7	0.03836	0.3002	0.00838	117.09	54.05	0.04636	1.00183	0.6930
140	0.5188	2230.7	0.03510	0.3004	0.00717	136.10	59.18	0.05908	1.00156	0.6952
160	0.4538	2614.2	0.03395	0.3005	0.00626	148.28	63.00	0.07187	1.00137	0.6954
180	0.4033	2938.1	0.03399	0.3006	0.00556	155.66	66.18	0.08506	1.00122	0.6945
200	0.3630	3217.4	0.03466	0.3006	0.00500	160.23	69.03	0.09877	1.00109	0.6931
220	0.3300	3470.8	0.03558	0.3006	0.00454	163.46	71.68	0.11307	1.00099	0.6916
240	0.3025	3713.9	0.03652	0.3006	0.00416	166.29	74.21	0.12796	1.00091	0.6902
260	0.2792	3957.2	0.03735	0.3006	0.00384	169.22	76.67	0.14345	1.00084	0.6890
280	0.2593	4205.2	0.03803	0.3005	0.00357	172.45	79.07	0.15955	1.00078	0.6880
300	0.2421	4459.9	0.03856	0.3005	0.00333	176.00	81.44	0.17626	1.00073	0.6872
350	0.2075	5128.6	0.03933	0.3005	0.00285	186.24	87.27	0.22074	1.00063	0.6859
400	0.1816	5827.4	0.03963	0.3004	0.00250	197.57	93.02	0.26914	1.00055	0.6852
450	0.1614	6546.3	0.03970	0.3004	0.00222	209.48	98.70	0.32145	1.00049	0.6847
500	0.1453	7270.4	0.03971	0.3004	0.00200	221.43	104.33	0.37766	1.00044	0.6844
550	0.1321	8001.6	0.03967	0.3003	0.00182	233.46	109.89	0.43770	1.00040	0.6841
600	0.1211	8738.1	0.03961	0.3003	0.00167	245.49	115.39	0.50150	1.00036	0.6840
700	0.1038	10232.4	0.03939	0.3003	0.00143	269.61	126.21	0.64004	1.00031	0.6837
800	0.0909	11766.3	0.03904	0.3002	0.00125	294.01	136.77	0.79266	1.00027	0.6837
900	0.0808	13350.4	0.03857	0.3002	0.00111	318.87	147.07	0.95876	1.00024	0.6837
1000	0.0727	14992.2	0.03801	0.3002	0.00100	440.56	157.15	1.45613	1.00022	0.5344
1200	0.0606	18450.4	0.03670	0.3002	0.00083	511.14	176.65	1.97638	1.00018	0.5311
1400	0.0519	22139.1	0.03532	0.3001	0.00071	583.53	195.38	2.55903	1.00016	0.5292
1600	0.0454	26013.8	0.03403	0.3001	0.00062	657.50	213.43	3.20478	1.00014	0.5276
1800	0.0404	30212.6	0.03264	0.3001	0.00056	739.50	230.91	3.92755	1.00012	0.5240
2000	0.0363	35315.2	0.03062	0.3000	0.00050	851.60	247.90	4.77675	1.00011	0.5141
2500	0.0289	62107.6	0.02058	0.2979	0.00040	1644.08	289.38	8.19221	1.00009	0.4403
3000	0.0232	144953.9	0.01022	0.2869	0.00035	4510.27	334.70	13.86503	1.00007	0.3749

* TWO-PHASE BOUNDARY

0.35 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.913	0.01295	1.1844	0.9273	-308.8	-304.3	4.974	4.69	6.39	1270
14	0.01296	1.1826	0.9272	-308.3	-303.7	5.014	4.71	6.42	1270
15	0.01310	1.0667	0.9194	-301.6	-297.1	5.473	4.91	6.95	1229
16	0.01326	0.9993	0.9009	-294.5	-289.9	5.936	5.10	7.39	1203
17	0.01342	0.9353	0.8856	-287.0	-282.3	6.398	5.29	7.86	1179
18	0.01360	0.8753	0.8710	-278.9	-274.2	6.860	5.45	8.34	1157
19	0.01379	0.8190	0.8559	-270.4	-265.6	7.325	5.60	8.87	1132
20	0.01400	0.7473	0.8386	-261.3	-256.4	7.793	5.73	9.42	1108
21	0.01423	0.6817	0.8197	-251.7	-246.7	8.267	5.85	10.04	1082
22	0.01449	0.6161	0.7982	-241.4	-236.4	8.749	5.94	10.72	1054
23	0.01478	0.5473	0.7730	-230.4	-225.2	9.244	6.02	11.51	1023
24	0.01511	0.4770	0.7430	-218.6	-213.3	9.752	6.09	12.43	987
25	0.01549	0.4056	0.7075	-205.8	-200.4	10.280	6.14	13.55	946
* 25.299	0.01562	0.3858	0.6949	-201.7	-196.2	10.445	6.16	13.89	933
* 25.299	0.23414	0.0603	0.0198	121.6	203.6	26.258	6.84	15.88	374
26	0.24651	0.0660	0.0186	128.2	214.4	26.682	6.72	15.02	384
27	0.26317	0.0735	0.0172	136.9	229.0	27.231	6.61	14.16	397
28	0.27906	0.0805	0.0161	145.2	242.8	27.735	6.54	13.56	408
29	0.29438	0.0870	0.0151	153.1	256.2	28.202	6.49	13.11	419
30	0.30925	0.0933	0.0143	160.9	269.1	28.641	6.45	12.76	429
31	0.32376	0.0993	0.0136	168.4	281.7	29.054	6.42	12.48	439
32	0.33801	0.1051	0.0130	175.8	294.1	29.447	6.40	12.26	449
33	0.35201	0.1107	0.0124	183.0	306.3	29.821	6.38	12.07	458
34	0.36580	0.1162	0.0119	190.2	318.2	30.179	6.36	11.90	466
35	0.37942	0.1216	0.0114	197.3	330.1	30.522	6.34	11.76	475
36	0.39289	0.1269	0.0110	204.3	341.8	30.852	6.33	11.64	483
37	0.40623	0.1321	0.0106	211.2	353.4	31.169	6.32	11.54	491
38	0.41946	0.1372	0.0103	218.0	364.8	31.476	6.31	11.45	499
39	0.43259	0.1422	0.0099	224.9	376.3	31.772	6.30	11.37	507
40	0.44562	0.1472	0.0096	231.6	387.6	32.059	6.30	11.30	514
42	0.47146	0.1570	0.0091	245.1	410.1	32.608	6.29	11.19	528
44	0.49704	0.1666	0.0086	258.4	432.4	33.126	6.29	11.10	542
46	0.52239	0.1761	0.0082	271.6	454.5	33.618	6.29	11.03	556
48	0.54756	0.1855	0.0078	284.8	476.5	34.086	6.30	10.98	568
50	0.57257	0.1947	0.0074	298.0	498.4	34.533	6.32	10.94	581
52	0.59745	0.2039	0.0071	311.2	520.3	34.962	6.35	10.92	592
54	0.62222	0.2130	0.0068	324.3	542.1	35.374	6.38	10.91	604
56	0.64688	0.2220	0.0065	337.5	563.9	35.771	6.42	10.92	614
58	0.67145	0.2309	0.0063	350.8	585.8	36.154	6.47	10.94	625
60	0.69594	0.2398	0.0061	364.1	607.7	36.525	6.52	10.97	635
65	0.75689	0.2618	0.0056	397.9	662.8	37.408	6.71	11.10	658
70	0.81750	0.2836	0.0051	432.7	718.8	38.237	6.96	11.30	679
75	0.87786	0.3052	0.0048	468.7	775.9	39.026	7.26	11.57	698
80	0.93802	0.3267	0.0045	506.3	834.6	39.783	7.61	11.90	715
85	0.99802	0.3481	0.0042	545.7	895.0	40.515	8.00	12.27	731
90	1.05788	0.3694	0.0039	587.1	957.3	41.227	8.42	12.67	746
95	1.11764	0.3906	0.0037	630.5	1021.7	41.923	8.85	13.08	760
100	1.17730	0.4117	0.0035	676.1	1088.1	42.605	9.28	13.50	774
120	1.41526	0.4958	0.0029	878.7	1374.1	45.205	10.83	15.02	829
140	1.65251	0.5794	0.0025	1106.9	1685.3	47.602	11.82	15.99	885
160	1.88933	0.6626	0.0022	1348.6	2009.8	49.768	12.21	16.37	942
180	2.12586	0.7457	0.0020	1593.4	2337.5	51.699	12.19	16.34	1000
200	2.36220	0.8287	0.0018	1835.3	2662.0	53.407	11.95	16.09	1056
220	2.59840	0.9115	0.0016	2071.3	2980.7	54.927	11.63	15.77	1112
240	2.83450	0.9943	0.0015	2301.0	3293.1	56.285	11.33	15.47	1165
260	3.07053	1.0770	0.0013	2525.1	3599.8	57.513	11.08	15.21	1216
280	3.30649	1.1597	0.0013	2744.6	3901.9	58.633	10.87	15.01	1265
300	3.54219	1.2423	0.0012	2960.6	4200.4	59.663	10.72	14.85	1312
350	4.13177	1.4488	0.0010	3490.8	4936.9	61.933	10.51	14.64	1421
400	4.72123	1.6552	0.0009	4013.9	5666.4	63.882	10.43	14.55	1520
450	5.31060	1.8615	0.0008	4534.3	6393.0	65.595	10.41	14.53	1612
500	5.89992	2.0679	0.0007	5054.7	7119.7	67.125	10.40	14.53	1699
550	6.48920	2.2742	0.0006	5574.7	7845.9	68.510	10.41	14.53	1782
600	7.07846	2.4804	0.0006	6095.7	8573.2	69.774	10.43	14.55	1861
700	8.25692	2.8929	0.0005	7140.7	10030.6	72.022	10.48	14.61	2008
800	9.43534	3.3054	0.0004	8193.2	11495.6	73.976	10.57	14.70	2144
900	10.61374	3.7179	0.0004	9256.6	12971.4	75.713	10.70	14.82	2270
1000	11.79212	4.1303	0.0004	10333.8	14461.1	77.285	10.86	14.98	2387
1200	14.14885	4.9552	0.0003	12544.1	17496.2	80.039	11.24	15.37	2602
1400	16.50557	5.7801	0.0003	14836.9	20613.8	82.446	11.68	15.81	2797
1600	18.86252	6.6049	0.0002	17217.7	23819.6	84.563	12.12	16.25	2975
1800	21.22097	7.4298	0.0002	19697.0	27124.3	86.471	12.63	16.77	3141
2000	23.58592	8.2546	0.0002	22312.5	30567.5	88.350	13.43	17.61	3289
2500	29.66646	10.3167	0.0001	30314.6	40697.9	95.192	19.71	24.48	3579
3000	36.85890	12.3788	0.0001	44989.2	57889.9	104.769	40.19	48.15	3846

* TWO-PHASE BOUNDARY

0.35 MPA ISOBAR

	TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
*	13.918	77.2115	629.7	0.25606	91.4518	0.01014	74.05	256.94	0.00054	1.25226	2.2156
	14	77.1358	631.5	0.25533	91.2209	0.01016	74.87	253.85	0.00054	1.25200	2.1762
	15	76.3270	615.5	0.24531	81.4195	0.01129	83.45	223.39	0.00057	1.24915	1.8606
	16	75.4422	618.3	0.23391	75.3921	0.01195	89.40	198.82	0.00058	1.24605	1.6430
	17	74.5163	618.2	0.22476	69.6955	0.01271	93.34	179.02	0.00057	1.24280	1.5066
	18	73.5458	616.3	0.21712	64.3776	0.01353	96.13	162.73	0.00056	1.23941	1.4117
	19	72.5233	608.8	0.21059	58.7405	0.01457	97.75	149.03	0.00055	1.23583	1.3524
	20	71.4378	599.8	0.20472	53.3890	0.01571	99.18	137.27	0.00053	1.23205	1.3041
	21	70.2782	586.7	0.19946	47.9054	0.01711	100.82	126.97	0.00051	1.22802	1.2641
	22	69.0324	571.1	0.19454	42.5317	0.01877	101.69	117.81	0.00049	1.22369	1.2417
	23	67.6752	551.3	0.18966	37.0390	0.02087	101.82	109.47	0.00047	1.21899	1.2370
	24	66.1935	528.1	0.18438	31.5729	0.02353	101.28	101.78	0.00044	1.21388	1.2489
	25	64.5558	501.3	0.17842	26.1848	0.02702	100.08	94.56	0.00041	1.20824	1.2799
*	25.299	64.0123	493.5	0.17627	24.6966	0.02814	99.54	92.41	0.00040	1.20637	1.2891
*	25.299	4.2710	206.2	0.06790	0.2575	0.07699	23.94	14.66	0.00127	1.01293	0.9724
	26	4.0566	216.0	0.06830	0.2678	0.06953	24.06	14.98	0.00142	1.01228	0.9349
	27	3.7998	229.6	0.06858	0.2793	0.06168	24.39	15.43	0.00163	1.01150	0.8958
	28	3.5834	242.9	0.06868	0.2883	0.05581	24.83	15.88	0.00184	1.01084	0.8674
	29	3.3970	255.9	0.06869	0.2956	0.05122	25.33	16.34	0.00205	1.01027	0.8457
	30	3.2336	268.7	0.06865	0.3016	0.04749	25.88	16.80	0.00226	1.00978	0.8284
	31	3.0885	281.3	0.06859	0.3066	0.04438	26.47	17.25	0.00247	1.00934	0.8137
	32	2.9585	293.6	0.06853	0.3108	0.04174	27.08	17.70	0.00269	1.00894	0.8014
	33	2.8408	305.8	0.06846	0.3145	0.03945	27.69	18.15	0.00291	1.00859	0.7911
	34	2.7337	317.7	0.06845	0.3177	0.03745	28.31	18.60	0.00313	1.00826	0.7819
	35	2.6356	329.6	0.06843	0.3205	0.03569	28.94	19.05	0.00336	1.00796	0.7740
	36	2.5452	341.3	0.06840	0.3229	0.03411	29.58	19.49	0.00359	1.00769	0.7669
	37	2.4616	352.9	0.06836	0.3251	0.03269	30.22	19.92	0.00383	1.00744	0.7607
	38	2.3840	364.5	0.06830	0.3270	0.03141	30.87	20.36	0.00407	1.00720	0.7550
	39	2.3117	376.1	0.06825	0.3288	0.03023	31.52	20.79	0.00432	1.00698	0.7499
	40	2.2441	387.6	0.06818	0.3303	0.02916	32.18	21.22	0.00457	1.00678	0.7451
	42	2.1211	410.5	0.06804	0.3330	0.02725	33.49	22.06	0.00508	1.00641	0.7369
	44	2.0119	433.3	0.06786	0.3353	0.02561	34.82	22.89	0.00561	1.00607	0.7297
	46	1.9143	456.2	0.06765	0.3372	0.02417	36.15	23.71	0.00616	1.00578	0.7235
	48	1.8263	479.2	0.06740	0.3387	0.02291	37.48	24.52	0.00673	1.00551	0.7180
	50	1.7465	502.3	0.06709	0.3401	0.02178	38.83	25.31	0.00732	1.00527	0.7133
	52	1.6738	525.7	0.06673	0.3413	0.02077	40.17	26.10	0.00791	1.00505	0.7093
	54	1.6072	549.5	0.06630	0.3423	0.01986	41.53	26.87	0.00852	1.00485	0.7060
	56	1.5459	573.8	0.06580	0.3431	0.01902	42.88	27.63	0.00915	1.00467	0.7034
	58	1.4893	598.6	0.06522	0.3439	0.01827	44.24	28.38	0.00978	1.00449	0.7016
	60	1.4369	624.1	0.06458	0.3446	0.01757	45.67	29.12	0.01043	1.00434	0.6994
	65	1.3212	691.2	0.06265	0.3459	0.01606	49.47	30.94	0.01214	1.00399	0.6941
	70	1.2232	763.9	0.06032	0.3469	0.01480	53.27	32.69	0.01387	1.00369	0.6936
	75	1.1391	843.0	0.05772	0.3477	0.01373	57.03	34.40	0.01558	1.00344	0.6980
	80	1.0661	928.9	0.05499	0.3483	0.01281	60.90	36.06	0.01728	1.00322	0.7046
	85	1.0020	1021.4	0.05226	0.3488	0.01201	65.82	37.69	0.01928	1.00302	0.7022
	90	0.9453	1120.2	0.04962	0.3492	0.01131	70.75	39.27	0.02127	1.00285	0.7038
	95	0.8947	1224.5	0.04717	0.3495	0.01068	75.68	40.82	0.02328	1.00270	0.7055
	100	0.8494	1333.2	0.04494	0.3497	0.01013	80.65	45.74	0.02814	1.00256	0.6890
	120	0.7066	1790.2	0.03840	0.3503	0.00839	117.09	54.05	0.03971	1.00213	0.6935
	140	0.6051	2230.5	0.03514	0.3506	0.00717	136.10	59.18	0.05062	1.00182	0.6955
	160	0.5293	2614.4	0.03397	0.3507	0.00626	148.28	63.00	0.06160	1.00160	0.6956
	180	0.4704	2938.5	0.03402	0.3508	0.00556	155.67	66.18	0.07291	1.00142	0.6947
	200	0.4233	3218.0	0.03468	0.3508	0.00500	160.24	69.03	0.08468	1.00128	0.6933
	220	0.3849	3471.6	0.03560	0.3508	0.00454	163.47	71.69	0.09694	1.00116	0.6917
	240	0.3528	3714.8	0.03654	0.3508	0.00416	166.30	74.22	0.10971	1.00106	0.6903
	260	0.3257	3958.2	0.03737	0.3508	0.00384	169.24	76.67	0.12299	1.00098	0.6891
	280	0.3024	4206.3	0.03805	0.3507	0.00357	172.47	79.08	0.13680	1.00091	0.6881
	300	0.2823	4461.1	0.03858	0.3507	0.00333	176.03	81.45	0.15113	1.00085	0.6873
	350	0.2420	5129.9	0.03934	0.3506	0.00285	186.26	87.28	0.18927	1.00073	0.6860
	400	0.2118	5828.8	0.03964	0.3506	0.00250	197.60	93.03	0.23077	1.00064	0.6852
	450	0.1883	6547.6	0.03971	0.3505	0.00222	209.51	98.72	0.27562	1.00057	0.6847
	500	0.1695	7271.8	0.03972	0.3505	0.00200	221.47	104.34	0.32382	1.00051	0.6844
	550	0.1541	8003.0	0.03968	0.3505	0.00182	233.50	109.91	0.37530	1.00046	0.6841
	600	0.1413	8739.6	0.03961	0.3504	0.00166	245.53	115.41	0.43001	1.00043	0.6840
	700	0.1211	10233.9	0.03939	0.3504	0.00143	269.66	126.23	0.54879	1.00036	0.6837
	800	0.1060	11767.8	0.03905	0.3503	0.00125	294.07	136.79	0.67965	1.00032	0.6837
	900	0.0942	13352.0	0.03858	0.3503	0.00111	318.93	147.11	0.82207	1.00028	0.6837
	1000	0.0848	14993.8	0.03801	0.3503	0.00100	440.56	157.18	1.24824	1.00026	0.5346
	1200	0.0707	18452.0	0.03671	0.3502	0.00083	511.14	176.69	1.69419	1.00021	0.5312
	1400	0.0606	22140.4	0.03532	0.3502	0.00071	583.52	195.42	2.19359	1.00018	0.5294
	1600	0.0530	25011.1	0.03404	0.3502	0.00062	657.33	213.48	2.74687	1.00016	0.5277
	1800	0.0471	30188.4	0.03267	0.3501	0.00056	738.48	230.97	3.36495	1.00014	0.5244
	2000	0.0424	35210.5	0.03073	0.3500	0.00050	847.49	247.96	4.08714	1.00013	0.5151
	2500	0.0337	60799.1	0.02108	0.3478	0.00040	1594.42	289.38	6.95696	1.00010	0.4442
	3000	0.0271	138607.2	0.01070	0.3358	0.00035	4271.99	334.27	11.77275	1.00008	0.3768

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.40 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.935	0.01295	1.1876	0.9279	-308.8	-303.6	4.975	4.69	6.39	1271
14	0.01296	1.1902	0.9278	-308.3	-303.2	5.007	4.71	6.41	1273
15	0.01309	1.0718	0.9211	-301.8	-296.5	5.465	4.91	6.94	1231
16	0.01325	1.0042	0.9025	-294.6	-289.3	5.928	5.10	7.38	1205
17	0.01341	0.9401	0.8872	-287.1	-281.7	6.389	5.29	7.85	1181
18	0.01358	0.8826	0.8729	-279.1	-273.7	6.850	5.45	8.32	1160
19	0.01378	0.8191	0.8576	-270.6	-265.1	7.314	5.60	8.84	1137
20	0.01399	0.7523	0.8402	-261.6	-256.0	7.782	5.73	9.40	1111
21	0.01421	0.6868	0.8213	-252.0	-246.3	8.255	5.84	10.01	1085
22	0.01447	0.6215	0.8000	-241.7	-235.9	8.736	5.94	10.68	1057
23	0.01476	0.5532	0.7751	-230.8	-224.9	9.228	6.02	11.46	1026
24	0.01508	0.4831	0.7454	-219.0	-213.0	9.734	6.09	12.37	991
25	0.01546	0.4122	0.7103	-206.3	-200.1	10.259	6.14	13.46	950
* 25.957	0.01590	0.3437	0.6694	-192.9	-186.6	10.790	6.19	14.74	905
* 25.957	0.20496	0.0579	0.0229	121.1	203.1	25.813	6.89	16.79	376
26	0.20572	0.0583	0.0228	121.6	203.9	25.842	6.88	16.71	376
27	0.22161	0.0668	0.0208	131.2	219.9	26.445	6.72	15.34	390
28	0.23648	0.0745	0.0193	140.1	234.7	26.985	6.62	14.44	403
29	0.25063	0.0817	0.0180	148.6	248.8	27.480	6.56	13.80	415
30	0.26426	0.0884	0.0170	156.7	262.4	27.940	6.51	13.33	425
31	0.27747	0.0948	0.0160	164.5	275.5	28.371	6.47	12.96	436
32	0.29036	0.1009	0.0153	172.2	288.3	28.777	6.44	12.66	445
33	0.30298	0.1068	0.0145	179.7	300.9	29.163	6.42	12.41	455
34	0.31537	0.1126	0.0139	187.0	313.2	29.531	6.39	12.21	464
35	0.32758	0.1182	0.0133	194.2	325.3	29.882	6.37	12.03	473
36	0.33963	0.1237	0.0128	201.4	337.2	30.219	6.35	11.88	481
37	0.35154	0.1290	0.0124	208.4	349.1	30.543	6.34	11.76	489
38	0.36332	0.1343	0.0119	215.4	360.8	30.855	6.33	11.65	497
39	0.37500	0.1395	0.0115	222.4	372.4	31.156	6.32	11.55	505
40	0.38659	0.1446	0.0112	229.2	383.9	31.447	6.31	11.47	513
42	0.40952	0.1547	0.0105	242.8	406.7	32.003	6.30	11.33	527
44	0.43217	0.1645	0.0099	256.3	429.2	32.528	6.30	11.22	541
46	0.45460	0.1742	0.0094	269.7	451.5	33.024	6.30	11.14	555
48	0.47684	0.1837	0.0089	283.0	473.8	33.497	6.31	11.07	568
50	0.49892	0.1931	0.0085	296.3	495.8	33.948	6.33	11.03	580
52	0.52086	0.2024	0.0082	309.5	517.9	34.380	6.35	11.00	592
54	0.54268	0.2116	0.0078	322.8	539.8	34.794	6.38	10.98	603
56	0.56440	0.2207	0.0075	336.0	561.8	35.194	6.42	10.98	614
58	0.58603	0.2297	0.0072	349.4	583.8	35.579	6.47	10.99	625
60	0.60758	0.2387	0.0070	362.8	605.8	35.952	6.53	11.02	635
65	0.66116	0.2610	0.0064	396.7	661.1	36.839	6.71	11.14	658
70	0.71441	0.2829	0.0059	431.6	717.3	37.671	6.96	11.34	679
75	0.76741	0.3047	0.0055	467.7	774.6	38.462	7.26	11.60	698
80	0.82020	0.3263	0.0051	505.4	833.4	39.221	7.61	11.92	715
85	0.87283	0.3478	0.0048	544.8	894.0	39.954	8.00	12.29	731
90	0.92533	0.3691	0.0045	586.2	956.4	40.668	8.42	12.69	746
95	0.97772	0.3904	0.0043	629.8	1020.8	41.365	8.85	13.10	760
100	1.03002	0.4116	0.0041	675.4	1087.4	42.047	9.28	13.52	774
120	1.23851	0.4959	0.0034	878.2	1373.6	44.650	10.83	15.03	830
140	1.44630	0.5796	0.0029	1106.4	1685.0	47.048	11.82	16.00	886
160	1.65365	0.6630	0.0025	1348.2	2009.6	49.215	12.22	16.38	943
180	1.86072	0.7462	0.0022	1593.1	2337.4	51.146	12.19	16.34	1000
200	2.06760	0.8292	0.0020	1835.0	2662.0	52.855	11.95	16.10	1057
220	2.27434	0.9121	0.0018	2071.0	2980.8	54.375	11.63	15.78	1112
240	2.48098	0.9949	0.0017	2300.8	3293.2	55.734	11.33	15.47	1165
260	2.68754	1.0777	0.0015	2524.9	3599.9	56.962	11.08	15.21	1217
280	2.89405	1.1604	0.0014	2744.4	3902.0	58.081	10.87	15.01	1266
300	3.10031	1.2430	0.0013	2960.5	4200.6	59.112	10.72	14.85	1312
350	3.61625	1.4496	0.0011	3490.7	4937.2	61.382	10.51	14.64	1421
400	4.13206	1.6560	0.0010	4013.8	5666.7	63.331	10.43	14.55	1520
450	4.64779	1.8624	0.0009	4534.2	6393.3	65.044	10.41	14.53	1613
500	5.16346	2.0687	0.0008	5054.6	7120.0	66.574	10.40	14.53	1700
550	5.67910	2.2750	0.0007	5574.7	7846.3	67.959	10.41	14.53	1782
600	6.19471	2.4813	0.0007	6095.7	8573.6	69.223	10.43	14.55	1861
700	7.22588	2.8938	0.0006	7140.7	10031.0	71.471	10.48	14.61	2008
800	8.25701	3.3063	0.0005	8193.2	11496.0	73.426	10.57	14.70	2144
900	9.28811	3.7187	0.0004	9256.6	12971.8	75.162	10.70	14.82	2270
1000	10.31920	4.1312	0.0004	10333.8	14461.5	76.734	10.86	14.98	2388
1200	12.38135	4.9561	0.0003	12544.1	17496.6	79.488	11.24	15.37	2603
1400	14.44349	5.7809	0.0003	14836.8	20614.2	81.895	11.68	15.81	2797
1600	16.50580	6.6058	0.0003	17217.5	23819.8	84.012	12.12	16.25	2976
1800	18.56935	7.4306	0.0002	19695.6	27123.4	85.919	12.62	16.75	3141
2000	20.63822	8.2555	0.0002	22306.3	30561.6	87.796	13.39	17.56	3290
2500	25.94803	10.3176	0.0002	30220.2	40599.4	94.598	19.31	24.04	3583
3000	32.16812	12.3797	0.0001	44399.4	57266.7	103.987	38.56	46.24	3848

* TWO-PHASE BOUNDARY

0.40 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.935	77.2399	631.3	0.25599	91.7322	0.01011	74.25	257.26	0.00054	1.25236	2.2124
14	77.1782	634.3	0.25541	91.8568	0.01010	74.91	254.75	0.00055	1.25215	2.1789
15	76.3720	617.1	0.24570	81.8567	0.01125	83.51	224.16	0.00057	1.24931	1.8642
16	75.4904	619.9	0.23427	75.8051	0.01191	89.48	199.49	0.00058	1.24621	1.6455
17	74.5686	619.9	0.22511	70.0983	0.01266	93.43	179.63	0.00057	1.24298	1.5084
18	73.6116	619.2	0.21750	64.9667	0.01344	96.26	163.38	0.00057	1.23964	1.4120
19	72.5911	612.8	0.21094	59.4563	0.01442	97.89	149.60	0.00055	1.23607	1.3508
20	71.5035	602.0	0.20502	53.7931	0.01562	99.33	137.75	0.00053	1.23228	1.3040
21	70.3507	589.0	0.19974	48.3137	0.01700	100.99	127.43	0.00052	1.22827	1.2634
22	69.1127	573.7	0.19481	42.9569	0.01862	101.88	118.25	0.00050	1.22397	1.2401
23	67.7665	554.3	0.18995	37.4872	0.02068	102.04	109.91	0.00047	1.21931	1.2344
24	66.2974	531.4	0.18472	32.0293	0.02327	101.53	102.22	0.00045	1.21424	1.2450
25	64.6759	505.0	0.17883	26.6581	0.02664	100.37	95.02	0.00042	1.20865	1.2739
* 25.957	62.9088	476.2	0.17182	21.6193	0.03096	98.50	88.30	0.00038	1.20259	1.3216
* 25.957	4.8790	206.9	0.06820	0.2826	0.08113	25.16	15.16	0.00111	1.01478	1.0116
26	4.8610	207.6	0.06823	0.2835	0.08050	25.15	15.18	0.00111	1.01472	1.0083
27	4.5124	222.0	0.06869	0.3016	0.06910	25.23	15.61	0.00131	1.01366	0.9489
28	4.2287	235.9	0.06888	0.3152	0.06120	25.51	16.05	0.00150	1.01280	0.9083
29	3.9899	249.5	0.06892	0.3258	0.05532	25.91	16.49	0.00169	1.01207	0.8787
30	3.7842	262.8	0.06889	0.3344	0.05072	26.38	16.94	0.00188	1.01145	0.8557
31	3.6040	275.7	0.06883	0.3415	0.04699	26.93	17.38	0.00208	1.01090	0.8364
32	3.4440	288.4	0.06877	0.3475	0.04389	27.50	17.83	0.00227	1.01042	0.8207
33	3.3005	301.0	0.06869	0.3526	0.04125	28.09	18.27	0.00247	1.00998	0.8077
34	3.1708	313.1	0.06870	0.3570	0.03898	28.68	18.71	0.00267	1.00959	0.7963
35	3.0527	325.1	0.06869	0.3608	0.03700	29.29	19.15	0.00287	1.00923	0.7866
36	2.9444	337.0	0.06866	0.3641	0.03525	29.91	19.59	0.00308	1.00890	0.7781
37	2.8447	348.9	0.06861	0.3670	0.03369	30.54	20.02	0.00329	1.00860	0.7707
38	2.7524	360.7	0.06856	0.3697	0.03229	31.18	20.45	0.00350	1.00832	0.7640
39	2.6666	372.4	0.06850	0.3720	0.03102	31.82	20.88	0.00372	1.00806	0.7580
40	2.5867	384.1	0.06843	0.3741	0.02986	32.47	21.31	0.00394	1.00782	0.7525
42	2.4419	407.3	0.06827	0.3777	0.02781	33.76	22.15	0.00439	1.00738	0.7431
44	2.3139	430.4	0.06809	0.3807	0.02607	35.07	22.97	0.00486	1.00699	0.7351
46	2.1997	453.4	0.06786	0.3832	0.02456	36.38	23.79	0.00535	1.00664	0.7281
48	2.0971	476.6	0.06760	0.3853	0.02323	37.71	24.59	0.00585	1.00633	0.7220
50	2.0043	499.9	0.06728	0.3871	0.02205	39.04	25.38	0.00636	1.00605	0.7169
52	1.9199	523.5	0.06691	0.3886	0.02100	40.38	26.16	0.00689	1.00580	0.7125
54	1.8427	547.5	0.06647	0.3899	0.02006	41.72	26.93	0.00742	1.00556	0.7088
56	1.7718	571.9	0.06596	0.3910	0.01920	43.07	27.69	0.00797	1.00535	0.7059
58	1.7064	596.8	0.06538	0.3920	0.01842	44.42	28.44	0.00853	1.00515	0.7038
60	1.6459	622.4	0.06473	0.3929	0.01770	45.84	29.18	0.00910	1.00497	0.7014
65	1.5125	689.7	0.06278	0.3947	0.01615	49.63	30.99	0.01060	1.00456	0.6956
70	1.3998	762.5	0.06044	0.3960	0.01487	53.43	32.74	0.01212	1.00422	0.6948
75	1.3031	841.8	0.05783	0.3970	0.01378	57.17	34.45	0.01361	1.00393	0.6991
80	1.2192	927.7	0.05509	0.3978	0.01285	61.02	36.11	0.01511	1.00368	0.7055
85	1.1457	1020.4	0.05234	0.3984	0.01204	65.95	37.73	0.01686	1.00346	0.7030
90	1.0807	1119.2	0.04970	0.3989	0.01133	70.87	39.31	0.01861	1.00326	0.7036
95	1.0228	1223.5	0.04724	0.3993	0.01071	75.80	40.85	0.02037	1.00308	0.7060
100	0.9709	1332.4	0.04500	0.3996	0.01015	80.67	45.75	0.02460	1.00293	0.6897
120	0.8074	1789.7	0.03845	0.4004	0.00840	117.09	54.05	0.03473	1.00243	0.6939
140	0.6914	2230.4	0.03517	0.4008	0.00717	136.10	59.18	0.04428	1.00208	0.6958
160	0.6047	2614.5	0.03400	0.4010	0.00626	148.28	63.00	0.05389	1.00182	0.6959
180	0.5374	2938.9	0.03404	0.4010	0.00556	155.67	66.19	0.06380	1.00162	0.6949
200	0.4837	3218.6	0.03471	0.4010	0.00500	160.25	69.04	0.07411	1.00146	0.6934
220	0.4397	3472.3	0.03562	0.4010	0.00454	163.48	71.69	0.08484	1.00133	0.6919
240	0.4031	3715.7	0.03656	0.4010	0.00416	166.32	74.23	0.09602	1.00121	0.6904
260	0.3721	3959.2	0.03739	0.4010	0.00384	169.26	76.68	0.10765	1.00112	0.6892
280	0.3455	4207.3	0.03807	0.4010	0.00357	172.49	79.09	0.11974	1.00104	0.6882
300	0.3225	4462.2	0.03859	0.4009	0.00333	176.05	81.46	0.13228	1.00097	0.6873
350	0.2765	5131.1	0.03935	0.4008	0.00285	186.29	87.29	0.16567	1.00083	0.6860
400	0.2420	5830.1	0.03965	0.4008	0.00250	197.63	93.05	0.20199	1.00073	0.6852
450	0.2152	6549.0	0.03972	0.4007	0.00222	209.54	98.73	0.24125	1.00065	0.6848
500	0.1937	7273.2	0.03973	0.4006	0.00200	221.51	104.36	0.28344	1.00058	0.6844
550	0.1761	8004.5	0.03969	0.4006	0.00182	233.55	109.93	0.32850	1.00053	0.6842
600	0.1614	8741.0	0.03962	0.4005	0.00166	245.58	115.43	0.37638	1.00049	0.6840
700	0.1384	10235.4	0.03940	0.4005	0.00143	269.71	126.25	0.48035	1.00042	0.6837
800	0.1211	11769.3	0.03905	0.4004	0.00125	294.13	136.82	0.59489	1.00036	0.6837
900	0.1077	13353.5	0.03858	0.4004	0.00111	319.00	147.14	0.71954	1.00032	0.6837
1000	0.0969	14995.4	0.03801	0.4003	0.00100	440.56	157.21	1.09232	1.00029	0.5347
1200	0.0808	18453.6	0.03671	0.4003	0.00083	511.14	176.73	1.48254	1.00024	0.5313
1400	0.0692	22141.7	0.03533	0.4002	0.00071	583.50	195.47	1.91952	1.00021	0.5295
1600	0.0606	26009.3	0.03404	0.4002	0.00062	657.19	213.53	2.40349	1.00018	0.5279
1800	0.0539	30169.3	0.03270	0.4002	0.00056	737.67	231.02	2.94329	1.00016	0.5247
2000	0.0485	35126.5	0.03082	0.4000	0.00050	844.18	248.02	3.57117	1.00015	0.5160
2500	0.0385	59743.7	0.02150	0.3976	0.00040	1554.35	289.39	6.03972	1.00012	0.4476
3000	0.0311	133455.3	0.01112	0.3848	0.00035	4078.54	333.93	10.21507	1.00009	0.3786

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.50 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 13.968	0.01294	1.1940	0.9290	-308.7	-302.3	4.978	4.70	6.39	1274
14	0.01294	1.2053	0.9289	-308.5	-302.0	4.994	4.70	6.38	1279
15	0.01308	1.0819	0.9246	-302.0	-295.4	5.451	4.91	6.93	1237
16	0.01323	1.0138	0.9058	-294.9	-288.3	5.913	5.10	7.37	1210
17	0.01339	0.9559	0.8908	-287.4	-280.7	6.370	5.28	7.81	1189
18	0.01356	0.8927	0.8759	-279.4	-272.7	6.832	5.45	8.29	1166
19	0.01375	0.8295	0.8607	-271.0	-264.1	7.294	5.60	8.81	1142
20	0.01396	0.7653	0.8436	-262.0	-255.0	7.760	5.73	9.35	1118
21	0.01419	0.6968	0.8246	-252.4	-245.3	8.231	5.84	9.96	1090
22	0.01444	0.6323	0.8035	-242.3	-235.1	8.709	5.94	10.62	1063
23	0.01472	0.5647	0.7790	-231.4	-224.1	9.198	6.02	11.37	1033
24	0.01504	0.4952	0.7500	-219.8	-212.3	9.700	6.08	12.25	998
25	0.01541	0.4251	0.7158	-207.3	-199.6	10.219	6.14	13.29	959
26	0.01584	0.3527	0.6746	-193.5	-185.6	10.766	6.19	14.61	912
27	0.01638	0.2793	0.6263	-178.4	-170.2	11.348	6.25	16.43	856
* 27.113	0.01645	0.2724	0.6200	-176.4	-168.2	11.421	6.26	16.62	850
* 27.116	0.16290	0.0528	0.0296	119.0	200.5	25.025	7.00	18.92	378
28	0.17542	0.0614	0.0270	128.6	216.3	25.600	6.84	17.03	391
29	0.18839	0.0701	0.0247	138.4	232.6	26.172	6.72	15.69	405
30	0.20054	0.0780	0.0229	147.5	247.8	26.688	6.64	14.78	417
31	0.21210	0.0854	0.0215	156.2	262.2	27.161	6.58	14.12	428
32	0.22323	0.0923	0.0203	164.5	276.1	27.601	6.53	13.62	439
33	0.23401	0.0988	0.0192	172.5	289.6	28.015	6.50	13.23	449
34	0.24452	0.1051	0.0183	180.4	302.6	28.405	6.45	12.90	458
35	0.25480	0.1112	0.0174	188.0	315.4	28.775	6.42	12.64	468
36	0.26489	0.1171	0.0167	195.5	327.9	29.128	6.40	12.42	477
37	0.27482	0.1229	0.0160	202.8	340.2	29.465	6.38	12.23	485
38	0.28462	0.1285	0.0154	210.1	352.4	29.789	6.36	12.07	494
39	0.29430	0.1340	0.0149	217.2	364.4	30.101	6.35	11.94	502
40	0.30387	0.1394	0.0144	224.3	376.2	30.402	6.34	11.82	510
42	0.32275	0.1500	0.0135	238.3	399.7	30.973	6.33	11.63	525
44	0.34133	0.1603	0.0127	252.1	422.8	31.511	6.32	11.47	539
46	0.35967	0.1703	0.0120	265.8	445.6	32.018	6.32	11.36	553
48	0.37782	0.1802	0.0114	279.3	468.2	32.499	6.33	11.27	566
50	0.39579	0.1899	0.0108	292.8	490.7	32.958	6.34	11.20	579
52	0.41363	0.1994	0.0104	306.2	513.0	33.396	6.37	11.15	591
54	0.43134	0.2089	0.0099	319.6	535.3	33.816	6.40	11.12	603
56	0.44894	0.2182	0.0095	333.1	557.5	34.221	6.44	11.11	614
58	0.46645	0.2275	0.0091	346.5	579.8	34.610	6.48	11.11	624
60	0.48388	0.2366	0.0088	360.1	602.0	34.987	6.54	11.12	634
65	0.52716	0.2593	0.0080	394.3	657.8	35.881	6.72	11.23	658
70	0.57010	0.2816	0.0074	429.4	714.4	36.720	6.97	11.41	679
75	0.61279	0.3036	0.0069	465.7	772.1	37.515	7.27	11.66	698
80	0.65527	0.3254	0.0064	503.5	831.1	38.277	7.62	11.97	715
85	0.69759	0.3471	0.0060	543.1	891.9	39.014	8.00	12.33	731
90	0.73977	0.3687	0.0057	584.6	954.5	39.730	8.42	12.72	746
95	0.78185	0.3901	0.0054	628.2	1019.2	40.429	8.85	13.13	761
100	0.82383	0.4115	0.0051	674.0	1085.9	41.113	9.28	13.55	775
120	0.99107	0.4962	0.0042	877.0	1372.6	43.721	10.84	15.05	830
140	1.15760	0.5802	0.0036	1105.5	1684.3	46.121	11.83	16.02	886
160	1.32371	0.6638	0.0031	1347.4	2009.2	48.290	12.22	16.39	944
180	1.48953	0.7472	0.0028	1592.4	2337.2	50.222	12.19	16.35	1001
200	1.65516	0.8303	0.0025	1834.4	2662.0	51.932	11.95	16.10	1058
220	1.82065	0.9133	0.0023	2070.5	2980.8	53.452	11.64	15.78	1113
240	1.98605	0.9962	0.0021	2300.3	3293.3	54.812	11.33	15.47	1166
260	2.15136	1.0790	0.0019	2524.5	3600.2	56.040	11.08	15.22	1217
280	2.31662	1.1618	0.0018	2744.0	3902.4	57.160	10.87	15.01	1266
300	2.48189	1.2445	0.0017	2960.2	4201.0	58.191	10.72	14.86	1313
350	2.89453	1.4511	0.0014	3490.4	4937.7	60.461	10.51	14.64	1422
400	3.30723	1.6576	0.0013	4013.6	5667.3	62.411	10.43	14.56	1521
450	3.71985	1.8640	0.0011	4534.1	6394.0	64.124	10.41	14.53	1613
500	4.13242	2.0703	0.0010	5054.5	7120.7	65.654	10.40	14.53	1701
550	4.54495	2.2767	0.0009	5574.6	7847.0	67.038	10.41	14.54	1783
600	4.95746	2.4830	0.0008	6095.6	8574.3	68.302	10.43	14.55	1862
700	5.78242	2.8955	0.0007	7140.6	10031.8	70.550	10.48	14.61	2009
800	6.60734	3.3080	0.0006	8193.1	11496.8	72.505	10.57	14.70	2144
900	7.43224	3.7205	0.0006	9256.5	12972.6	74.242	10.70	14.82	2270
1000	8.25712	4.1330	0.0005	10333.8	14462.3	75.814	10.86	14.98	2388
1200	9.90685	4.9578	0.0004	12544.0	17497.5	78.568	11.24	15.37	2603
1400	11.55656	5.7827	0.0004	14836.8	20615.1	80.975	11.68	15.81	2797
1600	13.20641	6.6076	0.0003	17217.1	23820.3	83.092	12.12	16.24	2976
1800	14.85713	7.4324	0.0003	19693.5	27122.1	84.998	12.60	16.74	3142
2000	16.51165	8.2573	0.0003	22297.0	30552.8	86.871	13.33	17.50	3292
2500	20.74647	10.3194	0.0002	30075.8	40449.0	93.612	18.71	23.37	3590
3000	25.63286	12.3815	0.0002	43497.1	56313.6	102.715	36.04	43.31	3853

* TWO-PHASE BOUNDARY

0.50 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 13.968	77.2965	634.5	0.25586	92.2941	0.01007	74.66	257.88	0.00054	1.25256	2.2061
14	77.2625	639.9	0.25557	93.1235	0.00998	74.98	256.56	0.00055	1.25244	2.1842
15	76.4616	620.4	0.24647	82.7270	0.01118	83.62	225.71	0.00057	1.24962	1.8716
16	75.5862	623.1	0.23499	76.6271	0.01182	89.63	200.85	0.00058	1.24655	1.6506
17	74.6876	626.0	0.22585	71.3910	0.01248	93.65	181.04	0.00058	1.24340	1.5099
18	73.7238	623.1	0.21812	65.8110	0.01331	96.49	164.50	0.00057	1.24003	1.4140
19	72.7116	617.0	0.21153	60.3138	0.01427	98.15	150.63	0.00055	1.23649	1.3514
20	71.6412	607.7	0.20563	54.8242	0.01539	99.63	138.76	0.00054	1.23276	1.3022
21	70.4941	593.6	0.20030	49.1229	0.01679	101.32	128.35	0.00052	1.22877	1.2621
22	69.2711	578.8	0.19535	43.7989	0.01834	102.25	119.14	0.00050	1.22452	1.2372
23	67.9460	560.1	0.19052	38.3717	0.02030	102.47	110.79	0.00048	1.21993	1.2294
24	66.5013	537.8	0.18538	32.9286	0.02278	102.02	103.11	0.00045	1.21494	1.2379
25	64.9112	512.3	0.17963	27.5905	0.02594	100.93	95.91	0.00042	1.20946	1.2629
26	63.1156	482.2	0.17263	22.2624	0.03030	99.09	88.98	0.00039	1.20330	1.3120
27	61.0558	447.2	0.16402	17.0512	0.03673	96.50	82.17	0.00035	1.19625	1.3988
* 27.116	60.7811	443.9	0.16287	16.5596	0.03744	96.11	81.33	0.00034	1.19531	1.4064
* 27.116	6.1386	207.3	0.06874	0.3240	0.09124	27.63	16.10	0.00086	1.01862	1.1024
28	5.7006	221.3	0.06912	0.3503	0.07695	27.33	16.44	0.00101	1.01728	1.0239
29	5.3082	236.3	0.06929	0.3723	0.06639	27.35	16.84	0.00118	1.01609	0.9656
30	4.9866	250.6	0.06931	0.3891	0.05897	27.58	17.25	0.00135	1.01511	0.9246
31	4.7147	264.5	0.06927	0.4024	0.05340	27.99	17.67	0.00151	1.01428	0.8918
32	4.4797	278.0	0.06922	0.4133	0.04901	28.46	18.10	0.00168	1.01356	0.8664
33	4.2733	291.2	0.06912	0.4223	0.04544	28.97	18.53	0.00184	1.01293	0.8461
34	4.0897	303.8	0.06918	0.4300	0.04247	29.50	18.96	0.00201	1.01238	0.8290
35	3.9247	316.3	0.06919	0.4365	0.03995	30.06	19.38	0.00218	1.01188	0.8148
36	3.7752	328.6	0.06918	0.4422	0.03778	30.63	19.81	0.00235	1.01142	0.8028
37	3.6387	340.9	0.06914	0.4471	0.03588	31.22	20.23	0.00253	1.01101	0.7925
38	3.5135	353.0	0.06908	0.4515	0.03420	31.83	20.66	0.00270	1.01063	0.7835
39	3.3979	365.1	0.06901	0.4554	0.03270	32.44	21.08	0.00288	1.01028	0.7755
40	3.2909	377.1	0.06894	0.4588	0.03134	33.06	21.49	0.00306	1.00995	0.7684
42	3.0984	400.8	0.06876	0.4647	0.02900	34.31	22.32	0.00343	1.00937	0.7563
44	2.9297	424.5	0.06854	0.4696	0.02703	35.58	23.14	0.00381	1.00885	0.7462
46	2.7803	448.0	0.06830	0.4736	0.02535	36.87	23.95	0.00420	1.00840	0.7377
48	2.6468	471.6	0.06801	0.4769	0.02389	38.17	24.74	0.00461	1.00800	0.7304
50	2.5266	495.3	0.06767	0.4797	0.02261	39.48	25.53	0.00502	1.00763	0.7241
52	2.4176	519.2	0.06728	0.4822	0.02148	40.80	26.30	0.00545	1.00730	0.7189
54	2.3184	543.4	0.06682	0.4843	0.02046	42.12	27.07	0.00588	1.00700	0.7146
56	2.2275	568.1	0.06629	0.4861	0.01955	43.46	27.82	0.00632	1.00673	0.7110
58	2.1438	593.2	0.06570	0.4876	0.01872	44.79	28.56	0.00677	1.00647	0.7084
60	2.0666	619.0	0.06503	0.4890	0.01797	46.20	29.30	0.00723	1.00624	0.7055
65	1.8970	686.7	0.06306	0.4918	0.01635	49.96	31.10	0.00844	1.00573	0.6988
70	1.7541	759.9	0.06069	0.4939	0.01502	53.73	32.84	0.00967	1.00529	0.6974
75	1.6319	839.3	0.05805	0.4954	0.01389	57.44	34.54	0.01086	1.00493	0.7013
80	1.5261	925.5	0.05529	0.4967	0.01294	61.28	36.19	0.01207	1.00461	0.7073
85	1.4335	1018.3	0.05252	0.4976	0.01211	66.19	37.81	0.01348	1.00433	0.7044
90	1.3518	1117.3	0.04986	0.4984	0.01139	71.11	39.39	0.01488	1.00408	0.7048
95	1.2790	1221.7	0.04738	0.4990	0.01075	76.03	40.93	0.01629	1.00386	0.7070
100	1.2138	1330.7	0.04513	0.4995	0.01018	89.72	45.75	0.01964	1.00366	0.6909
120	1.0090	1788.8	0.03854	0.5007	0.00842	117.09	54.04	0.02775	1.00304	0.6948
140	0.8639	2230.1	0.03524	0.5012	0.00718	136.09	59.17	0.03541	1.00261	0.6964
160	0.7555	2614.9	0.03406	0.5015	0.00627	148.28	63.00	0.04311	1.00228	0.6964
180	0.6714	2939.7	0.03409	0.5016	0.00556	155.68	66.19	0.05105	1.00202	0.6953
200	0.6042	3219.9	0.03475	0.5016	0.00500	160.27	69.05	0.05931	1.00182	0.6937
220	0.5493	3473.9	0.03566	0.5016	0.00454	163.51	71.70	0.06790	1.00166	0.6921
240	0.5035	3717.5	0.03659	0.5016	0.00416	166.35	74.24	0.07686	1.00152	0.6906
260	0.4648	3961.1	0.03742	0.5016	0.00384	169.29	76.69	0.08617	1.00140	0.6893
280	0.4317	4209.5	0.03810	0.5015	0.00357	172.53	79.10	0.09585	1.00130	0.6883
300	0.4030	4464.5	0.03862	0.5015	0.00333	176.10	81.48	0.10589	1.00121	0.6874
350	0.3455	5133.6	0.03938	0.5013	0.00285	186.35	87.32	0.13263	1.00104	0.6860
400	0.3024	5832.7	0.03967	0.5012	0.00250	197.69	93.07	0.16171	1.00091	0.6853
450	0.2688	6551.7	0.03974	0.5011	0.00222	209.61	98.76	0.19314	1.00081	0.6848
500	0.2420	7276.0	0.03974	0.5010	0.00200	221.59	104.39	0.22691	1.00073	0.6844
550	0.2200	8007.3	0.03970	0.5009	0.00182	233.63	109.96	0.26298	1.00066	0.6842
600	0.2017	8743.9	0.03963	0.5009	0.00166	245.67	115.47	0.30131	1.00061	0.6840
700	0.1729	10238.4	0.03941	0.5007	0.00143	269.82	126.30	0.38454	1.00052	0.6837
800	0.1513	11772.4	0.03906	0.5007	0.00125	294.26	136.87	0.47623	1.00046	0.6837
900	0.1345	13356.6	0.03859	0.5006	0.00111	319.14	147.20	0.57601	1.00041	0.6837
1000	0.1211	14998.5	0.03802	0.5005	0.00100	440.56	157.28	0.87403	1.00036	0.5349
1200	0.1009	18456.9	0.03672	0.5004	0.00083	511.14	176.81	1.18624	1.00030	0.5316
1400	0.0865	22144.5	0.03533	0.5004	0.00071	583.48	195.56	1.53583	1.00026	0.5297
1600	0.0757	26007.4	0.03406	0.5003	0.00062	656.97	213.64	1.92282	1.00023	0.5282
1800	0.0673	30140.9	0.03275	0.5003	0.00056	736.42	231.13	2.35342	1.00020	0.5253
2000	0.0606	34998.9	0.03097	0.5001	0.00050	839.11	248.14	2.85075	1.00018	0.5174
2500	0.0482	58129.2	0.02218	0.4974	0.00040	1493.02	289.44	4.77084	1.00015	0.4531
3000	0.0390	125516.5	0.01185	0.4830	0.00035	3780.36	333.43	8.05486	1.00012	0.3820

* TWO-PHASE BOUNDARY

0.60 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.001	0.01293	1.2078	0.9302	-308.7	-300.9	4.980	4.70	6.38	1280
15	0.01306	1.0920	0.9281	-302.2	-294.3	5.437	4.90	6.92	1242
16	0.01321	1.0321	0.9095	-295.2	-287.2	5.894	5.10	7.33	1219
17	0.01337	0.9660	0.8938	-287.7	-279.7	6.354	5.28	7.79	1194
18	0.01354	0.9027	0.8790	-279.7	-271.6	6.814	5.44	8.27	1171
19	0.01373	0.8398	0.8638	-271.3	-263.1	7.275	5.59	8.77	1148
20	0.01393	0.7755	0.8468	-262.4	-254.0	7.739	5.72	9.31	1123
21	0.01416	0.7107	0.8280	-252.9	-244.4	8.207	5.84	9.90	1098
22	0.01440	0.6428	0.8069	-242.8	-234.2	8.683	5.93	10.56	1069
23	0.01468	0.5760	0.7829	-232.1	-223.3	9.168	6.01	11.29	1040
24	0.01499	0.5082	0.7545	-220.6	-211.6	9.666	6.08	12.12	1007
25	0.01535	0.4376	0.7211	-208.2	-199.0	10.180	6.14	13.14	968
26	0.01577	0.3665	0.6813	-194.7	-185.3	10.719	6.19	14.38	923
27	0.01629	0.2933	0.6346	-179.9	-170.1	11.291	6.25	16.08	869
28	0.01694	0.2216	0.5810	-163.1	-152.9	11.916	6.32	18.56	807
* 28.123	0.01704	0.2189	0.5735	-160.8	-150.6	11.999	6.34	18.60	802
* 28.123	0.13376	0.0472	0.0369	115.5	195.8	24.322	7.13	21.64	378
29	0.14530	0.0570	0.0332	126.3	213.5	24.941	6.95	18.80	393
30	0.15699	0.0666	0.0302	137.1	231.3	25.545	6.81	16.93	407
31	0.16776	0.0752	0.0279	146.9	247.6	26.079	6.71	15.73	420
32	0.17792	0.0831	0.0260	156.1	262.8	26.564	6.64	14.88	431
33	0.18761	0.0905	0.0244	164.9	277.4	27.013	6.59	14.25	442
34	0.19695	0.0974	0.0231	173.2	291.4	27.430	6.53	13.74	453
35	0.20602	0.1041	0.0219	181.3	305.0	27.823	6.48	13.35	463
36	0.21486	0.1104	0.0209	189.2	318.1	28.194	6.45	13.03	472
37	0.22352	0.1166	0.0200	196.9	331.0	28.548	6.42	12.77	482
38	0.23202	0.1226	0.0192	204.5	343.7	28.885	6.40	12.55	490
39	0.24038	0.1285	0.0185	211.9	356.1	29.209	6.38	12.36	499
40	0.24864	0.1342	0.0178	219.2	368.4	29.520	6.37	12.20	507
42	0.26485	0.1453	0.0166	233.7	392.6	30.109	6.35	11.95	523
44	0.28074	0.1560	0.0156	247.8	416.3	30.660	6.34	11.75	538
46	0.29637	0.1665	0.0147	261.8	439.6	31.178	6.34	11.59	552
48	0.31179	0.1767	0.0139	275.6	462.7	31.669	6.35	11.47	565
50	0.32704	0.1867	0.0132	289.3	485.5	32.135	6.36	11.38	578
52	0.34214	0.1965	0.0126	302.9	508.2	32.580	6.38	11.31	590
54	0.35712	0.2062	0.0121	316.5	530.8	33.006	6.41	11.27	602
56	0.37198	0.2158	0.0115	330.1	553.3	33.416	6.45	11.24	613
58	0.38675	0.2252	0.0111	343.7	575.7	33.810	6.49	11.23	624
60	0.40143	0.2346	0.0107	357.3	598.2	34.190	6.55	11.23	634
65	0.43784	0.2576	0.0097	391.8	654.5	35.092	6.73	11.31	658
70	0.47391	0.2802	0.0090	427.1	711.5	35.936	6.97	11.48	679
75	0.50972	0.3025	0.0083	463.6	769.5	36.736	7.27	11.72	698
80	0.54533	0.3246	0.0078	501.6	828.8	37.502	7.62	12.03	716
85	0.58077	0.3465	0.0073	541.4	889.8	38.242	8.01	12.38	732
90	0.61608	0.3682	0.0068	583.0	952.7	38.960	8.42	12.76	747
95	0.65128	0.3899	0.0065	626.7	1017.5	39.661	8.85	13.17	761
100	0.68639	0.4113	0.0061	672.5	1084.4	40.347	9.29	13.58	776
120	0.82612	0.4965	0.0051	875.9	1371.6	42.959	10.84	15.07	831
140	0.96515	0.5808	0.0043	1104.6	1683.7	45.362	11.83	16.03	887
160	1.10375	0.6646	0.0038	1346.6	2008.9	47.533	12.22	16.40	945
180	1.24207	0.7481	0.0034	1591.8	2337.0	49.466	12.19	16.36	1002
200	1.38020	0.8314	0.0030	1833.8	2661.9	51.177	11.95	16.11	1059
220	1.51820	0.9145	0.0027	2070.0	2980.9	52.698	11.64	15.79	1114
240	1.65609	0.9975	0.0025	2299.9	3293.5	54.058	11.33	15.48	1167
260	1.79391	1.0804	0.0023	2524.1	3600.4	55.286	11.08	15.22	1218
280	1.93167	1.1632	0.0021	2743.7	3902.7	56.407	10.88	15.01	1267
300	2.06928	1.2459	0.0020	2959.9	4201.4	57.438	10.72	14.86	1314
350	2.41338	1.4526	0.0017	3490.2	4938.2	59.708	10.51	14.64	1423
400	2.75734	1.6592	0.0015	4013.5	5667.9	61.658	10.43	14.56	1522
450	3.10122	1.8656	0.0013	4533.9	6394.6	63.371	10.41	14.53	1614
500	3.44506	2.0720	0.0012	5054.4	7121.4	64.901	10.40	14.53	1701
550	3.78885	2.2783	0.0011	5574.4	7847.8	66.286	10.41	14.54	1784
600	4.13262	2.4847	0.0010	6095.5	8575.1	67.550	10.43	14.55	1862
700	4.82011	2.8972	0.0009	7140.5	10032.6	69.798	10.48	14.61	2009
800	5.50756	3.3097	0.0008	8193.1	11497.6	71.753	10.57	14.70	2145
900	6.19499	3.7222	0.0007	9256.5	12973.5	73.490	10.70	14.82	2271
1000	6.88239	4.1347	0.0006	10333.7	14463.2	75.062	10.86	14.98	2389
1200	8.25718	4.9596	0.0005	12544.0	17498.3	77.816	11.24	15.37	2604
1400	9.63195	5.7845	0.0004	14836.8	20615.9	80.223	11.68	15.81	2798
1600	11.00681	6.6094	0.0004	17216.9	23821.0	82.339	12.12	16.24	2977
1800	12.38234	7.4342	0.0003	19692.0	27121.4	84.245	12.59	16.72	3142
2000	13.76076	8.2591	0.0003	22290.0	30546.5	86.115	13.28	17.45	3293
2500	17.28176	10.3212	0.0002	29969.2	40338.2	92.811	16.27	22.88	3595
3000	21.29856	12.3833	0.0002	42830.8	55610.0	101.702	34.18	41.14	3857

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.60 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.001	77.3529	640.6	0.25573	93.4243	0.00996	75.07	258.50	0.00055	1.25276	2.1963
15	76.5504	623.6	0.24723	83.5919	0.01110	83.73	227.26	0.00057	1.24994	1.8790
16	75.7022	630.0	0.23579	78.1349	0.01164	89.81	202.51	0.00058	1.24696	1.6534
17	74.7902	629.7	0.22649	72.2485	0.01237	93.84	182.26	0.00058	1.24376	1.5130
18	73.8345	627.0	0.21873	66.6472	0.01319	96.71	165.61	0.00057	1.24041	1.4160
19	72.8306	621.3	0.21212	61.1633	0.01412	98.41	151.65	0.00055	1.23691	1.3522
20	71.7697	612.1	0.20621	55.6607	0.01521	99.92	139.71	0.00054	1.23321	1.3020
21	70.6402	600.0	0.20087	50.2035	0.01649	101.66	129.29	0.00052	1.22928	1.2585
22	69.4268	583.9	0.19588	44.6299	0.01808	102.62	120.02	0.00050	1.22506	1.2345
23	68.1216	565.8	0.19108	39.2410	0.01995	102.89	111.66	0.00048	1.22054	1.2249
24	66.7023	544.7	0.18601	33.8976	0.02226	102.51	103.99	0.00046	1.21563	1.2298
25	65.1405	519.3	0.18040	28.5044	0.02530	101.48	96.80	0.00043	1.21025	1.2531
26	63.3921	490.4	0.17372	23.2325	0.02933	99.75	89.93	0.00039	1.20424	1.2967
27	61.3956	456.4	0.16546	18.0098	0.03524	97.28	83.19	0.00035	1.19741	1.3751
28	59.0308	417.9	0.15564	13.0801	0.04442	93.92	76.36	0.00031	1.18935	1.5092
* 28.123	58.6975	416.7	0.15422	12.8515	0.04462	93.42	75.48	0.00031	1.18821	1.5024
* 28.123	7.4761	207.0	0.06917	0.3528	0.10454	30.27	17.01	0.00067	1.02271	1.2160
29	6.8825	222.0	0.06951	0.3925	0.08467	29.46	17.28	0.00082	1.02089	1.1027
30	6.3700	238.0	0.06964	0.4245	0.07115	29.18	17.64	0.00097	1.01933	1.0232
31	5.9608	253.0	0.06965	0.4484	0.06216	29.32	18.02	0.00113	1.01808	0.9662
32	5.6207	267.4	0.06962	0.4671	0.05565	29.62	18.41	0.00128	1.01704	0.9249
33	5.3301	281.3	0.06951	0.4822	0.05064	30.00	18.81	0.00142	1.01615	0.8935
34	5.0773	294.5	0.06964	0.4946	0.04667	30.43	19.22	0.00157	1.01538	0.8682
35	4.8539	307.4	0.06970	0.5051	0.04342	30.91	19.63	0.00172	1.01470	0.8479
36	4.6542	320.2	0.06970	0.5140	0.04069	31.43	20.05	0.00187	1.01409	0.8312
37	4.4739	332.9	0.06967	0.5217	0.03836	31.97	20.46	0.00201	1.01355	0.8172
38	4.3100	345.4	0.06962	0.5285	0.03633	32.53	20.87	0.00216	1.01305	0.8053
39	4.1600	357.8	0.06954	0.5344	0.03455	33.10	21.28	0.00232	1.01259	0.7949
40	4.0220	370.1	0.06946	0.5397	0.03297	33.69	21.69	0.00247	1.01217	0.7857
42	3.7758	394.5	0.06926	0.5486	0.03028	34.89	22.51	0.00279	1.01142	0.7705
44	3.5621	418.7	0.06902	0.5558	0.02806	36.12	23.31	0.00311	1.01077	0.7581
46	3.3742	442.7	0.06874	0.5617	0.02619	37.38	24.11	0.00344	1.01020	0.7478
48	3.2072	466.7	0.06843	0.5667	0.02458	38.65	24.90	0.00378	1.00970	0.7391
50	3.0577	490.7	0.06807	0.5708	0.02319	39.93	25.67	0.00413	1.00924	0.7317
52	2.9228	515.0	0.06766	0.5744	0.02197	41.23	26.44	0.00449	1.00883	0.7256
54	2.8002	539.5	0.06718	0.5774	0.02088	42.53	27.20	0.00485	1.00846	0.7204
56	2.6883	564.4	0.06663	0.5800	0.01991	43.85	27.95	0.00523	1.00812	0.7162
58	2.5857	589.8	0.06602	0.5823	0.01904	45.17	28.69	0.00560	1.00781	0.7130
60	2.4911	615.7	0.06534	0.5843	0.01824	46.56	29.42	0.00599	1.00753	0.7096
65	2.2839	683.8	0.06333	0.5883	0.01655	50.29	31.21	0.00701	1.00690	0.7020
70	2.1101	757.3	0.06094	0.5913	0.01516	54.04	32.94	0.00803	1.00637	0.6999
75	1.9618	837.0	0.05828	0.5935	0.01401	57.71	34.63	0.00903	1.00592	0.7036
80	1.8338	923.3	0.05549	0.5953	0.01303	61.54	36.28	0.01005	1.00554	0.7091
85	1.7219	1016.3	0.05270	0.5966	0.01218	66.44	37.89	0.01122	1.00520	0.7059
90	1.6232	1115.4	0.05002	0.5977	0.01144	71.35	39.46	0.01240	1.00490	0.7059
95	1.5354	1220.0	0.04753	0.5986	0.01079	76.26	41.00	0.01358	1.00463	0.7080
100	1.4569	1329.1	0.04526	0.5993	0.01022	89.77	45.76	0.01633	1.00440	0.6922
120	1.2105	1787.9	0.03862	0.6010	0.00843	117.09	54.03	0.02310	1.00365	0.6957
140	1.0361	2229.8	0.03530	0.6018	0.00719	136.08	59.17	0.02949	1.00313	0.6971
160	0.9060	2615.2	0.03411	0.6022	0.00627	148.28	63.00	0.03592	1.00273	0.6968
180	0.8051	2940.6	0.03414	0.6023	0.00556	155.69	66.20	0.04255	1.00243	0.6956
200	0.7245	3221.1	0.03479	0.6024	0.00500	160.29	69.05	0.04944	1.00218	0.6940
220	0.6587	3475.5	0.03570	0.6024	0.00454	163.54	71.71	0.05661	1.00199	0.6923
240	0.6038	3719.3	0.03663	0.6023	0.00416	166.38	74.25	0.06408	1.00182	0.6908
260	0.5574	3963.1	0.03746	0.6022	0.00384	169.33	76.71	0.07185	1.00168	0.6895
280	0.5177	4211.6	0.03813	0.6022	0.00357	172.57	79.12	0.07993	1.00156	0.6884
300	0.4833	4466.8	0.03865	0.6021	0.00333	176.14	81.49	0.08830	1.00146	0.6875
350	0.4144	5136.1	0.03940	0.6019	0.00285	186.40	87.34	0.11060	1.00125	0.6861
400	0.3627	5835.3	0.03970	0.6017	0.00249	197.75	93.10	0.13485	1.00109	0.6853
450	0.3225	6554.5	0.03976	0.6016	0.00222	209.68	98.79	0.16106	1.00097	0.6848
500	0.2903	7278.8	0.03976	0.6014	0.00200	221.66	104.43	0.18922	1.00087	0.6844
550	0.2639	8010.2	0.03972	0.6013	0.00181	233.72	110.00	0.21931	1.00080	0.6842
600	0.2420	8746.8	0.03965	0.6012	0.00166	245.76	115.51	0.25127	1.00073	0.6840
700	0.2075	10241.4	0.03942	0.6011	0.00143	269.93	126.35	0.32067	1.00063	0.6837
800	0.1816	11775.4	0.03907	0.6009	0.00125	294.38	136.93	0.39712	1.00055	0.6837
900	0.1614	13359.7	0.03860	0.6008	0.00111	319.27	147.26	0.48032	1.00049	0.6837
1000	0.1453	15001.7	0.03803	0.6008	0.00100	440.56	157.35	0.72851	1.00044	0.5351
1200	0.1211	18460.1	0.03672	0.6006	0.00083	511.13	176.89	0.98870	1.00036	0.5318
1400	0.1038	22147.5	0.03534	0.6006	0.00071	583.46	195.65	1.28004	1.00031	0.5300
1600	0.0909	26006.8	0.03407	0.6005	0.00062	656.81	213.74	1.60242	1.00027	0.5285
1800	0.0808	30120.9	0.03279	0.6004	0.00056	735.50	231.25	1.96050	1.00024	0.5258
2000	0.0727	34905.7	0.03108	0.6002	0.00050	835.37	248.26	2.37186	1.00022	0.5185
2500	0.0579	56937.1	0.02271	0.5972	0.00040	1447.69	289.52	3.93639	1.00017	0.4576
3000	0.0470	119609.2	0.01246	0.5814	0.00034	3558.42	333.10	6.63130	1.00014	0.3851

* TWO-PHASE BOUNDARY

0.70 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.034	0.01292	1.2145	0.9313	-308.7	-299.6	4.983	4.71	6.38	1283
15	0.01305	1.1212	0.9307	-302.4	-293.2	5.423	4.90	6.88	1254
16	0.01319	1.0426	0.9125	-295.4	-286.2	5.879	5.09	7.32	1224
17	0.01335	0.9761	0.8968	-287.9	-278.6	6.338	5.27	7.77	1199
18	0.01352	0.9125	0.8820	-280.0	-270.6	6.796	5.44	8.24	1176
19	0.01371	0.8500	0.8668	-271.7	-262.1	7.256	5.59	8.74	1153
20	0.01391	0.7857	0.8500	-262.8	-253.1	7.718	5.72	9.28	1129
21	0.01413	0.7213	0.8313	-253.4	-243.5	8.184	5.83	9.85	1104
22	0.01437	0.6554	0.8104	-243.4	-233.4	8.657	5.93	10.48	1076
23	0.01464	0.5871	0.7866	-232.7	-222.5	9.139	6.01	11.21	1046
24	0.01495	0.5200	0.7588	-221.4	-210.9	9.633	6.08	12.02	1014
25	0.01530	0.4498	0.7262	-209.1	-198.4	10.142	6.13	13.00	976
26	0.01571	0.3816	0.6878	-195.9	-184.9	10.673	6.18	14.14	934
27	0.01620	0.3102	0.6429	-181.4	-170.0	11.234	6.24	15.68	883
28	0.01682	0.2364	0.5913	-165.0	-153.2	11.844	6.31	18.03	822
29	0.01765	0.1660	0.5302	-145.9	-133.6	12.533	6.41	21.71	750
* 29.019	0.01767	0.1659	0.5291	-145.6	-133.2	12.546	6.41	21.70	749
* 29.019	0.11211	0.0412	0.0451	110.8	189.3	23.666	7.28	25.29	378
30	0.12448	0.0537	0.0395	124.6	211.7	24.425	7.04	20.53	396
31	0.13519	0.0641	0.0356	136.3	230.9	25.055	6.89	18.10	411
32	0.14493	0.0733	0.0327	146.7	248.2	25.604	6.78	16.59	424
33	0.15402	0.0817	0.0304	156.5	264.3	26.099	6.70	15.56	435
34	0.16265	0.0894	0.0285	165.6	279.4	26.552	6.61	14.79	447
35	0.17092	0.0967	0.0269	174.3	293.9	26.972	6.55	14.21	458
36	0.17893	0.1036	0.0255	182.6	307.9	27.365	6.50	13.75	468
37	0.18672	0.1102	0.0243	190.8	321.5	27.737	6.47	13.39	478
38	0.19432	0.1166	0.0232	198.7	334.7	28.090	6.44	13.09	487
39	0.20178	0.1229	0.0223	206.4	347.7	28.427	6.42	12.84	496
40	0.20911	0.1289	0.0214	214.0	360.4	28.749	6.40	12.63	504
42	0.22344	0.1406	0.0199	228.9	385.3	29.357	6.38	12.29	521
44	0.23742	0.1518	0.0186	243.4	409.6	29.922	6.36	12.04	536
46	0.25114	0.1626	0.0175	257.7	433.5	30.453	6.36	11.84	550
48	0.26463	0.1732	0.0166	271.8	457.0	30.953	6.36	11.69	564
50	0.27793	0.1835	0.0157	285.7	480.3	31.428	6.38	11.57	577
52	0.29109	0.1936	0.0149	299.5	503.3	31.880	6.40	11.48	590
54	0.30411	0.2036	0.0143	313.3	526.2	32.312	6.42	11.42	601
56	0.31701	0.2133	0.0136	327.1	549.0	32.726	6.46	11.37	613
58	0.32982	0.2230	0.0131	340.8	571.7	33.125	6.50	11.35	624
60	0.34255	0.2325	0.0126	354.6	594.4	33.510	6.56	11.34	634
65	0.37406	0.2560	0.0115	389.4	651.2	34.419	6.74	11.40	658
70	0.40522	0.2789	0.0105	424.9	708.6	35.269	6.98	11.55	680
75	0.43612	0.3015	0.0098	461.6	766.9	36.074	7.28	11.78	699
80	0.46681	0.3238	0.0091	499.8	826.5	36.844	7.62	12.08	716
85	0.49734	0.3459	0.0085	539.6	887.8	37.586	8.01	12.42	732
90	0.52774	0.3678	0.0080	581.4	950.8	38.307	8.43	12.80	748
95	0.55802	0.3896	0.0076	625.2	1015.9	39.010	8.86	13.20	762
100	0.58822	0.4112	0.0072	671.1	1082.9	39.697	9.29	13.61	776
120	0.70831	0.4968	0.0059	874.8	1370.6	42.314	10.84	15.10	832
140	0.82769	0.5814	0.0051	1103.7	1683.0	44.720	11.83	16.05	888
160	0.94664	0.6655	0.0044	1345.8	2008.5	46.893	12.22	16.41	945
180	1.06532	0.7491	0.0039	1591.1	2336.8	48.827	12.19	16.37	1003
200	1.18381	0.8325	0.0035	1833.2	2661.9	50.539	11.95	16.12	1059
220	1.30216	0.9157	0.0032	2069.5	2981.0	52.060	11.64	15.79	1115
240	1.42041	0.9988	0.0029	2299.4	3293.7	53.420	11.33	15.48	1168
260	1.53859	1.0817	0.0027	2523.7	3600.7	54.649	11.08	15.22	1219
280	1.65671	1.1646	0.0025	2743.3	3903.0	55.770	10.88	15.02	1268
300	1.77470	1.2474	0.0023	2959.6	4201.8	56.801	10.72	14.86	1315
350	2.06970	1.4541	0.0020	3489.9	4938.7	59.072	10.51	14.64	1423
400	2.36456	1.6607	0.0018	4013.3	5668.5	61.022	10.43	14.56	1523
450	2.65935	1.8672	0.0016	4533.7	6395.3	62.735	10.41	14.54	1615
500	2.95408	2.0737	0.0014	5054.2	7122.1	64.265	10.40	14.53	1702
550	3.24878	2.2800	0.0013	5574.3	7848.5	65.650	10.41	14.54	1784
600	3.54346	2.4863	0.0012	6095.4	8575.8	66.914	10.43	14.55	1863
700	4.13275	2.8989	0.0010	7140.5	10033.4	69.162	10.48	14.61	2010
800	4.72201	3.3115	0.0009	8193.0	11498.4	71.117	10.57	14.70	2146
900	5.31123	3.7240	0.0008	9256.4	12974.3	72.854	10.70	14.82	2271
1000	5.90045	4.1365	0.0007	10333.7	14464.0	74.426	10.86	14.98	2389
1200	7.07884	4.9614	0.0006	12544.0	17499.2	77.180	11.24	15.37	2604
1400	8.25722	5.7863	0.0005	14836.7	20616.8	79.587	11.68	15.81	2798
1600	9.43567	6.6111	0.0004	17216.7	23821.7	81.704	12.11	16.24	2977
1800	10.61465	7.4360	0.0004	19690.8	27121.1	83.609	12.58	16.71	3143
2000	11.79592	8.2608	0.0004	22284.7	30541.8	85.476	13.25	17.41	3295
2500	14.80859	10.3230	0.0003	29886.3	40252.3	92.138	17.92	22.50	3599
3000	18.21479	12.3851	0.0002	42312.9	55063.2	100.864	32.73	39.46	3860

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

0.70 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.034	77.4091	644.0	0.25560	94.0105	0.00991	75.48	259.12	0.00055	1.25296	2.1901
15	76.6375	634.7	0.24774	85.9246	0.01083	83.85	228.80	0.00057	1.25024	1.8761
16	75.7962	633.6	0.23643	79.0247	0.01155	89.96	203.88	0.00058	1.24729	1.6580
17	74.8918	633.3	0.22711	73.0991	0.01227	94.03	183.49	0.00058	1.24412	1.5163
18	73.9440	630.7	0.21933	67.4756	0.01307	96.93	166.73	0.00057	1.24080	1.4182
19	72.9482	625.4	0.21269	62.0050	0.01398	98.66	152.68	0.00056	1.23732	1.3530
20	71.8967	616.4	0.20678	56.4899	0.01505	100.21	140.66	0.00054	1.23365	1.3020
21	70.7792	604.8	0.20142	51.0545	0.01628	101.99	130.19	0.00053	1.22976	1.2571
22	69.5856	589.9	0.19642	45.6088	0.01777	103.00	120.92	0.00051	1.22561	1.2306
23	68.2935	571.3	0.19162	40.0958	0.01962	103.31	112.52	0.00049	1.22113	1.2208
24	66.8966	550.9	0.18662	34.7861	0.02181	102.98	104.85	0.00046	1.21630	1.2235
25	65.3638	526.1	0.18114	29.4004	0.02470	102.02	97.68	0.00043	1.21102	1.2442
26	63.6599	499.3	0.17471	24.2906	0.02832	100.38	90.86	0.00040	1.20516	1.2796
27	61.7337	467.0	0.16688	19.1479	0.03357	98.07	84.23	0.00036	1.19857	1.3467
28	59.4604	428.5	0.15755	14.0551	0.04207	94.89	77.51	0.00032	1.19081	1.4724
29	56.6553	385.1	0.14604	9.4055	0.05638	90.57	70.44	0.00027	1.18129	1.6885
* 29.019	56.5997	385.0	0.14582	9.3871	0.05636	90.49	70.31	0.00027	1.18110	1.6862
* 29.019	8.9195	206.1	0.06948	0.3678	0.12267	33.25	17.94	0.00053	1.02714	1.3638
30	8.0336	224.4	0.06982	0.4315	0.09151	31.56	18.14	0.00069	1.02442	1.1802
31	7.3969	241.0	0.06993	0.4744	0.07508	31.10	18.44	0.00084	1.02247	1.0728
32	6.8999	256.6	0.06995	0.5059	0.06468	31.07	18.78	0.00098	1.02095	1.0031
33	6.4925	271.4	0.06985	0.5302	0.05733	31.23	19.15	0.00111	1.01970	0.9539
34	6.1483	285.2	0.07008	0.5496	0.05186	31.51	19.53	0.00125	1.01865	0.9163
35	5.8506	298.6	0.07020	0.5655	0.04757	31.88	19.91	0.00138	1.01774	0.8873
36	5.5888	311.9	0.07024	0.5789	0.04409	32.31	20.31	0.00151	1.01694	0.8643
37	5.3557	325.0	0.07022	0.5904	0.04119	32.78	20.71	0.00165	1.01623	0.8455
38	5.1461	337.9	0.07017	0.6002	0.03873	33.29	21.10	0.00178	1.01559	0.8297
39	4.9559	350.7	0.07010	0.6088	0.03661	33.82	21.50	0.00191	1.01501	0.8163
40	4.7823	363.3	0.07000	0.6164	0.03476	34.37	21.90	0.00205	1.01448	0.8047
42	4.4755	388.3	0.06977	0.6291	0.03165	35.51	22.70	0.00232	1.01355	0.7858
44	4.2119	413.0	0.06951	0.6393	0.02914	36.69	23.49	0.00261	1.01275	0.7708
46	3.9819	437.5	0.06920	0.6476	0.02706	37.90	24.28	0.00289	1.01205	0.7584
48	3.7789	461.9	0.06886	0.6545	0.02530	39.14	25.06	0.00319	1.01143	0.7482
50	3.5980	486.3	0.06848	0.6603	0.02379	40.40	25.82	0.00349	1.01088	0.7396
52	3.4354	510.8	0.06804	0.6652	0.02247	41.67	26.58	0.00380	1.01039	0.7324
54	3.2883	535.6	0.06754	0.6694	0.02131	42.95	27.34	0.00412	1.00994	0.7265
56	3.1544	560.8	0.06698	0.6730	0.02028	44.25	28.08	0.00444	1.00954	0.7216
58	3.0319	586.4	0.06635	0.6761	0.01935	45.55	28.81	0.00477	1.00916	0.7178
60	2.9193	612.5	0.06566	0.6788	0.01852	46.93	29.54	0.00510	1.00882	0.7139
65	2.6734	681.0	0.06361	0.6843	0.01674	50.63	31.32	0.00598	1.00808	0.7053
70	2.4678	754.7	0.06119	0.6883	0.01531	54.36	33.05	0.00686	1.00746	0.7024
75	2.2929	834.7	0.05850	0.6914	0.01412	57.99	34.73	0.00773	1.00693	0.7058
80	2.1422	921.2	0.05569	0.6937	0.01311	61.80	36.37	0.00860	1.00647	0.7109
85	2.0107	1014.3	0.05288	0.6956	0.01225	66.69	37.97	0.00961	1.00607	0.7074
90	1.8949	1113.6	0.05018	0.6970	0.01150	71.59	39.54	0.01062	1.00572	0.7071
95	1.7920	1218.3	0.04767	0.6982	0.01084	76.49	41.08	0.01164	1.00541	0.7090
100	1.7000	1327.6	0.04539	0.6991	0.01025	89.83	45.76	0.01398	1.00513	0.6934
120	1.4118	1787.0	0.03871	0.7014	0.00845	117.09	54.03	0.01978	1.00426	0.6965
140	1.2082	2229.6	0.03537	0.7025	0.00720	136.08	59.17	0.02527	1.00364	0.6977
160	1.0564	2615.6	0.03417	0.7030	0.00627	148.28	63.00	0.03079	1.00319	0.6973
180	0.9387	2941.5	0.03419	0.7032	0.00556	155.70	66.20	0.03648	1.00283	0.6960
200	0.8447	3222.4	0.03484	0.7032	0.00500	160.31	69.06	0.04239	1.00255	0.6943
220	0.7680	3477.1	0.03574	0.7032	0.00454	163.56	71.72	0.04855	1.00232	0.6926
240	0.7040	3721.1	0.03667	0.7031	0.00416	166.42	74.26	0.05496	1.00212	0.6910
260	0.6499	3965.1	0.03749	0.7030	0.00384	169.37	76.72	0.06162	1.00196	0.6896
280	0.6036	4213.8	0.03816	0.7029	0.00356	172.61	79.14	0.06855	1.00182	0.6885
300	0.5635	4469.2	0.03868	0.7029	0.00333	176.19	81.51	0.07574	1.00170	0.6876
350	0.4832	5138.6	0.03943	0.7026	0.00285	186.45	87.36	0.09486	1.00146	0.6861
400	0.4229	5838.0	0.03972	0.7023	0.00249	197.82	93.12	0.11567	1.00127	0.6853
450	0.3760	6557.2	0.03977	0.7021	0.00222	209.75	98.82	0.13815	1.00113	0.6848
500	0.3385	7281.6	0.03978	0.7020	0.00200	221.74	104.46	0.16231	1.00102	0.6844
550	0.3078	8013.0	0.03974	0.7018	0.00181	233.80	110.04	0.18811	1.00093	0.6842
600	0.2822	8749.7	0.03966	0.7017	0.00166	245.85	115.55	0.21552	1.00085	0.6840
700	0.2420	10244.4	0.03944	0.7015	0.00143	270.04	126.40	0.27504	1.00073	0.6837
800	0.2118	11778.5	0.03908	0.7013	0.00125	294.50	136.98	0.34061	1.00064	0.6836
900	0.1883	13362.8	0.03861	0.7012	0.00111	319.41	147.32	0.41197	1.00057	0.6837
1000	0.1695	15004.8	0.03804	0.7010	0.00100	440.56	157.42	0.62457	1.00051	0.5354
1200	0.1413	18463.4	0.03673	0.7009	0.00083	511.13	176.97	0.84761	1.00043	0.5321
1400	0.1211	22150.6	0.03535	0.7008	0.00071	583.45	195.74	1.09733	1.00036	0.5302
1600	0.1060	26007.2	0.03408	0.7007	0.00062	656.69	213.84	1.37359	1.00032	0.5288
1800	0.0942	30106.1	0.03281	0.7005	0.00056	734.78	231.36	1.68002	1.00028	0.5262
2000	0.0848	34834.1	0.03116	0.7003	0.00050	832.46	248.38	2.03055	1.00026	0.5194
2500	0.0675	56010.7	0.02314	0.6971	0.00040	1412.42	289.62	3.34689	1.00020	0.4613
3000	0.0549	114990.9	0.01299	0.6799	0.00034	3384.84	332.87	5.62467	1.00017	0.3881

* TWO-PHASE BOUNDARY

0.80 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.067	0.01291	1.2211	0.9325	-308.6	-298.3	4.985	4.71	6.38	1286
15	0.01303	1.1342	0.9319	-302.6	-292.1	5.410	4.90	6.85	1259
16	0.01318	1.0530	0.9155	-295.6	-285.1	5.865	5.09	7.30	1229
17	0.01333	0.9860	0.8998	-288.2	-277.5	6.322	5.27	7.75	1204
18	0.01350	0.9223	0.8850	-280.3	-269.5	6.779	5.43	8.22	1181
19	0.01369	0.8601	0.8698	-272.0	-261.1	7.237	5.58	8.71	1159
20	0.01388	0.7958	0.8531	-263.2	-252.1	7.697	5.71	9.24	1134
21	0.01410	0.7318	0.8346	-253.9	-242.6	8.161	5.83	9.80	1109
22	0.01434	0.6662	0.8139	-243.9	-232.5	8.631	5.93	10.42	1082
23	0.01461	0.5980	0.7903	-233.4	-221.7	9.111	6.01	11.13	1053
24	0.01491	0.5315	0.7631	-222.1	-210.2	9.601	6.08	11.92	1021
25	0.01525	0.4638	0.7313	-210.0	-197.8	10.105	6.13	12.83	985
26	0.01565	0.3950	0.6939	-197.0	-184.4	10.630	6.18	13.94	944
27	0.01612	0.3242	0.6505	-182.7	-169.8	11.181	6.24	15.39	895
28	0.01670	0.2545	0.6010	-166.9	-153.5	11.775	6.30	17.39	838
29	0.01747	0.1831	0.5432	-148.6	-134.6	12.437	6.39	20.66	769
* 29.828	0.01837	0.1248	0.4856	-130.4	-115.7	13.080	6.49	25.51	700
* 29.828	0.09519	0.0349	0.0545	104.8	180.9	23.030	7.46	30.49	378
30	0.09783	0.0379	0.0526	108.2	186.5	23.214	7.38	28.36	382
31	0.10956	0.0516	0.0455	123.5	211.2	24.025	7.12	22.06	400
32	0.11945	0.0627	0.0408	136.1	231.6	24.674	6.95	19.10	415
33	0.12833	0.0723	0.0374	147.2	249.8	25.235	6.84	17.33	428
34	0.13656	0.0810	0.0347	157.3	266.5	25.733	6.71	16.12	441
35	0.14434	0.0890	0.0325	166.7	282.2	26.187	6.63	15.25	453
36	0.15178	0.0966	0.0306	175.7	297.1	26.608	6.56	14.61	464
37	0.15896	0.1037	0.0290	184.3	311.4	27.001	6.52	14.10	474
38	0.16594	0.1106	0.0276	192.6	325.3	27.371	6.48	13.70	484
39	0.17273	0.1172	0.0264	200.7	338.9	27.723	6.45	13.37	493
40	0.17939	0.1236	0.0253	208.6	352.1	28.058	6.43	13.10	502
42	0.19234	0.1358	0.0234	224.0	377.8	28.686	6.40	12.67	518
44	0.20491	0.1475	0.0218	238.9	402.8	29.267	6.39	12.35	534
46	0.21720	0.1588	0.0205	253.5	427.3	29.811	6.38	12.10	549
48	0.22925	0.1697	0.0193	267.9	451.3	30.322	6.38	11.91	563
50	0.24110	0.1804	0.0183	282.1	475.0	30.805	6.39	11.77	576
52	0.25280	0.1908	0.0173	296.1	498.4	31.264	6.41	11.65	589
54	0.26436	0.2010	0.0165	310.1	521.6	31.702	6.44	11.57	601
56	0.27580	0.2110	0.0158	324.0	544.7	32.122	6.47	11.51	613
58	0.28715	0.2208	0.0151	337.9	567.7	32.525	6.51	11.47	624
60	0.29840	0.2305	0.0145	351.9	590.6	32.914	6.57	11.45	634
65	0.32623	0.2544	0.0132	386.9	647.9	33.831	6.75	11.49	658
70	0.35372	0.2777	0.0121	422.7	705.7	34.688	6.98	11.63	680
75	0.38093	0.3005	0.0112	459.6	764.3	35.497	7.28	11.85	699
80	0.40794	0.3231	0.0105	497.9	824.3	36.270	7.63	12.13	717
85	0.43478	0.3454	0.0098	537.9	885.7	37.016	8.02	12.47	733
90	0.46149	0.3675	0.0092	579.8	949.0	37.739	8.43	12.84	748
95	0.48810	0.3894	0.0087	623.7	1014.2	38.444	8.86	13.24	763
100	0.51461	0.4112	0.0082	669.7	1081.4	39.133	9.29	13.64	777
120	0.61995	0.4972	0.0068	873.7	1369.6	41.755	10.84	15.12	832
140	0.72459	0.5821	0.0058	1102.7	1682.4	44.163	11.83	16.06	889
160	0.82881	0.6663	0.0050	1345.1	2008.1	46.337	12.22	16.42	946
180	0.93276	0.7501	0.0045	1590.4	2336.6	48.272	12.19	16.38	1004
200	1.03651	0.8336	0.0040	1832.7	2661.9	49.985	11.95	16.12	1060
220	1.14013	0.9169	0.0037	2069.0	2981.1	51.507	11.64	15.80	1116
240	1.24366	1.0000	0.0033	2299.0	3293.9	52.868	11.33	15.49	1169
260	1.34710	1.0831	0.0031	2523.3	3601.0	54.097	11.08	15.23	1220
280	1.45049	1.1660	0.0029	2743.0	3903.4	55.218	10.88	15.02	1269
300	1.55377	1.2488	0.0027	2959.3	4202.3	56.249	10.72	14.86	1316
350	1.81194	1.4557	0.0023	3489.7	4939.3	58.520	10.51	14.65	1424
400	2.06998	1.6623	0.0020	4013.1	5669.1	60.471	10.43	14.56	1523
450	2.32794	1.8689	0.0018	4533.6	6395.9	62.184	10.41	14.54	1616
500	2.58586	2.0753	0.0016	5054.1	7122.8	63.714	10.40	14.53	1703
550	2.84373	2.2817	0.0015	5574.2	7849.2	65.099	10.41	14.54	1785
600	3.10158	2.4880	0.0013	6095.3	8576.6	66.363	10.43	14.55	1864
700	3.61723	2.9007	0.0011	7140.4	10034.2	68.612	10.48	14.61	2011
800	4.13284	3.3132	0.0010	8193.0	11499.2	70.567	10.57	14.70	2146
900	4.64842	3.7257	0.0009	9256.4	12975.1	72.303	10.70	14.82	2272
1000	5.16399	4.1382	0.0008	10333.6	14464.8	73.876	10.86	14.98	2390
1200	6.19509	4.9631	0.0007	12543.9	17500.0	76.629	11.24	15.37	2605
1400	7.22618	5.7880	0.0006	14836.7	20617.6	79.036	11.68	15.81	2799
1600	8.25732	6.6129	0.0005	17216.5	23822.4	81.153	12.11	16.24	2977
1800	9.28889	7.4378	0.0004	19689.8	27121.0	83.057	12.57	16.70	3144
2000	10.32234	8.2626	0.0004	22280.3	30538.2	84.923	13.22	17.38	3296
2500	12.95466	10.3247	0.0003	29819.5	40183.3	91.556	17.64	22.19	3603
3000	15.90915	12.3869	0.0003	41895.2	54622.5	100.150	31.55	38.10	3863

* TWO-PHASE BOUNDARY

0.80 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.067	77.4651	647.3	0.25548	94.5954	0.00986	75.88	259.74	0.00055	1.25315	2.1840
15	76.7248	639.7	0.24789	87.0229	0.01071	83.96	230.36	0.00058	1.25055	1.8798
16	75.8894	637.2	0.23706	79.9090	0.01146	90.11	205.24	0.00059	1.24761	1.6627
17	74.9923	637.0	0.22772	73.9430	0.01217	94.21	184.71	0.00058	1.24447	1.5196
18	74.0521	634.5	0.21992	68.2963	0.01296	97.15	167.84	0.00057	1.24118	1.4204
19	73.0644	629.5	0.21325	62.8392	0.01384	98.91	153.70	0.00056	1.23772	1.3540
20	72.0222	620.7	0.20734	57.3120	0.01489	100.49	141.61	0.00054	1.23409	1.3021
21	70.9163	609.5	0.20196	51.8962	0.01608	102.31	131.10	0.00053	1.23024	1.2559
22	69.7362	595.0	0.19695	46.4549	0.01752	103.37	121.79	0.00051	1.22613	1.2282
23	68.4619	576.7	0.19215	40.9370	0.01931	103.72	113.38	0.00049	1.22172	1.2171
24	67.0865	556.9	0.18721	35.6589	0.02140	103.44	105.70	0.00047	1.21696	1.2177
25	65.5817	533.8	0.18185	30.4154	0.02404	102.55	98.55	0.00044	1.21177	1.2332
26	63.9171	507.2	0.17564	25.2504	0.02748	101.00	91.76	0.00041	1.20605	1.2664
27	62.0450	475.9	0.16816	20.1166	0.03234	98.80	85.20	0.00037	1.19963	1.3271
28	59.8722	440.8	0.15929	15.2350	0.03945	95.82	78.64	0.00033	1.19221	1.4271
29	57.2336	398.5	0.14856	10.4781	0.05184	91.83	71.81	0.00029	1.18324	1.6155
* 29.828	54.4335	356.9	0.13744	6.7925	0.07148	87.32	65.59	0.00023	1.17378	1.9164
* 29.828	10.5055	205.0	0.06963	0.3666	0.14877	36.90	18.93	0.00041	1.03202	1.5642
30	10.2218	208.9	0.06974	0.3877	0.13577	36.00	18.91	0.00045	1.03114	1.4895
31	9.1271	228.2	0.07006	0.4710	0.09664	33.73	19.00	0.00060	1.02777	1.2426
32	8.3720	245.4	0.07018	0.5246	0.07784	32.98	19.24	0.00074	1.02545	1.1146
33	7.7923	261.3	0.07011	0.5634	0.06630	32.75	19.54	0.00087	1.02368	1.0339
34	7.3227	275.8	0.07049	0.5930	0.05844	32.79	19.88	0.00100	1.02224	0.9770
35	6.9280	289.9	0.07069	0.6167	0.05262	32.99	20.23	0.00112	1.02103	0.9353
36	6.5883	303.6	0.07078	0.6361	0.04810	33.30	20.60	0.00125	1.01999	0.9034
37	6.2907	317.2	0.07079	0.6525	0.04447	33.69	20.98	0.00137	1.01908	0.8781
38	6.0264	330.5	0.07074	0.6664	0.04146	34.12	21.36	0.00149	1.01828	0.8575
39	5.7893	343.6	0.07067	0.6784	0.03891	34.60	21.74	0.00161	1.01755	0.8404
40	5.5746	356.6	0.07056	0.6889	0.03672	35.10	22.13	0.00173	1.01690	0.8258
42	5.1992	382.2	0.07031	0.7062	0.03314	36.16	22.91	0.00198	1.01575	0.8024
44	4.8801	407.5	0.07001	0.7200	0.03030	37.28	23.68	0.00223	1.01478	0.7843
46	4.6041	432.4	0.06968	0.7312	0.02799	38.45	24.45	0.00248	1.01394	0.7697
48	4.3621	457.2	0.06931	0.7405	0.02605	39.65	25.22	0.00275	1.01320	0.7577
50	4.1476	482.0	0.06890	0.7482	0.02441	40.88	25.98	0.00302	1.01255	0.7478
52	3.9557	506.8	0.06843	0.7547	0.02299	42.12	26.73	0.00329	1.01197	0.7395
54	3.7827	531.9	0.06791	0.7602	0.02175	43.38	27.48	0.00357	1.01144	0.7327
56	3.6258	557.3	0.06732	0.7649	0.02065	44.66	28.21	0.00385	1.01097	0.7270
58	3.4826	583.1	0.06668	0.7690	0.01967	45.94	28.94	0.00414	1.01053	0.7226
60	3.3512	609.4	0.06597	0.7726	0.01880	47.31	29.66	0.00444	1.01013	0.7182
65	3.0653	678.3	0.06389	0.7797	0.01694	50.98	31.43	0.00521	1.00927	0.7086
70	2.8271	752.3	0.06144	0.7850	0.01546	54.67	33.15	0.00599	1.00854	0.7050
75	2.6251	832.5	0.05873	0.7889	0.01423	58.26	34.82	0.00674	1.00793	0.7080
80	2.4513	919.2	0.05589	0.7920	0.01320	62.06	36.46	0.00751	1.00741	0.7127
85	2.3000	1012.4	0.05306	0.7944	0.01232	66.95	38.06	0.00840	1.00695	0.7088
90	2.1669	1111.9	0.05035	0.7962	0.01155	71.83	39.62	0.00929	1.00654	0.7083
95	2.0488	1216.7	0.04782	0.7978	0.01088	76.73	41.15	0.01018	1.00619	0.7100
100	1.9432	1326.1	0.04553	0.7990	0.01029	89.88	45.77	0.01221	1.00587	0.6947
120	1.6130	1786.2	0.03880	0.8019	0.00846	117.09	54.02	0.01729	1.00487	0.6974
140	1.3801	2229.4	0.03544	0.8033	0.00720	136.07	59.17	0.02210	1.00416	0.6983
160	1.2065	2616.0	0.03423	0.8039	0.00628	148.28	63.01	0.02694	1.00364	0.6978
180	1.0721	2942.4	0.03424	0.8042	0.00557	155.71	66.21	0.03193	1.00323	0.6964
200	0.9648	3223.7	0.03488	0.8042	0.00500	160.32	69.07	0.03711	1.00291	0.6946
220	0.8771	3478.7	0.03578	0.8042	0.00454	163.59	71.73	0.04250	1.00265	0.6928
240	0.8041	3723.0	0.03671	0.8041	0.00416	166.45	74.28	0.04811	1.00242	0.6911
260	0.7423	3967.1	0.03752	0.8040	0.00384	169.41	76.74	0.05395	1.00224	0.6898
280	0.6894	4215.9	0.03819	0.8039	0.00356	172.66	79.15	0.06002	1.00208	0.6886
300	0.6436	4471.5	0.03871	0.8037	0.00332	176.23	81.53	0.06632	1.00194	0.6877
350	0.5519	5141.1	0.03945	0.8034	0.00285	186.51	87.38	0.08306	1.00166	0.6862
400	0.4831	5840.6	0.03974	0.8031	0.00249	197.98	93.15	0.10128	1.00146	0.6853
450	0.4296	6559.9	0.03979	0.8028	0.00222	209.82	98.85	0.12097	1.00129	0.6848
500	0.3867	7284.5	0.03980	0.8026	0.00199	221.82	104.49	0.14212	1.00117	0.6844
550	0.3517	8015.9	0.03975	0.8024	0.00181	233.88	110.07	0.16471	1.00106	0.6842
600	0.3224	8752.6	0.03968	0.8022	0.00166	245.95	115.59	0.18871	1.00097	0.6840
700	0.2765	10247.4	0.03945	0.8019	0.00143	270.14	126.44	0.24082	1.00083	0.6837
800	0.2420	11781.5	0.03910	0.8017	0.00125	294.62	137.04	0.29823	1.00073	0.6836
900	0.2151	13365.9	0.03862	0.8015	0.00111	319.55	147.38	0.36071	1.00065	0.6837
1000	0.1936	15008.0	0.03805	0.8014	0.00100	440.56	157.48	0.54661	1.00058	0.5356
1200	0.1614	18466.6	0.03674	0.8011	0.00083	511.13	177.05	0.74179	1.00049	0.5323
1400	0.1384	22153.7	0.03535	0.8010	0.00071	583.44	195.83	0.96030	1.00042	0.5305
1600	0.1211	26008.2	0.03409	0.8009	0.00062	656.59	213.94	1.20199	1.00036	0.5291
1800	0.1077	30094.9	0.03284	0.8007	0.00056	734.20	231.47	1.46976	1.00032	0.5266
2000	0.0969	34777.1	0.03123	0.8005	0.00050	830.12	248.50	1.77502	1.00029	0.5202
2500	0.0772	55264.2	0.02350	0.7970	0.00040	1383.98	289.72	2.90881	1.00023	0.4645
3000	0.0629	111251.3	0.01345	0.7786	0.00034	3244.24	332.71	4.87643	1.00019	0.3908

* TWO-PHASE BOUNDARY

0.90 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.100	0.01290	1.2278	0.9336	-308.6	-297.0	4.987	4.72	6.38	1289
15	0.01302	1.1472	0.9331	-302.7	-291.0	5.396	4.90	6.83	1265
16	0.01316	1.0633	0.9185	-295.8	-284.0	5.850	5.09	7.28	1234
17	0.01332	0.9759	0.9027	-288.5	-276.5	6.306	5.27	7.73	1209
18	0.01348	0.9319	0.8879	-280.6	-268.5	6.761	5.43	8.20	1186
19	0.01367	0.8700	0.8728	-272.4	-260.1	7.218	5.58	8.68	1164
20	0.01386	0.8057	0.8562	-263.6	-251.1	7.677	5.71	9.20	1140
21	0.01407	0.7421	0.8377	-254.3	-241.6	8.139	5.82	9.76	1115
22	0.01431	0.6767	0.8172	-244.5	-231.6	8.607	5.92	10.37	1088
23	0.01457	0.6109	0.7941	-234.0	-220.9	9.082	6.00	11.04	1060
24	0.01486	0.5428	0.7672	-222.8	-209.4	9.569	6.07	11.82	1028
25	0.01520	0.4762	0.7360	-210.9	-197.2	10.069	6.13	12.70	993
26	0.01558	0.4081	0.6998	-198.0	-184.0	10.588	6.18	13.76	953
27	0.01604	0.3377	0.6579	-184.0	-169.6	11.131	6.23	15.13	906
28	0.01660	0.2691	0.6099	-168.5	-153.6	11.711	6.29	16.96	851
29	0.01731	0.2011	0.5551	-151.0	-135.4	12.350	6.37	19.69	788
30	0.01833	0.1312	0.4891	-129.9	-113.4	13.096	6.48	24.86	709
* 30.567	0.01918	0.0889	0.4424	-114.9	-97.7	13.615	6.59	31.34	650
* 30.567	0.08139	0.0281	0.0656	97.2	170.5	22.391	7.67	38.60	376
31	0.08768	0.0365	0.0595	106.9	185.8	22.890	7.46	30.60	387
32	0.09864	0.0507	0.0511	123.3	212.1	23.726	7.18	23.21	405
33	0.10775	0.0622	0.0457	136.6	233.6	24.386	7.01	19.86	420
34	0.11588	0.0721	0.0418	148.1	252.4	24.948	6.83	17.87	434
35	0.12339	0.0811	0.0387	158.5	269.6	25.446	6.71	16.57	447
36	0.13047	0.0893	0.0362	168.2	285.6	25.899	6.63	15.64	459
37	0.13723	0.0971	0.0342	177.4	300.9	26.317	6.57	14.94	470
38	0.14374	0.1044	0.0324	186.2	315.6	26.708	6.52	14.40	480
39	0.15006	0.1114	0.0308	194.7	329.8	27.077	6.49	13.97	490
40	0.15620	0.1182	0.0294	203.0	343.6	27.426	6.46	13.62	499
42	0.16811	0.1311	0.0271	218.9	370.2	28.076	6.43	13.07	516
44	0.17961	0.1433	0.0252	234.3	395.9	28.675	6.41	12.68	533
46	0.19079	0.1550	0.0235	249.3	421.0	29.232	6.40	12.38	548
48	0.20173	0.1663	0.0221	264.0	445.5	29.753	6.40	12.15	562
50	0.21246	0.1773	0.0209	278.4	469.6	30.245	6.41	11.97	576
52	0.22303	0.1880	0.0198	292.7	493.4	30.712	6.42	11.83	588
54	0.23345	0.1984	0.0189	306.9	517.0	31.157	6.45	11.73	601
56	0.24376	0.2086	0.0180	321.0	540.4	31.582	6.48	11.65	612
58	0.25396	0.2187	0.0172	335.0	563.6	31.990	6.53	11.60	623
60	0.26408	0.2286	0.0165	349.1	586.8	32.382	6.58	11.57	634
65	0.28905	0.2528	0.0150	384.5	644.6	33.308	6.75	11.58	658
70	0.31367	0.2764	0.0138	420.5	702.8	34.171	6.99	11.70	680
75	0.33802	0.2996	0.0127	457.6	761.8	34.985	7.29	11.91	700
80	0.36216	0.3224	0.0118	496.0	822.0	35.762	7.63	12.18	717
85	0.38614	0.3448	0.0111	536.2	883.7	36.510	8.02	12.51	734
90	0.40998	0.3671	0.0104	578.2	947.2	37.235	8.43	12.88	749
95	0.43371	0.3892	0.0098	622.2	1012.6	37.942	8.86	13.27	763
100	0.45736	0.4111	0.0093	668.3	1079.9	38.633	9.29	13.67	778
120	0.55124	0.4975	0.0077	872.6	1368.7	41.260	10.85	15.14	833
140	0.64442	0.5827	0.0065	1101.8	1681.8	43.671	11.83	16.07	890
160	0.73717	0.6671	0.0057	1344.3	2007.8	45.847	12.22	16.43	947
180	0.82966	0.7511	0.0050	1589.8	2336.5	47.783	12.20	16.39	1005
200	0.92195	0.8347	0.0045	1832.1	2661.8	49.496	11.95	16.13	1061
220	1.01411	0.9181	0.0041	2068.5	2981.2	51.019	11.64	15.80	1117
240	1.10618	1.0013	0.0038	2298.5	3294.1	52.380	11.34	15.49	1170
260	1.19817	1.0844	0.0035	2522.9	3601.2	53.610	11.08	15.23	1221
280	1.29010	1.1674	0.0032	2742.6	3903.7	54.731	10.88	15.02	1270
300	1.38193	1.2503	0.0030	2958.9	4202.7	55.762	10.72	14.87	1316
350	1.61146	1.4572	0.0026	3489.5	4939.8	58.034	10.51	14.65	1425
400	1.84086	1.6639	0.0023	4012.9	5669.7	59.985	10.43	14.56	1524
450	2.07019	1.8705	0.0020	4533.4	6396.6	61.698	10.41	14.54	1616
500	2.29945	2.0770	0.0018	5054.0	7123.5	63.228	10.40	14.53	1703
550	2.52869	2.2834	0.0016	5574.1	7849.9	64.613	10.41	14.54	1786
600	2.75790	2.4897	0.0015	6095.2	8577.3	65.878	10.43	14.55	1864
700	3.21627	2.9024	0.0013	7140.3	10035.0	68.126	10.48	14.61	2011
800	3.67460	3.3149	0.0011	8192.9	11500.1	70.081	10.57	14.70	2147
900	4.13290	3.7275	0.0010	9256.3	12975.9	71.818	10.70	14.82	2273
1000	4.59118	4.1400	0.0009	10333.6	14465.7	73.390	10.86	14.98	2390
1200	5.50773	4.9649	0.0008	12543.9	17500.9	76.143	11.24	15.37	2605
1400	6.42425	5.7898	0.0006	14836.7	20618.5	78.550	11.68	15.81	2799
1600	7.34082	6.6147	0.0006	17216.4	23823.1	80.667	12.11	16.24	2978
1800	8.25775	7.4396	0.0005	19689.0	27121.0	82.571	12.57	16.70	3144
2000	9.17625	8.2644	0.0005	22276.7	30535.4	84.435	13.20	17.35	3296
2500	11.51332	10.3265	0.0004	29764.2	40126.2	91.045	17.41	21.93	3606
3000	14.12044	12.3886	0.0003	41549.2	54257.6	99.529	30.58	36.98	3867

* TWO-PHASE BOUNDARY

0.90 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial V)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.100	77.5208	650.6	0.25535	95.1791	0.00981	76.29	260.36	0.00056	1.25335	2.1781
15	76.8115	644.7	0.24804	88.1146	0.01059	84.07	231.93	0.00058	1.25085	1.8836
16	75.9818	64 L.8	0.23767	80.7877	0.01137	90.26	206.61	0.00059	1.24794	1.6675
17	75.0917	640.5	0.22831	74.7803	0.01207	94.39	185.94	0.00059	1.24482	1.5231
18	74.1591	638.2	0.22049	69.1097	0.01285	97.36	168.95	0.00058	1.24155	1.4227
19	73.1793	633.5	0.21380	63.6661	0.01371	99.15	154.72	0.00056	1.23812	1.3551
20	72.1462	624.9	0.20788	58.1271	0.01473	100.77	142.56	0.00055	1.23452	1.3023
21	71.0514	614.1	0.20249	52.7287	0.01589	102.62	132.00	0.00053	1.23071	1.2550
22	69.8844	599.9	0.19747	47.2907	0.01728	103.72	122.66	0.00052	1.22665	1.2260
23	68.6311	583.2	0.19269	41.9288	0.01894	104.13	114.25	0.00049	1.22230	1.2118
24	67.2723	562.8	0.18778	36.5169	0.02101	103.90	106.55	0.00047	1.21760	1.2125
25	65.7941	540.6	0.18251	31.3292	0.02349	103.07	99.40	0.00044	1.21250	1.2249
26	64.1659	514.8	0.17651	26.1854	0.02673	101.60	92.65	0.00041	1.20690	1.2546
27	62.3439	484.3	0.16936	21.0554	0.03124	99.51	86.15	0.00038	1.20065	1.3101
28	60.2507	450.8	0.16085	16.2152	0.03761	96.69	79.70	0.00034	1.19350	1.3975
29	57.7615	412.0	0.15082	11.6174	0.04778	92.98	73.10	0.00029	1.18504	1.5477
30	54.5650	363.7	0.13827	7.1562	0.06834	87.88	65.89	0.00023	1.17422	1.8639
* 30.567	52.1365	328.3	0.12885	4.6342	0.09546	85.67	61.14	0.00019	1.16605	2.2367
* 30.567	12.2868	203.6	0.06962	0.3458	0.18963	41.99	20.06	0.00032	1.03752	1.8447
31	11.4051	213.9	0.06992	0.4158	0.14310	38.62	19.89	0.00040	1.03479	1.5758
32	10.1382	233.6	0.07027	0.5144	0.09938	35.76	19.87	0.00055	1.03088	1.2896
33	9.2804	251.0	0.07027	0.5773	0.07913	34.73	20.04	0.00068	1.02824	1.1459
34	8.6298	266.3	0.07085	0.6224	0.06711	34.35	20.30	0.00080	1.02625	1.0563
35	8.1045	281.1	0.07117	0.6569	0.05894	34.30	20.60	0.00092	1.02463	0.9951
36	7.6647	295.4	0.07132	0.6846	0.05293	34.44	20.93	0.00103	1.02329	0.9505
37	7.2871	309.4	0.07137	0.7073	0.04829	34.70	21.28	0.00115	1.02213	0.9164
38	6.9569	323.2	0.07134	0.7264	0.04457	35.04	21.64	0.00126	1.02112	0.8894
39	6.6642	336.7	0.07126	0.7427	0.04149	35.44	22.00	0.00137	1.02022	0.8674
40	6.4019	350.1	0.07115	0.7568	0.03890	35.88	22.37	0.00148	1.01942	0.8491
42	5.9485	376.3	0.07087	0.7799	0.03474	36.85	23.12	0.00171	1.01804	0.8204
44	5.5677	402.0	0.07054	0.7980	0.03153	37.91	23.88	0.00193	1.01688	0.7987
46	5.2414	427.5	0.07017	0.8126	0.02896	39.02	24.64	0.00217	1.01588	0.7815
48	4.9572	452.7	0.06977	0.8245	0.02684	40.18	25.39	0.00240	1.01502	0.7677
50	4.7068	477.8	0.06932	0.8344	0.02505	41.37	26.14	0.00264	1.01425	0.7563
52	4.4838	503.0	0.06883	0.8428	0.02352	42.59	26.88	0.00289	1.01358	0.7469
54	4.2835	528.3	0.06829	0.8499	0.02220	43.82	27.62	0.00314	1.01297	0.7391
56	4.1025	554.0	0.06768	0.8559	0.02103	45.08	28.35	0.00340	1.01242	0.7326
58	3.9376	579.9	0.06702	0.8611	0.02000	46.34	29.07	0.00365	1.01191	0.7275
60	3.7868	606.5	0.06629	0.8656	0.01908	47.69	29.79	0.00392	1.01146	0.7226
65	3.4596	675.6	0.06418	0.8746	0.01714	51.32	31.54	0.00461	1.01046	0.7119
70	3.1881	756.0	0.06169	0.8813	0.01560	55.00	33.25	0.00531	1.00964	0.7076
75	2.9584	830.3	0.05895	0.8863	0.01434	58.54	34.92	0.00598	1.00894	0.7103
80	2.7612	917.2	0.05609	0.8901	0.01328	62.32	36.55	0.00667	1.00834	0.7145
85	2.5898	1010.6	0.05324	0.8931	0.01238	67.20	38.14	0.00747	1.00782	0.7103
90	2.4391	1110.2	0.05051	0.8954	0.01160	72.08	39.70	0.00826	1.00737	0.7095
95	2.3057	1215.2	0.04797	0.8973	0.01092	76.96	41.23	0.00905	1.00696	0.7110
100	2.1865	1324.7	0.04566	0.8988	0.01032	89.94	45.78	0.01083	1.00660	0.6960
120	1.8141	1785.5	0.03889	0.9025	0.00848	117.10	54.02	0.01535	1.00548	0.6982
140	1.5518	2229.3	0.03551	0.9042	0.00721	136.07	59.17	0.01964	1.00468	0.6990
160	1.3565	2616.5	0.03428	0.9050	0.00628	148.28	63.01	0.02395	1.00409	0.6983
180	1.2053	2943.4	0.03429	0.9053	0.00557	155.72	66.22	0.02838	1.00364	0.6968
200	1.0847	3225.0	0.03492	0.9054	0.00500	160.35	69.08	0.03300	1.00327	0.6949
220	0.9861	3480.3	0.03582	0.9053	0.00454	163.62	71.75	0.03780	1.00297	0.6930
240	0.9040	3724.8	0.03674	0.9052	0.00416	166.48	74.29	0.04279	1.00273	0.6913
260	0.8346	3969.2	0.03756	0.9051	0.00384	169.44	76.75	0.04799	1.00252	0.6899
280	0.7751	4218.1	0.03823	0.9049	0.00356	172.70	79.17	0.05338	1.00234	0.6887
300	0.7236	4473.8	0.03874	0.9047	0.00332	176.28	81.55	0.05899	1.00218	0.6878
350	0.6206	5143.7	0.03948	0.9043	0.00285	186.56	87.40	0.07389	1.00187	0.6862
400	0.5432	5843.3	0.03976	0.9039	0.00249	197.94	93.17	0.09009	1.00164	0.6854
450	0.4830	6562.7	0.03981	0.9035	0.00222	209.89	98.88	0.10760	1.00146	0.6848
500	0.4349	7287.3	0.03982	0.9032	0.00199	221.89	104.52	0.12641	1.00131	0.6845
550	0.3955	8018.8	0.03977	0.9030	0.00181	233.97	110.11	0.14651	1.00119	0.6842
600	0.3626	8755.6	0.03969	0.9028	0.00166	246.04	115.63	0.16786	1.00109	0.6840
700	0.3109	10250.3	0.03946	0.9024	0.00143	270.25	126.49	0.21421	1.00094	0.6837
800	0.2721	11784.6	0.03911	0.9021	0.00125	294.74	137.09	0.26527	1.00082	0.6836
900	0.2420	13369.0	0.03863	0.9019	0.00111	319.68	147.44	0.32084	1.00073	0.6837
1000	0.2178	15011.1	0.03806	0.9017	0.00100	440.56	157.55	0.48597	1.00066	0.5358
1200	0.1816	18469.9	0.03674	0.9014	0.00083	511.13	177.13	0.65948	1.00055	0.5325
1400	0.1557	22156.9	0.03536	0.9012	0.00071	583.43	195.92	0.85373	1.00047	0.5307
1600	0.1362	26009.5	0.03410	0.9011	0.00062	656.51	214.04	1.06853	1.00041	0.5294
1800	0.1211	30086.2	0.03286	0.9009	0.00055	733.73	231.58	1.30629	1.00036	0.5270
2000	0.1090	34730.5	0.03129	0.9006	0.00050	828.18	248.62	1.57655	1.00033	0.5210
2500	0.0869	54646.3	0.02381	0.8969	0.00040	1360.41	289.83	2.57075	1.00026	0.4673
3000	0.0708	108142.4	0.01385	0.8774	0.00034	3127.32	332.61	4.29912	1.00021	0.3933

* TWO-PHASE BOUNDARY

1.00 MPA ISOBAR

	TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
*	14.133	0.01289	1.2344	0.9347	-308.5	-295.7	4.990	4.72	6.38	1292
	15	0.01300	1.1600	0.9343	-302.9	-289.9	5.382	4.90	6.80	1270
	16	0.01315	1.0735	0.9214	-296.1	-282.9	5.835	5.08	7.27	1239
	17	0.01330	1.0056	0.9056	-288.7	-275.4	6.290	5.26	7.71	1214
	18	0.01347	0.9414	0.8908	-280.9	-267.5	6.744	5.43	8.18	1191
	19	0.01364	0.8798	0.8757	-272.7	-259.0	7.199	5.57	8.66	1169
	20	0.01384	0.8155	0.8593	-264.0	-250.1	7.656	5.70	9.17	1145
	21	0.01405	0.7523	0.8409	-254.7	-240.7	8.117	5.82	9.71	1121
	22	0.01428	0.6871	0.8205	-245.0	-230.7	8.582	5.92	10.31	1094
	23	0.01454	0.6219	0.7976	-234.6	-220.1	9.055	6.00	10.97	1066
	24	0.01482	0.5539	0.7713	-223.5	-208.7	9.538	6.07	11.74	1035
	25	0.01515	0.4883	0.7407	-211.7	-196.6	10.034	6.13	12.58	1001
	26	0.01553	0.4207	0.7056	-199.0	-183.5	10.547	6.18	13.59	962
	27	0.01597	0.3531	0.6648	-185.3	-169.3	11.082	6.23	14.84	917
	28	0.01650	0.2850	0.6185	-170.2	-153.7	11.650	6.29	16.52	865
	29	0.01717	0.2166	0.5658	-153.1	-136.0	12.271	6.36	19.00	804
	30	0.01809	0.1485	0.5041	-133.2	-115.1	12.979	6.45	23.26	731
	31	0.01957	0.0784	0.4243	-107.2	-87.6	13.878	6.63	33.89	633
*	31.243	0.02016	0.0594	0.3982	-98.7	-78.5	14.171	6.71	40.60	600
*	31.248	0.06965	0.0213	0.0788	87.6	157.2	21.719	7.93	52.16	374
	32	0.08043	0.0367	0.0654	107.0	187.4	22.675	7.50	31.66	393
	33	0.09052	0.0511	0.0561	124.2	214.7	23.515	7.22	23.86	411
	34	0.09887	0.0627	0.0502	137.8	236.6	24.170	6.97	20.33	427
	35	0.10632	0.0727	0.0459	149.5	255.9	24.727	6.81	18.27	442
	36	0.11320	0.0818	0.0426	160.2	273.4	25.221	6.70	16.91	454
	37	0.11969	0.0903	0.0398	170.1	289.8	25.671	6.62	15.94	466
	38	0.12587	0.0982	0.0375	179.5	305.4	26.086	6.57	15.22	477
	39	0.13183	0.1057	0.0356	188.5	320.3	26.474	6.53	14.65	487
	40	0.13759	0.1128	0.0339	197.1	334.7	26.839	6.49	14.20	497
	42	0.14869	0.1264	0.0310	213.7	362.4	27.514	6.45	13.52	515
	44	0.15934	0.1391	0.0287	229.6	388.9	28.131	6.43	13.03	531
	46	0.16965	0.1513	0.0267	245.0	414.6	28.702	6.42	12.67	547
	48	0.17971	0.1629	0.0251	260.0	439.7	29.235	6.41	12.39	561
	50	0.18954	0.1742	0.0236	274.7	464.2	29.736	6.42	12.18	575
	52	0.19921	0.1852	0.0224	289.2	488.4	30.211	6.44	12.02	588
	54	0.20873	0.1959	0.0213	303.6	512.3	30.662	6.46	11.89	600
	56	0.21813	0.2063	0.0203	317.9	536.0	31.093	6.49	11.79	612
	58	0.22742	0.2166	0.0194	332.1	559.5	31.506	6.54	11.73	623
	60	0.23663	0.2267	0.0185	346.3	582.9	31.902	6.59	11.69	634
	65	0.25931	0.2513	0.0168	382.0	641.3	32.836	6.76	11.68	659
	70	0.28164	0.2752	0.0154	418.3	699.9	33.705	7.00	11.78	681
	75	0.30370	0.2986	0.0142	455.5	759.2	34.524	7.29	11.97	700
	80	0.32554	0.3217	0.0132	494.2	819.7	35.304	7.64	12.24	718
	85	0.34723	0.3444	0.0123	534.5	881.7	36.056	8.02	12.56	734
	90	0.36878	0.3668	0.0116	576.6	945.4	36.783	8.44	12.92	749
	95	0.39022	0.3890	0.0109	620.7	1010.9	37.492	8.86	13.31	764
	100	0.41157	0.4111	0.0103	666.9	1078.5	38.185	9.30	13.70	778
	120	0.49627	0.4979	0.0085	871.5	1367.7	40.816	10.85	15.16	834
	140	0.58028	0.5833	0.0073	1100.9	1681.2	43.230	11.84	16.09	891
	160	0.66386	0.6680	0.0063	1343.5	2007.4	45.407	12.22	16.44	948
	180	0.74718	0.7521	0.0056	1589.1	2336.3	47.345	12.20	16.39	1005
	200	0.83031	0.8358	0.0050	1831.5	2661.8	49.059	11.95	16.14	1062
	220	0.91330	0.9193	0.0046	2068.0	2981.3	50.582	11.64	15.81	1117
	240	0.99620	1.0026	0.0042	2298.1	3294.3	51.944	11.34	15.50	1171
	260	1.07902	1.0858	0.0039	2522.5	3601.5	53.173	11.08	15.23	1222
	280	1.16179	1.1688	0.0036	2742.3	3904.0	54.295	10.88	15.03	1271
	300	1.24446	1.2517	0.0033	2958.6	4203.1	55.327	10.73	14.87	1317
	350	1.45108	1.4588	0.0029	3489.2	4940.3	57.599	10.51	14.65	1426
	400	1.65757	1.6655	0.0025	4012.7	5670.3	59.550	10.43	14.56	1525
	450	1.86398	1.8721	0.0022	4533.3	6397.2	61.263	10.41	14.54	1617
	500	2.07033	2.0786	0.0020	5053.8	7124.2	62.794	10.40	14.53	1704
	550	2.27666	2.2851	0.0018	5574.0	7853.7	64.178	10.41	14.54	1786
	600	2.48295	2.4914	0.0017	6095.1	8578.1	65.443	10.43	14.55	1865
	700	2.89550	2.9041	0.0014	7140.2	10035.7	67.691	10.48	14.61	2012
	800	3.30800	3.3167	0.0013	8192.9	11500.9	69.646	10.57	14.70	2147
	900	3.72048	3.7292	0.0011	9256.3	12976.8	71.383	10.70	14.82	2273
	1000	4.13294	4.1417	0.0010	10333.6	14466.5	72.955	10.86	14.98	2391
	1200	4.95784	4.9667	0.0008	12543.9	17501.7	75.709	11.24	15.37	2605
	1400	5.78271	5.7916	0.0007	14836.6	20619.3	78.116	11.68	15.80	2799
	1600	6.60763	6.6165	0.0006	17216.3	23823.9	80.232	12.11	16.24	2978
	1800	7.43264	7.4413	0.0006	19688.4	27121.2	82.136	12.56	16.69	3145
	2000	8.25941	8.2662	0.0005	22273.7	30533.1	83.999	13.18	17.33	3297
	2500	10.36066	10.3283	0.0004	29717.4	40078.1	90.589	17.22	21.72	3609
	3000	12.69252	12.3904	0.0003	41256.5	53949.0	98.980	29.75	36.03	3869

* TWO-PHASE BOUNDARY

1.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.133	77.5763	654.0	0.25522	95.7614	0.00976	76.69	260.99	0.00056	1.25355	2.1723
15	76.8975	649.7	0.24818	89.1999	0.01047	84.18	233.50	0.00058	1.25116	1.8875
16	76.0734	644.3	0.23827	81.6612	0.01128	90.41	207.98	0.00059	1.24826	1.6724
17	75.1902	644.1	0.22890	75.6113	0.01198	94.58	187.17	0.00059	1.24516	1.5266
18	74.2648	641.8	0.22106	69.9161	0.01274	97.58	170.06	0.00058	1.24192	1.4251
19	73.2929	637.5	0.21433	64.4858	0.01358	99.40	155.74	0.00056	1.23852	1.3564
20	72.2689	629.1	0.20842	58.9352	0.01458	101.04	143.51	0.00055	1.23495	1.3027
21	71.1846	618.6	0.20301	53.5525	0.01570	102.94	132.90	0.00054	1.23117	1.2541
22	70.0303	604.8	0.19798	48.1167	0.01705	104.07	123.52	0.00052	1.22716	1.2241
23	68.7931	588.6	0.19320	42.7839	0.01864	104.53	115.09	0.00050	1.22286	1.2083
24	67.4541	568.5	0.18834	37.3608	0.02064	104.35	107.38	0.00047	1.21823	1.2077
25	66.0015	547.2	0.18315	32.2261	0.02298	103.58	100.25	0.00045	1.21322	1.2173
26	64.4069	522.0	0.17735	27.0974	0.02604	102.18	93.53	0.00042	1.20773	1.2442
27	62.6325	493.8	0.17046	22.1181	0.03006	100.19	87.08	0.00039	1.20164	1.2900
28	60.6157	461.3	0.16232	17.2762	0.03580	97.53	80.74	0.00035	1.19475	1.3671
29	58.2362	423.5	0.15281	12.6128	0.04486	94.04	74.28	0.00031	1.18665	1.5007
30	55.2770	378.6	0.14128	8.2063	0.06142	89.37	67.41	0.00025	1.17662	1.7544
31	51.0906	320.0	0.12529	4.0067	0.10589	85.69	59.29	0.00018	1.16254	2.3450
* 31.248	49.6094	300.4	0.11970	2.9465	0.13513	86.22	56.77	0.00015	1.15759	2.6729
* 31.248	14.3567	202.2	0.06923	0.3054	0.25798	49.56	21.45	0.00024	1.04393	2.2578
32	12.4337	220.6	0.07010	0.4557	0.14350	40.71	20.84	0.00037	1.03797	1.6202
33	11.0478	240.2	0.07027	0.5646	0.09932	37.54	20.72	0.00051	1.03369	1.3169
34	10.1147	256.8	0.07115	0.6340	0.07916	36.34	20.83	0.00064	1.03081	1.1650
35	9.4056	272.3	0.07164	0.6842	0.06708	35.87	21.05	0.00075	1.02863	1.0719
36	8.8336	287.3	0.07188	0.7230	0.05886	35.75	21.32	0.00086	1.02687	1.0083
37	8.3550	301.8	0.07197	0.7541	0.05282	35.84	21.62	0.00097	1.02540	0.9618
38	7.9444	316.0	0.07196	0.7798	0.04815	36.05	21.95	0.00107	1.02414	0.9263
39	7.5856	329.9	0.07188	0.8014	0.04440	36.36	22.29	0.00118	1.02304	0.8982
40	7.2677	343.6	0.07177	0.8199	0.04132	36.72	22.64	0.00128	1.02207	0.8752
42	6.7254	370.5	0.07145	0.8499	0.03648	37.58	23.36	0.00149	1.02041	0.8401
44	6.2759	396.8	0.07108	0.8731	0.03284	38.56	24.09	0.00170	1.01904	0.8142
46	5.8943	422.6	0.07068	0.8917	0.02998	39.62	24.83	0.00191	1.01787	0.7941
48	5.5647	448.2	0.07024	0.9067	0.02765	40.73	25.57	0.00213	1.01687	0.7781
50	5.2758	473.7	0.06976	0.9192	0.02571	41.88	26.31	0.00235	1.01599	0.7651
52	5.0198	499.2	0.06924	0.9296	0.02407	43.06	27.04	0.00257	1.01521	0.7545
54	4.7908	524.8	0.06868	0.9384	0.02265	44.27	27.77	0.00280	1.01451	0.7457
56	4.5844	550.7	0.06804	0.9459	0.02141	45.50	28.49	0.00303	1.01388	0.7383
58	4.3971	576.9	0.06736	0.9524	0.02033	46.75	29.21	0.00326	1.01331	0.7326
60	4.2261	603.6	0.06662	0.9580	0.01936	48.08	29.91	0.00350	1.01279	0.7270
65	3.8564	673.1	0.06447	0.9691	0.01734	51.68	31.66	0.00413	1.01167	0.7152
70	3.5506	747.7	0.06195	0.9772	0.01575	55.32	33.36	0.00476	1.01074	0.7102
75	3.2928	828.3	0.05918	0.9834	0.01445	58.83	35.02	0.00537	1.00996	0.7126
80	3.0718	915.3	0.05630	0.9881	0.01337	62.59	36.64	0.00599	1.00929	0.7163
85	2.8800	1008.9	0.05342	0.9917	0.01245	67.45	38.23	0.00671	1.00870	0.7117
90	2.7117	1108.6	0.05067	0.9946	0.01166	72.32	39.78	0.00743	1.00819	0.7107
95	2.5627	1213.7	0.04811	0.9969	0.01096	77.19	41.30	0.00815	1.00774	0.7120
100	2.4297	1323.3	0.04579	0.9988	0.01035	90.00	45.80	0.00973	1.00734	0.6972
120	2.0150	1784.8	0.03898	1.0032	0.00849	117.10	54.01	0.01380	1.00608	0.6991
140	1.7233	2229.2	0.03557	1.0053	0.00722	136.07	59.17	0.01767	1.00520	0.6996
160	1.5063	2617.0	0.03434	1.0062	0.00628	148.29	63.01	0.02155	1.00455	0.6988
180	1.3384	2944.3	0.03433	1.0066	0.00557	155.73	66.22	0.02555	1.00404	0.6971
200	1.2044	3226.4	0.03497	1.0067	0.00500	160.37	69.09	0.02971	1.00363	0.6952
220	1.0949	3481.9	0.03586	1.0066	0.00454	163.64	71.76	0.03403	1.00330	0.6932
240	1.0038	3726.7	0.03678	1.0064	0.00416	166.52	74.30	0.03853	1.00303	0.6915
260	0.9268	3971.2	0.03759	1.0062	0.00384	169.48	76.77	0.04321	1.00280	0.6900
280	0.8607	4220.3	0.03826	1.0060	0.00356	172.74	79.18	0.04808	1.00260	0.6889
300	0.8036	4476.1	0.03877	1.0059	0.00332	176.33	81.56	0.05312	1.00242	0.6879
350	0.6891	5146.2	0.03950	1.0053	0.00285	186.62	87.42	0.06654	1.00208	0.6863
400	0.6033	5845.9	0.03978	1.0048	0.00249	198.00	93.20	0.08114	1.00182	0.6854
450	0.5365	6565.4	0.03983	1.0044	0.00221	209.96	98.91	0.09691	1.00162	0.6849
500	0.4830	7290.1	0.03983	1.0040	0.00199	221.97	104.56	0.11385	1.00146	0.6845
550	0.4392	8021.6	0.03978	1.0037	0.00181	234.05	110.15	0.13195	1.00132	0.6842
600	0.4027	8758.5	0.03971	1.0034	0.00166	246.13	115.67	0.15117	1.00121	0.6840
700	0.3454	10253.3	0.03947	1.0030	0.00142	270.36	126.54	0.19292	1.00104	0.6837
800	0.3023	11787.6	0.03912	1.0026	0.00125	294.86	137.14	0.23890	1.00091	0.6836
900	0.2688	13372.1	0.03864	1.0023	0.00111	319.82	147.50	0.28894	1.00081	0.6837
1000	0.2420	15014.3	0.03806	1.0021	0.00100	440.56	157.62	0.43747	1.00073	0.5361
1200	0.2017	18473.1	0.03675	1.0018	0.00083	511.13	177.21	0.59363	1.00061	0.5328
1400	0.1729	22160.0	0.03536	1.0015	0.00071	583.42	196.01	0.76847	1.00052	0.5310
1600	0.1513	26011.3	0.03410	1.0013	0.00062	656.44	214.15	0.96177	1.00046	0.5297
1800	0.1345	30079.4	0.03288	1.0011	0.00055	733.32	231.70	1.17555	1.00041	0.5274
2000	0.1211	34691.6	0.03134	1.0008	0.00050	826.53	248.74	1.41797	1.00036	0.5216
2500	0.0965	54123.9	0.02407	0.9969	0.00040	1340.45	289.95	2.30214	1.00029	0.4698
3000	0.0788	105504.7	0.01422	0.9762	0.00034	3028.08	332.54	3.84065	1.00024	0.3956

* TWO-PHASE BOUNDARY

1.292800 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.229	0.01286	1.2537	0.9367	-308.4	-291.8	4.996	4.73	6.38	1300
15	0.01296	1.1970	0.9378	-303.5	-286.7	5.343	4.89	6.74	1285
16	0.01310	1.1028	0.9299	-296.7	-279.7	5.793	5.08	7.23	1253
17	0.01325	1.0336	0.9139	-289.4	-272.3	6.245	5.25	7.66	1228
18	0.01341	0.9688	0.8991	-281.7	-264.4	6.695	5.42	8.12	1205
19	0.01358	0.9102	0.8842	-273.6	-256.1	7.145	5.56	8.57	1184
20	0.01377	0.8467	0.8680	-265.0	-247.2	7.599	5.69	9.07	1161
21	0.01397	0.7813	0.8499	-256.0	-237.9	8.054	5.81	9.60	1136
22	0.01420	0.7166	0.8300	-246.4	-228.0	8.513	5.91	10.17	1111
23	0.01444	0.6530	0.8077	-236.3	-217.6	8.978	5.99	10.79	1084
24	0.01471	0.5882	0.7826	-225.5	-206.5	9.451	6.06	11.47	1055
25	0.01502	0.5232	0.7537	-214.0	-194.6	9.936	6.12	12.25	1023
26	0.01537	0.4570	0.7209	-201.8	-181.9	10.433	6.17	13.16	987
27	0.01577	0.3916	0.6835	-188.6	-168.3	10.948	6.22	14.23	946
28	0.01624	0.3269	0.6411	-174.4	-153.4	11.489	6.27	15.56	901
29	0.01682	0.2603	0.5941	-158.7	-136.9	12.066	6.33	17.45	847
30	0.01755	0.1976	0.5409	-141.0	-118.3	12.697	6.40	20.08	787
31	0.01856	0.1349	0.4787	-120.2	-96.2	13.422	6.50	24.64	715
32	0.02020	0.0718	0.3996	-93.1	-67.0	14.348	6.68	35.71	620
* 32.976	0.03128	-0.0001	0.1927	-5.6	34.9	17.461	9.88	-14658.08	348
* 32.976	0.03241	-0.0001	0.1868	-0.1	41.8	17.671	9.80	-13261.84	351
33	0.03934	0.0025	0.1548	30.3	81.1	18.865	9.44	501.14	363
34	0.06012	0.0298	0.0915	93.8	171.6	21.578	7.72	42.28	404
35	0.06941	0.0456	0.0760	116.0	205.7	22.568	7.23	28.61	425
36	0.07672	0.0584	0.0669	132.1	231.3	23.289	6.98	23.23	441
37	0.08307	0.0694	0.0607	145.5	252.9	23.883	6.82	20.36	455
38	0.08886	0.0793	0.0559	157.4	272.3	24.400	6.72	18.54	468
39	0.09425	0.0884	0.0521	168.4	290.2	24.865	6.64	17.28	479
40	0.09935	0.0969	0.0489	178.5	307.0	25.290	6.59	16.35	490
42	0.10894	0.1126	0.0439	197.5	338.3	26.054	6.53	15.07	510
44	0.11795	0.1270	0.0401	215.1	367.5	26.734	6.49	14.22	528
46	0.12654	0.1405	0.0369	231.8	395.4	27.353	6.47	13.63	544
48	0.13482	0.1533	0.0344	247.9	422.2	27.923	6.46	13.18	559
50	0.14286	0.1655	0.0322	263.5	448.2	28.454	6.46	12.85	574
52	0.15070	0.1773	0.0303	278.8	473.6	28.953	6.48	12.59	587
54	0.15839	0.1888	0.0287	293.8	498.6	29.424	6.50	12.39	600
56	0.16594	0.1999	0.0272	308.7	523.2	29.872	6.53	12.23	612
58	0.17338	0.2107	0.0259	323.4	547.6	30.299	6.57	12.12	624
60	0.18072	0.2214	0.0247	338.1	571.7	30.709	6.62	12.04	635
65	0.19875	0.2471	0.0223	374.7	631.6	31.668	6.78	11.95	660
70	0.21640	0.2720	0.0203	411.7	691.5	32.555	7.02	12.00	682
75	0.23379	0.2961	0.0187	449.6	751.8	33.387	7.31	12.15	702
80	0.25096	0.3198	0.0173	488.7	813.1	34.179	7.65	12.39	720
85	0.26796	0.3431	0.0162	529.4	875.8	34.939	8.03	12.69	736
90	0.28483	0.3660	0.0152	571.9	940.1	35.674	8.45	13.04	752
95	0.30159	0.3886	0.0143	616.3	1006.2	36.388	8.87	13.41	766
100	0.31826	0.4111	0.0135	662.8	1074.2	37.086	9.30	13.79	781
120	0.38425	0.4990	0.0111	868.2	1365.0	39.731	10.85	15.22	836
140	0.44956	0.5853	0.0094	1098.3	1679.4	42.152	11.84	16.13	893
160	0.51445	0.6705	0.0082	1341.3	2006.4	44.335	12.23	16.48	950
180	0.57907	0.7551	0.0073	1587.2	2335.8	46.275	12.20	16.42	1008
200	0.64351	0.8392	0.0065	1829.8	2661.8	47.992	11.96	16.16	1065
220	0.70781	0.9229	0.0059	2066.5	2981.6	49.516	11.64	15.83	1120
240	0.77202	1.0064	0.0054	2296.8	3294.8	50.879	11.34	15.51	1173
260	0.83616	1.0897	0.0050	2521.3	3602.3	52.110	11.08	15.25	1224
280	0.90024	1.1729	0.0046	2741.2	3905.0	53.232	10.88	15.04	1273
300	0.96425	1.2560	0.0043	2957.8	4204.3	54.265	10.73	14.88	1320
350	1.12416	1.4633	0.0037	3488.5	4941.9	56.538	10.51	14.66	1428
400	1.28395	1.6702	0.0032	4012.1	5672.0	58.489	10.43	14.57	1527
450	1.44365	1.8769	0.0029	4532.8	6399.2	60.203	10.41	14.54	1619
500	1.60330	2.0835	0.0026	5053.5	7126.2	61.734	10.40	14.53	1706
550	1.76292	2.2900	0.0024	5573.7	7852.8	63.119	10.41	14.54	1788
600	1.92252	2.4964	0.0022	6094.8	8580.3	64.383	10.43	14.55	1867
700	2.24165	2.9091	0.0018	7140.0	10038.8	66.632	10.48	14.61	2014
800	2.56075	3.3218	0.0016	8192.7	11503.2	68.587	10.57	14.70	2149
900	2.87982	3.7343	0.0014	9256.2	12979.2	70.324	10.70	14.83	2275
1000	3.19888	4.1469	0.0013	10333.5	14469.0	71.896	10.86	14.98	2392
1200	3.83696	4.9718	0.0011	12543.8	17504.2	74.650	11.24	15.37	2607
1400	4.47502	5.7968	0.0009	14836.5	20521.9	77.056	11.68	15.80	2801
1600	5.11310	6.6217	0.0008	17216.0	23826.2	79.173	12.11	16.23	2980
1800	5.75139	7.4465	0.0007	19686.8	27122.2	81.076	12.55	16.68	3146
2000	6.39059	8.2714	0.0006	22266.9	30528.7	82.936	13.13	17.28	3299
2500	8.01231	10.3335	0.0005	29613.1	39971.5	89.493	16.78	21.24	3616
3000	9.79099	12.3957	0.0004	40604.3	53262.1	97.666	27.91	33.90	3877

* TWO-PHASE BOUNDARY

1.292800 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.229	77.7376	664.1	0.25449	97.4607	0.00961	77.85	262.81	0.00056	1.25411	2.1545
15	77.1455	663.8	0.24860	92.3420	0.01016	84.50	238.11	0.00058	1.25203	1.8998
16	76.3375	654.5	0.23996	84.1885	0.01105	90.83	212.01	0.00059	1.24919	1.6873
17	75.4732	654.2	0.23054	78.0093	0.01172	95.10	190.76	0.00059	1.24615	1.5374
18	74.5678	652.2	0.22264	72.2386	0.01245	98.19	173.31	0.00058	1.24298	1.4327
19	73.6240	649.8	0.21587	67.0094	0.01319	100.11	158.77	0.00057	1.23968	1.3597
20	72.6196	642.4	0.20992	61.4904	0.01412	101.84	146.28	0.00056	1.23617	1.3025
21	71.5645	631.5	0.20447	55.9166	0.01520	103.83	135.51	0.00054	1.23249	1.2526
22	70.4452	618.6	0.19942	50.4817	0.01644	105.08	126.02	0.00053	1.22860	1.2197
23	69.2507	603.8	0.19462	45.2201	0.01786	105.66	117.53	0.00051	1.22445	1.1997
24	67.9678	586.1	0.18987	39.9775	0.01958	105.62	109.81	0.00049	1.22001	1.1929
25	66.5794	566.0	0.18490	34.8312	0.02164	105.01	102.67	0.00046	1.21521	1.1974
26	65.0753	542.6	0.17949	29.7379	0.02424	103.82	96.02	0.00044	1.21003	1.2167
27	63.4185	517.0	0.17329	24.8318	0.02753	102.08	89.69	0.00041	1.20434	1.2502
28	61.5718	488.4	0.16604	20.1288	0.03185	99.77	83.56	0.00037	1.19801	1.3029
29	59.4606	454.6	0.15784	15.4766	0.03838	96.80	77.47	0.00034	1.19081	1.3965
30	56.9770	416.0	0.14833	11.2605	0.04803	93.03	71.26	0.00029	1.18237	1.5379
31	53.8752	374.2	0.13669	7.2696	0.06585	87.74	64.60	0.00024	1.17190	1.8140
32	49.5003	317.8	0.12082	3.5564	0.11236	85.51	56.75	0.00017	1.15723	2.3699
* 32.976	31.9741	198.6	0.06097	-0.0026	-73.80653	-5850.18	35.91	0.00004	1.09971	8.9969
* 32.975	30.8504	195.5	0.06180	-0.0028	-66.46463	-5289.75	34.93	0.00005	1.09609	8.7585
33	25.4217	204.8	0.06448	0.0633	2.44661	241.60	30.45	0.00007	1.07873	6.3152
34	16.6336	228.8	0.07129	0.4952	0.18481	50.08	24.13	0.00026	1.05103	2.0376
35	14.4079	247.2	0.07296	0.6567	0.11577	43.73	23.27	0.00038	1.04409	1.5227
36	13.0352	264.3	0.07355	0.7615	0.08789	41.38	23.04	0.00049	1.03983	1.2929
37	12.0376	280.5	0.07387	0.8358	0.07258	40.31	23.04	0.00059	1.03675	1.1633
38	11.2542	296.0	0.07395	0.8927	0.06263	39.82	23.16	0.00069	1.03432	1.0785
39	10.6104	311.1	0.07389	0.9380	0.05554	39.64	23.36	0.00078	1.03234	1.0183
40	10.0653	325.9	0.07374	0.9753	0.05017	39.65	23.60	0.00087	1.03066	0.9731
42	9.1792	354.5	0.07332	1.0334	0.04250	40.03	24.17	0.00104	1.02793	0.9096
44	8.4784	382.3	0.07281	1.0767	0.03720	40.69	24.80	0.00121	1.02578	0.8668
46	7.9028	409.5	0.07227	1.1102	0.03328	41.51	25.46	0.00139	1.02402	0.8356
48	7.4174	436.2	0.07170	1.1370	0.03023	42.45	26.14	0.00156	1.02253	0.8118
50	7.0001	462.7	0.07111	1.1588	0.02777	43.47	26.83	0.00174	1.02125	0.7931
52	6.6357	489.0	0.07050	1.1768	0.02575	44.54	27.53	0.00192	1.02014	0.7782
54	6.3136	515.4	0.06984	1.1919	0.02404	45.66	28.23	0.00210	1.01915	0.7660
56	6.0264	541.9	0.06912	1.2046	0.02258	46.81	28.92	0.00229	1.01828	0.7559
58	5.7678	568.6	0.06839	1.2154	0.02131	47.98	29.61	0.00247	1.01749	0.7479
60	5.5334	595.8	0.06759	1.2248	0.02020	49.26	30.30	0.00266	1.01677	0.7405
65	5.0315	666.3	0.06533	1.2433	0.01793	52.74	32.01	0.00316	1.01524	0.7252
70	4.6210	741.6	0.06271	1.2567	0.01618	56.29	33.68	0.00365	1.01399	0.7178
75	4.2774	822.8	0.05986	1.2667	0.01477	59.67	35.31	0.00413	1.01295	0.7192
80	3.9848	910.3	0.05690	1.2743	0.01361	63.38	36.91	0.00462	1.01206	0.7216
85	3.7319	1004.2	0.05396	1.2802	0.01264	68.21	38.48	0.00518	1.01129	0.7160
90	3.5109	1104.2	0.05115	1.2849	0.01180	73.05	40.02	0.00575	1.01062	0.7141
95	3.3158	1209.7	0.04855	1.2886	0.01108	77.89	41.53	0.00631	1.01003	0.7148
100	3.1421	1319.7	0.04618	1.2916	0.01045	90.19	45.84	0.00749	1.00950	0.7009
120	2.6025	1783.0	0.03923	1.2987	0.00853	117.13	54.01	0.01065	1.00786	0.7016
140	2.2244	2229.2	0.03577	1.3020	0.00724	136.07	59.17	0.01365	1.00672	0.7015
160	1.9438	2618.5	0.03450	1.3034	0.00629	148.31	63.03	0.01667	1.00587	0.7002
180	1.7269	2947.3	0.03448	1.3039	0.00557	155.78	66.25	0.01978	1.00521	0.6982
200	1.5540	3230.4	0.03510	1.3040	0.00500	160.43	69.12	0.02301	1.00469	0.6960
220	1.4128	3486.8	0.03598	1.3039	0.00454	163.73	71.79	0.02636	1.00426	0.6939
240	1.2953	3732.1	0.03689	1.3036	0.00416	166.62	74.34	0.02986	1.00391	0.6920
260	1.1959	3977.2	0.03769	1.3033	0.00383	169.60	76.81	0.03349	1.00361	0.6905
280	1.1108	4226.7	0.03835	1.3029	0.00356	172.87	79.23	0.03726	1.00335	0.6892
300	1.0371	4483.0	0.03886	1.3026	0.00332	176.46	81.62	0.04117	1.00313	0.6881
350	0.8896	5153.6	0.03958	1.3017	0.00284	186.78	87.49	0.05158	1.00268	0.6864
400	0.7788	5853.7	0.03985	1.3008	0.00249	198.18	93.27	0.06289	1.00235	0.6855
450	0.6927	6573.5	0.03989	1.3001	0.00221	210.16	98.99	0.07511	1.00209	0.6849
500	0.6237	7298.3	0.03988	1.2995	0.00199	222.20	104.65	0.08825	1.00188	0.6845
550	0.5672	8030.0	0.03983	1.2990	0.00181	234.30	110.25	0.10227	1.00171	0.6842
600	0.5202	8767.0	0.03975	1.2985	0.00166	246.40	115.79	0.11717	1.00157	0.6840
700	0.4461	10262.1	0.03951	1.2978	0.00142	270.67	126.68	0.14952	1.00134	0.6837
800	0.3905	11796.5	0.03915	1.2972	0.00125	295.22	137.30	0.18515	1.00118	0.6836
900	0.3472	13381.2	0.03867	1.2967	0.00111	320.22	147.68	0.22393	1.00105	0.6837
1000	0.3126	15023.5	0.03809	1.2963	0.00100	440.56	157.81	0.33859	1.00094	0.5368
1200	0.2606	18482.6	0.03677	1.2958	0.00083	511.13	177.44	0.45942	1.00079	0.5335
1400	0.2235	22169.5	0.03538	1.2954	0.00071	583.41	196.28	0.59468	1.00067	0.5317
1600	0.1956	26017.5	0.03412	1.2950	0.00062	656.28	214.45	0.74417	1.00059	0.5304
1800	0.1739	30066.8	0.03292	1.2947	0.00055	732.42	232.03	0.90921	1.00052	0.5284
2000	0.1565	34607.6	0.03145	1.2943	0.00050	822.87	249.10	1.09531	1.00047	0.5232
2500	0.1248	52962.2	0.02469	1.2897	0.00040	1295.97	290.31	1.76030	1.00038	0.4757
3000	0.1021	99603.9	0.01512	1.2660	0.00034	2805.93	332.51	2.91717	1.00031	0.4018

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

1.50 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.296	0.01285	1.2672	0.9378	-308.3	-289.1	5.001	4.74	6.38	1306
15	0.01293	1.2227	0.9402	-303.8	-284.4	5.316	4.89	6.70	1295
16	0.01307	1.1232	0.9358	-297.1	-277.5	5.764	5.07	7.20	1263
17	0.01321	1.0597	0.9197	-289.9	-270.1	6.212	5.25	7.62	1240
18	0.01337	0.9938	0.9049	-282.3	-262.3	6.660	5.41	8.06	1217
19	0.01354	0.9302	0.8898	-274.3	-254.0	7.109	5.56	8.52	1194
20	0.01372	0.8675	0.8738	-265.8	-245.2	7.559	5.69	9.00	1172
21	0.01392	0.8044	0.8561	-256.8	-235.9	8.010	5.80	9.51	1148
22	0.01414	0.7407	0.8365	-247.4	-226.2	8.465	5.90	10.06	1123
23	0.01437	0.6765	0.8147	-237.4	-215.8	8.925	5.99	10.65	1097
24	0.01464	0.6103	0.7902	-226.8	-204.8	9.393	6.06	11.32	1068
25	0.01493	0.5466	0.7624	-215.5	-193.1	9.870	6.12	12.05	1037
26	0.01526	0.4806	0.7310	-203.6	-180.7	10.358	6.17	12.91	1003
27	0.01564	0.4190	0.6953	-190.8	-167.3	10.862	6.22	13.84	966
28	0.01608	0.3544	0.6555	-177.0	-152.9	11.386	6.26	15.04	923
29	0.01661	0.2909	0.6113	-162.1	-137.2	11.939	6.32	16.59	874
30	0.01726	0.2295	0.5622	-145.5	-119.6	12.535	6.38	18.68	820
31	0.01810	0.1686	0.5067	-126.6	-99.4	13.196	6.45	21.92	757
32	0.01930	0.1106	0.4417	-103.9	-75.0	13.971	6.57	27.61	682
33	0.02140	0.0534	0.3575	-73.3	-41.2	15.009	6.80	42.98	581
34	0.03016	0.0078	0.2048	-1.9	43.4	17.524	8.76	174.96	395
35	0.04884	0.0245	0.1167	77.1	150.4	20.638	7.70	54.07	415
36	0.05798	0.0408	0.0942	104.8	191.8	21.806	7.27	33.56	434
37	0.06494	0.0542	0.0817	123.7	221.2	22.612	7.02	26.25	450
38	0.07082	0.0656	0.0737	138.9	245.1	23.250	6.84	22.59	465
39	0.07614	0.0761	0.0668	152.0	266.2	23.798	6.74	20.01	475
40	0.08105	0.0857	0.0620	163.8	285.4	24.284	6.67	18.44	487
42	0.09006	0.1030	0.0546	185.0	320.1	25.131	6.58	16.45	508
44	0.09836	0.1186	0.0492	204.1	351.7	25.866	6.53	15.23	526
46	0.10618	0.1331	0.0450	222.0	381.2	26.524	6.50	14.40	543
48	0.11365	0.1467	0.0416	238.9	409.4	27.123	6.49	13.81	559
50	0.12085	0.1597	0.0388	255.3	436.6	27.678	6.49	13.37	573
52	0.12785	0.1721	0.0363	271.2	463.0	28.195	6.51	13.03	587
54	0.13467	0.1840	0.0343	286.7	488.7	28.682	6.52	12.77	600
56	0.14135	0.1956	0.0324	302.1	514.1	29.143	6.55	12.56	612
58	0.14792	0.2068	0.0308	317.2	539.1	29.581	6.59	12.41	624
60	0.15439	0.2178	0.0294	332.2	563.8	30.000	6.64	12.29	635
65	0.17022	0.2443	0.0263	369.5	624.8	30.977	6.80	12.15	661
70	0.18567	0.2698	0.0239	407.0	685.5	31.877	7.03	12.16	683
75	0.20084	0.2945	0.0220	445.3	746.6	32.720	7.32	12.28	703
80	0.21580	0.3186	0.0203	484.8	808.5	33.519	7.66	12.50	721
85	0.23060	0.3423	0.0190	525.8	871.7	34.285	8.04	12.78	738
90	0.24526	0.3655	0.0177	568.6	936.5	35.025	8.45	13.12	753
95	0.25981	0.3885	0.0167	613.2	1002.9	35.744	8.88	13.48	768
100	0.27427	0.4112	0.0158	659.9	1071.3	36.445	9.31	13.85	782
120	0.33142	0.4999	0.0129	865.9	1363.1	39.099	10.86	15.26	838
140	0.38790	0.5868	0.0110	1096.4	1678.2	41.526	11.84	16.16	895
160	0.44397	0.6724	0.0095	1339.7	2005.7	43.712	12.23	16.50	952
180	0.49977	0.7572	0.0084	1585.8	2335.5	45.655	12.20	16.44	1010
200	0.55538	0.8415	0.0076	1828.7	2661.7	47.373	11.96	16.17	1067
220	0.61087	0.9255	0.0069	2065.5	2981.8	48.898	11.64	15.84	1122
240	0.66627	1.0091	0.0063	2295.9	3295.3	50.262	11.34	15.52	1175
260	0.72159	1.0926	0.0058	2520.5	3602.9	51.494	11.08	15.25	1226
280	0.77685	1.1759	0.0054	2740.5	3905.8	52.616	10.88	15.04	1275
300	0.83206	1.2591	0.0050	2957.1	4205.2	53.650	10.73	14.88	1322
350	0.96994	1.4665	0.0043	3488.1	4943.0	55.923	10.51	14.66	1430
400	1.10769	1.6735	0.0038	4011.8	5673.3	57.875	10.43	14.57	1529
450	1.24536	1.8803	0.0033	4532.5	6400.5	59.589	10.41	14.54	1621
500	1.38297	2.0869	0.0030	5053.2	7127.7	61.120	10.40	14.53	1708
550	1.52056	2.2934	0.0027	5573.5	7854.3	62.505	10.41	14.54	1790
600	1.65812	2.4999	0.0025	6094.6	8581.8	63.770	10.43	14.56	1868
700	1.93319	2.9127	0.0021	7139.9	10039.7	66.018	10.48	14.61	2015
800	2.20822	3.3253	0.0019	8192.6	11504.9	67.974	10.57	14.70	2150
900	2.48322	3.7379	0.0017	9256.1	12980.9	69.710	10.70	14.83	2276
1000	2.75821	4.1505	0.0015	10333.4	14470.7	71.283	10.86	14.98	2393
1200	3.30816	4.9755	0.0013	12543.8	17506.0	74.036	11.24	15.37	2608
1400	3.85809	5.8004	0.0011	14836.5	20623.6	76.443	11.68	15.80	2802
1600	4.40804	6.6253	0.0009	17215.9	23827.9	78.560	12.11	16.23	2980
1800	4.95814	7.4502	0.0008	19686.0	27123.3	80.462	12.54	16.67	3147
2000	5.50898	8.2751	0.0008	22263.3	30526.8	82.321	13.11	17.26	3301
2500	6.90505	10.3372	0.0006	29558.6	39916.2	86.845	16.55	20.98	3620
3000	8.42675	12.3993	0.0005	40263.2	52903.4	96.920	26.94	32.79	3881

* TWO-PHASE BOUNDARY

1.50 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.296	77.8506	671.3	0.25391	98.6543	0.00951	78.66	264.09	0.00057	1.25451	2.1424
15	77.3176	673.7	0.24889	94.5343	0.00995	84.72	241.40	0.00059	1.25264	1.9091
16	76.5207	661.5	0.24110	85.9509	0.01089	91.13	214.88	0.00060	1.24983	1.6983
17	75.6762	664.0	0.23165	80.1912	0.01147	95.47	193.41	0.00060	1.24687	1.5429
18	74.7864	662.0	0.22371	74.3219	0.01213	98.64	175.72	0.00059	1.24375	1.4359
19	73.8480	657.9	0.21687	68.6960	0.01295	100.60	160.87	0.00058	1.24046	1.3627
20	72.8612	651.2	0.21090	63.2062	0.01382	102.39	148.24	0.00056	1.23701	1.3034
21	71.8281	641.8	0.20547	57.7812	0.01482	104.46	137.37	0.00055	1.23341	1.2505
22	70.7307	629.8	0.20040	52.3925	0.01597	105.78	127.79	0.00054	1.22959	1.2148
23	69.5672	615.2	0.19561	47.0594	0.01731	106.44	119.26	0.00052	1.22555	1.1933
24	68.3128	597.3	0.19089	41.6902	0.01895	106.48	111.48	0.00050	1.22120	1.1853
25	66.9679	578.4	0.18604	36.6072	0.02083	105.98	104.35	0.00047	1.21655	1.1861
26	65.5158	555.8	0.18085	31.4849	0.02322	104.91	97.72	0.00045	1.21154	1.2021
27	63.9253	533.2	0.17498	26.7877	0.02596	103.32	91.43	0.00042	1.20608	1.2247
28	62.1792	505.8	0.16830	22.0382	0.02974	101.22	85.42	0.00039	1.20009	1.2696
29	60.2136	475.4	0.16072	17.5136	0.03491	98.55	79.52	0.00036	1.19338	1.3391
30	57.9478	441.9	0.15217	13.2993	0.04227	95.19	73.59	0.00032	1.18567	1.4441
31	55.2427	403.0	0.14212	9.3138	0.05440	90.61	67.45	0.00027	1.17651	1.6322
32	51.8031	358.1	0.12978	5.7282	0.07711	86.46	60.78	0.00022	1.16493	1.9411
33	46.7258	300.0	0.11254	2.4954	0.14328	85.30	52.63	0.00015	1.14799	2.6518
34	33.1607	221.1	0.07050	0.2588	0.79145	120.16	37.31	0.00007	1.10354	5.4322
35	20.4766	232.5	0.07402	0.5017	0.23253	59.13	27.31	0.00019	1.06308	2.4976
36	17.2459	251.0	0.07512	0.7044	0.13372	48.97	25.44	0.00030	1.05294	1.7437
37	15.3982	268.1	0.07557	0.8349	0.09789	45.37	24.75	0.00040	1.04717	1.4320
38	14.1209	284.3	0.07621	0.9270	0.07946	43.71	24.50	0.00049	1.04320	1.2664
39	13.1343	299.2	0.07552	0.9995	0.06687	42.72	24.46	0.00059	1.04014	1.1457
40	12.3383	314.6	0.07535	1.0570	0.05862	42.27	24.54	0.00067	1.03768	1.0705
42	11.1031	344.3	0.07481	1.1436	0.04777	42.09	24.90	0.00083	1.03386	0.9730
44	10.1664	373.1	0.07416	1.2062	0.04081	42.41	25.40	0.00099	1.03097	0.9120
46	9.4180	401.1	0.07349	1.2538	0.03591	43.01	25.98	0.00114	1.02867	0.8699
48	8.7991	428.5	0.07281	1.2912	0.03223	43.79	26.60	0.00130	1.02677	0.8389
50	8.2746	455.6	0.07213	1.3213	0.02934	44.69	27.25	0.00145	1.02516	0.8152
52	7.8219	482.5	0.07143	1.3460	0.02700	45.66	27.91	0.00161	1.02377	0.7965
54	7.4254	509.4	0.07070	1.3665	0.02507	46.70	28.58	0.00177	1.02255	0.7815
56	7.0744	536.3	0.06991	1.3836	0.02342	47.78	29.25	0.00194	1.02148	0.7691
58	6.7603	563.4	0.06913	1.3983	0.02202	48.90	29.92	0.00210	1.02052	0.7593
60	6.4771	590.9	0.06830	1.4109	0.02081	50.12	30.60	0.00227	1.01965	0.7504
65	5.8748	662.0	0.06595	1.4355	0.01835	53.51	32.26	0.00270	1.01781	0.7325
70	5.3859	737.8	0.06326	1.4533	0.01648	56.99	33.91	0.00313	1.01632	0.7234
75	4.9790	819.3	0.06035	1.4665	0.01499	60.28	35.52	0.00355	1.01508	0.7239
80	4.6339	907.1	0.05733	1.4766	0.01378	63.95	37.11	0.00397	1.01403	0.7254
85	4.3366	1001.3	0.05435	1.4843	0.01277	68.75	38.66	0.00446	1.01313	0.7189
90	4.0774	1101.5	0.05150	1.4905	0.01191	73.56	40.19	0.00495	1.01234	0.7165
95	3.8490	1207.2	0.04886	1.4953	0.01116	78.39	41.69	0.00544	1.01165	0.7168
100	3.6461	1317.4	0.04646	1.4992	0.01052	90.34	45.87	0.00644	1.01103	0.7035
120	3.0173	1782.0	0.03942	1.5085	0.00856	117.17	54.01	0.00916	1.00912	0.7034
140	2.5780	2229.3	0.03591	1.5126	0.00725	136.09	59.18	0.01176	1.00779	0.7028
160	2.2524	2619.8	0.03462	1.5145	0.00630	148.33	63.04	0.01437	1.00680	0.7012
180	2.0009	2949.5	0.03458	1.5151	0.00557	155.81	66.27	0.01706	1.00604	0.6990
200	1.8006	3233.3	0.03519	1.5152	0.00500	160.48	69.14	0.01984	1.00544	0.6966
220	1.6370	3490.3	0.03606	1.5150	0.00454	163.79	71.82	0.02275	1.00494	0.6944
240	1.5009	3736.1	0.03696	1.5146	0.00415	166.69	74.37	0.02576	1.00453	0.6924
260	1.3858	3981.5	0.03776	1.5141	0.00383	169.68	76.84	0.02890	1.00418	0.6908
280	1.2872	4231.2	0.03842	1.5136	0.00356	172.96	79.27	0.03215	1.00388	0.6894
300	1.2018	4487.9	0.03892	1.5132	0.00332	176.56	81.65	0.03554	1.00363	0.6883
350	1.0310	5158.8	0.03963	1.5119	0.00284	186.89	87.53	0.04452	1.00311	0.6865
400	0.9028	5859.2	0.03989	1.5108	0.00249	198.31	93.32	0.05428	1.00272	0.6856
450	0.8030	6579.2	0.03993	1.5098	0.00221	210.31	99.05	0.06483	1.00242	0.6850
500	0.7231	7304.2	0.03992	1.5090	0.00199	222.35	104.72	0.07617	1.00218	0.6845
550	0.6577	8036.0	0.03986	1.5083	0.00181	234.47	110.33	0.08827	1.00198	0.6842
600	0.6031	8773.0	0.03978	1.5077	0.00166	246.59	115.87	0.10113	1.00182	0.6840
700	0.5173	10268.3	0.03954	1.5067	0.00142	270.89	126.77	0.12904	1.00156	0.6837
800	0.4529	11802.8	0.03917	1.5059	0.00125	295.47	137.41	0.15979	1.00137	0.6836
900	0.4027	13387.6	0.03869	1.5053	0.00111	320.50	147.80	0.19326	1.00121	0.6837
1000	0.3626	15030.0	0.03811	1.5048	0.00100	440.56	157.95	0.29194	1.00109	0.5372
1200	0.3023	18489.4	0.03678	1.5040	0.00083	511.13	177.60	0.39610	1.00091	0.5340
1400	0.2592	22176.3	0.03539	1.5034	0.00071	583.40	196.47	0.51269	1.00078	0.5322
1600	0.2269	26022.7	0.03414	1.5030	0.00062	656.20	214.66	0.64152	1.00068	0.5310
1800	0.2017	30062.1	0.03294	1.5026	0.00055	731.95	232.26	0.78362	1.00061	0.5290
2000	0.1815	34565.6	0.03152	1.5021	0.00050	820.96	249.36	0.94338	1.00055	0.5242
2500	0.1448	52356.5	0.02503	1.4971	0.00040	1272.70	290.58	1.50767	1.00044	0.4791
3000	0.1187	96506.1	0.01564	1.4714	0.00034	2689.20	332.58	2.48770	1.00036	0.4056

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

2.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.457	0.01280	1.2994	0.9407	-308.1	-282.5	5.013	4.77	6.38	1319
15	0.01287	1.2650	0.9449	-304.7	-278.9	5.254	4.88	6.63	1311
16	0.01300	1.1850	0.9435	-298.1	-272.1	5.696	5.06	7.09	1288
17	0.01313	1.1096	0.9322	-291.0	-264.8	6.138	5.23	7.53	1264
18	0.01328	1.0414	0.9177	-283.6	-257.0	6.581	5.39	7.96	1240
19	0.01345	0.9770	0.9029	-275.7	-248.8	7.024	5.54	8.41	1218
20	0.01362	0.9157	0.8873	-267.4	-240.2	7.467	5.67	8.86	1196
21	0.01381	0.8527	0.8704	-258.7	-231.1	7.910	5.79	9.34	1173
22	0.01401	0.7908	0.8514	-249.5	-221.5	8.356	5.89	9.85	1150
23	0.01423	0.7273	0.8307	-239.9	-211.4	8.805	5.97	10.39	1125
24	0.01447	0.6647	0.8075	-229.7	-200.7	9.260	6.05	10.98	1098
25	0.01474	0.6021	0.7817	-218.9	-189.4	9.721	6.11	11.63	1070
26	0.01504	0.5392	0.7529	-207.5	-177.5	10.191	6.16	12.35	1039
27	0.01537	0.4780	0.7209	-195.5	-164.7	10.672	6.21	13.15	1006
28	0.01575	0.4174	0.6856	-182.6	-151.1	11.166	6.26	14.08	969
29	0.01619	0.3585	0.6467	-168.9	-136.5	11.678	6.30	15.17	929
30	0.01671	0.2994	0.6046	-154.1	-120.7	12.216	6.34	16.57	884
31	0.01733	0.2429	0.5588	-137.9	-103.2	12.787	6.40	18.37	835
32	0.01812	0.1881	0.5085	-119.9	-83.7	13.408	6.46	20.89	780
33	0.01915	0.1373	0.4528	-99.4	-61.1	14.102	6.54	24.60	719
34	0.02062	0.0915	0.3897	-75.0	-33.8	14.918	6.67	30.65	649
35	0.02303	0.0526	0.3166	-43.9	2.1	15.958	6.89	42.21	568
36	0.02752	0.0300	0.2395	-2.1	53.0	17.389	7.30	59.51	494
37	0.03460	0.0290	0.1764	43.8	113.0	19.036	7.32	54.86	466
38	0.04137	0.0388	0.1415	77.1	159.8	20.286	7.23	40.85	468
39	0.04711	0.0505	0.1203	101.5	195.8	21.219	7.06	31.86	477
40	0.05206	0.0618	0.1061	120.7	224.8	21.956	6.92	26.66	488
42	0.06054	0.0824	0.0877	150.8	271.9	23.105	6.73	21.10	508
44	0.06776	0.1002	0.0762	175.1	310.6	24.005	6.62	18.34	527
46	0.07446	0.1169	0.0680	196.5	345.4	24.780	6.58	16.66	544
48	0.08071	0.1323	0.0617	216.2	377.6	25.465	6.57	15.56	560
50	0.08664	0.1468	0.0567	234.6	407.9	26.083	6.56	14.77	575
52	0.09232	0.1606	0.0526	252.2	436.8	26.651	6.57	14.20	589
54	0.09781	0.1737	0.0491	269.1	464.8	27.178	6.59	13.76	602
56	0.10314	0.1863	0.0461	285.7	492.0	27.674	6.61	13.41	615
58	0.10835	0.1984	0.0435	301.9	518.6	28.139	6.64	13.14	627
60	0.11345	0.2102	0.0413	317.7	544.6	28.581	6.68	12.94	638
65	0.12584	0.2385	0.0367	356.8	608.5	29.604	6.84	12.64	664
70	0.13784	0.2654	0.0331	395.7	671.4	30.536	7.06	12.55	687
75	0.14956	0.2913	0.0302	435.1	734.2	31.403	7.34	12.60	707
80	0.16106	0.3164	0.0278	475.5	797.6	32.221	7.68	12.77	725
85	0.17240	0.3409	0.0258	517.2	862.0	33.002	8.06	13.01	742
90	0.18360	0.3650	0.0241	560.6	927.8	33.754	8.47	13.31	757
95	0.19470	0.3886	0.0227	605.8	995.2	34.483	8.89	13.65	772
100	0.20571	0.4119	0.0214	652.9	1064.3	35.192	9.32	14.00	787
120	0.24906	0.5024	0.0174	860.5	1358.6	37.869	10.87	15.36	842
140	0.29176	0.5905	0.0147	1091.9	1675.4	40.309	11.85	16.23	899
160	0.33405	0.6770	0.0128	1335.9	2004.0	42.503	12.24	16.55	957
180	0.37609	0.7625	0.0113	1582.6	2334.8	44.451	12.21	16.48	1014
200	0.41794	0.8474	0.0101	1825.8	2661.7	46.172	11.97	16.20	1071
220	0.45968	0.9317	0.0092	2063.0	2982.4	47.701	11.65	15.86	1126
240	0.50131	1.0157	0.0084	2293.7	3296.3	49.067	11.34	15.54	1180
260	0.54288	1.0995	0.0077	2518.6	3604.3	50.300	11.09	15.27	1231
280	0.58439	1.1830	0.0072	2738.7	3907.5	51.424	10.88	15.06	1279
300	0.62587	1.2665	0.0067	2955.6	4207.4	52.458	10.73	14.90	1326
350	0.72937	1.4743	0.0057	3486.9	4945.6	54.733	10.52	14.67	1434
400	0.83275	1.6815	0.0050	4010.8	5676.3	56.686	10.43	14.57	1533
450	0.93605	1.8885	0.0045	4531.7	6403.8	58.401	10.41	14.55	1624
500	1.03929	2.0952	0.0040	5052.6	7131.2	59.932	10.40	14.54	1711
550	1.14251	2.3019	0.0036	5572.9	7857.9	61.318	10.41	14.54	1793
600	1.24570	2.5084	0.0033	6094.2	8585.6	62.583	10.43	14.56	1871
700	1.45203	2.9213	0.0029	7139.5	10043.6	64.831	10.48	14.61	2018
800	1.65832	3.3340	0.0025	8192.3	11509.0	66.787	10.57	14.70	2153
900	1.86459	3.7466	0.0022	9255.8	12985.0	68.524	10.70	14.83	2278
1000	2.07084	4.1592	0.0020	10333.2	14474.9	70.096	10.86	14.98	2396
1200	2.48332	4.9843	0.0017	12543.6	17510.3	72.850	11.24	15.37	2610
1400	2.89578	5.8092	0.0014	14836.4	20627.9	75.257	11.68	15.80	2804
1600	3.30824	6.6342	0.0013	17215.6	23832.1	77.373	12.10	16.23	2982
1800	3.72080	7.4591	0.0011	19684.6	27126.2	79.275	12.53	16.66	3149
2000	4.13384	8.2840	0.0010	22257.2	30524.9	81.131	13.07	17.22	3303
2500	5.17677	10.3461	0.0008	29464.0	39821.5	87.615	16.16	20.55	3627
3000	6.30535	12.4082	0.0007	39671.0	52281.7	95.502	25.26	30.87	3890

* TWO-PHASE BOUNDARY

2.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	V(DH/DV)$_P$ KJ/KG	V(DP/DV)$_V$ MPA-CU M/KJ X 10^2	-V(DP/DV)$_T$ MPA	-(DV/DT)$_P$/V 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.457	78.1196	688.5	0.25262	101.5121	0.00927	80.58	267.20	0.00058	1.25546	2.1155
15	77.7130	689.7	0.24935	98.3063	0.00961	85.23	249.22	0.00060	1.25403	1.9386
16	76.9464	685.5	0.24215	91.1801	0.01035	91.81	221.79	0.00061	1.25133	1.7135
17	76.1334	682.5	0.23391	84.4778	0.01104	96.32	199.58	0.00060	1.24847	1.5606
18	75.2732	680.3	0.22598	78.3875	0.01171	99.64	181.27	0.00060	1.24545	1.4489
19	74.3695	676.5	0.21912	72.6572	0.01243	101.74	165.95	0.00059	1.24229	1.3714
20	73.4224	671.4	0.21311	67.2294	0.01320	103.67	152.96	0.00057	1.23897	1.3073
21	72.4296	662.9	0.20771	61.7632	0.01409	105.90	141.77	0.00056	1.23551	1.2507
22	71.3823	652.7	0.20261	56.4471	0.01508	107.38	131.98	0.00055	1.23186	1.2100
23	70.2758	639.5	0.19784	51.1094	0.01625	108.22	123.28	0.00053	1.22801	1.1840
24	69.0976	624.6	0.19317	45.9266	0.01758	108.47	115.43	0.00051	1.22392	1.1686
25	67.8400	607.5	0.18853	40.8465	0.01914	108.19	108.27	0.00049	1.21956	1.1634
26	66.4945	588.0	0.18367	35.8550	0.02100	107.37	101.65	0.00047	1.21492	1.1689
27	65.0436	567.2	0.17842	31.0906	0.02319	106.09	95.46	0.00045	1.20992	1.1832
28	63.4743	544.2	0.17267	26.4928	0.02588	104.38	89.61	0.00042	1.20453	1.2090
29	61.7543	519.4	0.16625	22.1397	0.02921	102.20	83.98	0.00039	1.19864	1.2466
30	59.8446	491.1	0.15926	17.9155	0.03375	99.54	78.48	0.00036	1.19212	1.3066
31	57.6930	460.7	0.15142	14.0151	0.03987	95.97	73.03	0.00033	1.18480	1.3977
32	55.2006	426.7	0.14257	10.3835	0.04897	91.79	67.50	0.00029	1.17637	1.5366
33	52.2285	389.7	0.13249	7.1714	0.06313	87.82	61.76	0.00025	1.16636	1.7303
34	48.4961	349.2	0.12049	4.4390	0.08778	84.92	55.59	0.00021	1.15388	2.0066
35	43.4287	304.9	0.10580	2.2862	0.13846	82.44	48.63	0.00016	1.13707	2.4902
36	36.3370	270.5	0.09025	1.0885	0.22002	80.21	40.96	0.00013	1.11384	3.0388
37	28.9056	260.6	0.08339	0.6378	0.21056	70.15	34.76	0.00016	1.08985	2.7180
38	24.1693	270.4	0.08095	0.9366	0.15110	60.34	31.40	0.00022	1.07475	2.1255
39	21.2266	284.0	0.08025	1.0722	0.11220	54.70	29.55	0.00029	1.06544	1.7216
40	19.2072	298.3	0.07980	1.1871	0.08935	51.56	28.51	0.00036	1.05909	1.4742
42	16.5171	327.5	0.07896	1.3614	0.06444	48.56	27.62	0.00050	1.05066	1.2002
44	14.7578	355.7	0.07799	1.4784	0.05155	47.51	27.48	0.00063	1.04518	1.0604
46	13.4303	384.8	0.07688	1.5698	0.04329	47.26	27.66	0.00076	1.04106	0.9748
48	12.3903	413.5	0.07582	1.6397	0.03762	47.48	28.01	0.00089	1.03784	0.9179
50	11.5426	441.8	0.07482	1.6949	0.03344	47.96	28.47	0.00101	1.03522	0.8771
52	10.8320	469.7	0.07386	1.7393	0.03022	48.62	29.00	0.00114	1.03302	0.8466
54	10.2239	497.6	0.07292	1.7759	0.02765	49.42	29.56	0.00126	1.03115	0.8230
56	9.6956	525.2	0.07193	1.8060	0.02553	50.30	30.15	0.00139	1.02952	0.8037
58	9.2297	553.0	0.07102	1.8315	0.02377	51.25	30.76	0.00152	1.02809	0.7888
60	8.8146	581.0	0.07008	1.8533	0.02228	52.34	31.37	0.00165	1.02681	0.7758
65	7.9467	653.4	0.06750	1.8955	0.01935	55.46	32.93	0.00199	1.02415	0.7506
70	7.2548	730.1	0.06462	1.9256	0.01719	58.75	34.50	0.00232	1.02203	0.7369
75	6.6864	812.3	0.06155	1.9479	0.01551	61.79	36.06	0.00264	1.02029	0.7354
80	6.2088	900.7	0.05839	1.9647	0.01417	65.35	37.60	0.00297	1.01883	0.7344
85	5.8005	995.4	0.05529	1.9776	0.01307	70.09	39.12	0.00334	1.01759	0.7261
90	5.4465	1096.1	0.05234	1.9877	0.01214	74.84	40.61	0.00372	1.01651	0.7223
95	5.1361	1202.3	0.04961	1.9958	0.01135	79.60	42.08	0.00409	1.01556	0.7214
100	4.8612	1312.9	0.04714	2.0021	0.01066	90.72	45.98	0.00480	1.01472	0.7096
120	4.0150	1780.4	0.03986	2.0171	0.00863	117.28	54.04	0.00685	1.01215	0.7076
140	3.4275	2230.4	0.03625	2.0238	0.00728	136.14	59.21	0.00881	1.01037	0.7059
160	2.9935	2623.4	0.03489	2.0266	0.00631	148.39	63.09	0.01078	1.00905	0.7036
180	2.6590	2955.2	0.03482	2.0275	0.00558	155.90	66.32	0.01281	1.00803	0.7008
200	2.3927	3240.7	0.03540	2.0275	0.00500	160.60	69.20	0.01492	1.00723	0.6981
220	2.1754	3498.9	0.03626	2.0270	0.00453	163.94	71.88	0.01710	1.00657	0.6955
240	1.9948	3745.8	0.03715	2.0262	0.00415	166.87	74.44	0.01938	1.00602	0.6933
260	1.8420	3991.9	0.03793	2.0253	0.00383	169.88	76.92	0.02174	1.00556	0.6915
280	1.7112	4242.3	0.03858	2.0243	0.00355	173.18	79.35	0.02419	1.00517	0.6900
300	1.5978	4499.8	0.03907	2.0236	0.00331	176.79	81.75	0.02674	1.00482	0.6887
350	1.3710	5171.6	0.03976	2.0213	0.00284	187.16	87.64	0.03351	1.00414	0.6868
400	1.2008	5872.5	0.04000	2.0192	0.00248	198.62	93.45	0.04086	1.00362	0.6857
450	1.0683	6593.0	0.04003	2.0175	0.00221	210.65	99.20	0.04879	1.00322	0.6850
500	0.9622	7318.3	0.04001	2.0160	0.00199	222.74	104.88	0.05732	1.00290	0.6846
550	0.8753	8050.4	0.03994	2.0147	0.00181	234.89	110.51	0.06643	1.00264	0.6842
600	0.8028	8787.6	0.03985	2.0136	0.00166	247.05	116.07	0.07610	1.00242	0.6840
700	0.6887	10283.2	0.03960	2.0119	0.00142	271.42	127.01	0.09711	1.00208	0.6837
800	0.6030	11818.0	0.03922	2.0105	0.00124	296.08	137.68	0.12024	1.00182	0.6836
900	0.5363	13403.1	0.03873	2.0094	0.00111	321.18	148.11	0.14541	1.00162	0.6837
1000	0.4829	15045.8	0.03815	2.0085	0.00100	440.56	158.29	0.21918	1.00146	0.5384
1200	0.4027	18505.6	0.03682	2.0071	0.00083	511.13	178.00	0.29733	1.00121	0.5352
1400	0.3453	22192.8	0.03542	2.0061	0.00071	583.38	196.92	0.38480	1.00104	0.5335
1600	0.3023	26036.4	0.03416	2.0053	0.00062	656.06	215.17	0.48142	1.00091	0.5323
1800	0.2688	30059.0	0.03299	2.0047	0.00055	731.13	232.83	0.58781	1.00081	0.5306
2000	0.2419	34497.9	0.03163	2.0039	0.00050	817.64	249.97	0.70681	1.00073	0.5263
2500	0.1931	51309.9	0.02564	1.9978	0.00040	1232.26	291.26	1.11812	1.00058	0.4856
3000	0.1586	91109.1	0.01664	1.9679	0.00034	2485.57	332.94	1.82796	1.00048	0.4134

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

2.50 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.615	0.01276	1.3311	0.9438	-307.8	-275.9	5.024	4.79	6.38	1332
15	0.01280	1.3125	0.9471	-305.4	-273.4	5.193	4.87	6.55	1329
16	0.01293	1.2382	0.9495	-299.0	-266.6	5.630	5.05	7.00	1310
17	0.01306	1.1575	0.9442	-292.1	-259.4	6.068	5.23	7.46	1285
18	0.01320	1.0930	0.9296	-284.8	-251.8	6.505	5.38	7.86	1264
19	0.01336	1.0271	0.9152	-277.1	-243.7	6.942	5.53	8.29	1241
20	0.01352	0.9641	0.8999	-269.0	-235.2	7.379	5.66	8.73	1220
21	0.01370	0.9029	0.8836	-260.5	-226.2	7.816	5.77	9.18	1198
22	0.01389	0.8411	0.8655	-251.5	-216.8	8.254	5.87	9.65	1176
23	0.01410	0.7795	0.8456	-242.1	-206.9	8.694	5.96	10.16	1152
24	0.01432	0.7170	0.8236	-232.3	-196.5	9.138	6.04	10.70	1127
25	0.01457	0.6554	0.7993	-221.9	-185.5	9.586	6.11	11.28	1100
26	0.01484	0.5935	0.7725	-211.0	-173.9	10.041	6.16	11.92	1072
27	0.01514	0.5348	0.7431	-199.5	-161.6	10.503	6.21	12.60	1042
28	0.01548	0.4768	0.7109	-187.4	-148.6	10.976	6.25	13.37	1009
29	0.01586	0.4193	0.6761	-174.5	-134.8	11.460	6.29	14.25	974
30	0.01630	0.3619	0.6386	-160.8	-120.1	11.960	6.33	15.31	935
31	0.01680	0.3088	0.5984	-146.2	-104.2	12.480	6.37	16.52	895
32	0.01740	0.2566	0.5555	-130.4	-86.9	13.029	6.42	18.07	850
33	0.01813	0.2071	0.5095	-113.2	-67.9	13.614	6.47	20.07	802
34	0.01904	0.1628	0.4605	-94.2	-46.6	14.249	6.53	22.59	750
35	0.02022	0.1226	0.4081	-72.9	-22.4	14.953	6.61	26.06	695
36	0.02184	0.0888	0.3529	-48.6	6.0	15.751	6.73	30.80	638
37	0.02410	0.0645	0.2985	-20.7	39.6	16.672	6.88	36.58	586
38	0.02724	0.0509	0.2453	10.1	78.2	17.701	7.05	40.39	540
39	0.03114	0.0477	0.2036	41.0	118.8	18.756	7.14	39.99	517
40	0.03530	0.0523	0.1728	68.0	156.2	19.705	7.06	35.52	513
42	0.04305	0.0690	0.1338	110.7	218.3	21.221	6.91	27.10	520
44	0.04977	0.0872	0.1111	142.7	267.2	22.358	6.77	22.20	534
46	0.05576	0.1048	0.0962	169.0	308.4	23.276	6.69	19.31	550
48	0.06125	0.1213	0.0855	192.0	345.1	24.057	6.64	17.49	565
50	0.06631	0.1365	0.0774	212.8	378.6	24.739	6.63	16.28	579
52	0.07120	0.1512	0.0713	232.3	410.3	25.363	6.63	15.49	594
54	0.07589	0.1653	0.0660	250.9	440.6	25.934	6.65	14.83	607
56	0.08040	0.1787	0.0614	268.9	469.9	26.467	6.67	14.31	619
58	0.08478	0.1916	0.0576	286.2	498.1	26.962	6.69	13.92	631
60	0.08905	0.2042	0.0544	303.0	525.7	27.429	6.73	13.62	643
65	0.09936	0.2339	0.0478	344.0	592.4	28.498	6.87	13.15	669
70	0.10928	0.2621	0.0428	384.4	657.6	29.464	7.09	12.94	692
75	0.11891	0.2890	0.0389	424.9	722.2	30.355	7.37	12.92	712
80	0.12832	0.3151	0.0357	466.2	787.0	31.192	7.70	13.03	730
85	0.13758	0.3403	0.0330	508.7	852.6	31.987	8.08	13.23	747
90	0.14670	0.3650	0.0308	552.7	919.4	32.751	8.48	13.50	762
95	0.15572	0.3893	0.0288	598.4	987.7	33.489	8.90	13.81	777
100	0.16465	0.4131	0.0271	646.0	1057.6	34.206	9.33	14.15	792
120	0.19970	0.5052	0.0220	855.1	1354.3	36.906	10.88	15.45	847
140	0.23411	0.5944	0.0185	1087.5	1672.7	39.358	11.86	16.30	904
160	0.26813	0.6818	0.0161	1332.2	2002.5	41.560	12.25	16.60	961
180	0.30190	0.7680	0.0142	1579.4	2334.1	43.513	12.22	16.51	1019
200	0.33550	0.8533	0.0127	1823.1	2661.8	45.239	11.97	16.23	1076
220	0.36897	0.9381	0.0115	2060.6	2983.0	46.770	11.65	15.89	1131
240	0.40235	1.0225	0.0105	2291.5	3297.4	48.138	11.35	15.56	1184
260	0.43566	1.1065	0.0097	2516.6	3605.8	49.372	11.09	15.29	1235
280	0.46892	1.1902	0.0090	2737.0	3909.3	50.497	10.89	15.07	1284
300	0.50216	1.2740	0.0084	2954.2	4209.6	51.533	10.74	14.91	1330
350	0.58503	1.4821	0.0072	3485.8	4948.3	53.810	10.52	14.68	1438
400	0.66779	1.6896	0.0063	4009.9	5679.4	55.764	10.43	14.58	1537
450	0.75046	1.8967	0.0056	4531.0	6407.1	57.479	10.41	14.55	1628
500	0.83309	2.1036	0.0050	5052.0	7134.7	59.011	10.40	14.54	1715
550	0.91568	2.3103	0.0046	5572.4	7861.6	60.397	10.41	14.55	1796
600	0.99825	2.5169	0.0042	6093.7	8589.3	61.662	10.43	14.56	1875
700	1.16334	2.9299	0.0036	7139.2	10047.5	63.911	10.48	14.61	2021
800	1.32839	3.3427	0.0031	8192.0	11513.0	65.866	10.57	14.70	2156
900	1.49341	3.7553	0.0028	9255.6	12989.2	67.603	10.70	14.83	2281
1000	1.65842	4.1680	0.0025	10333.0	14479.1	69.176	10.86	14.99	2398
1200	1.98841	4.9931	0.0021	12543.5	17514.5	71.929	11.24	15.37	2612
1400	2.31838	5.8180	0.0018	14836.3	20632.2	74.336	11.68	15.80	2806
1600	2.64836	6.6430	0.0016	17215.4	23836.3	76.453	12.10	16.23	2984
1800	2.97840	7.4679	0.0014	19683.7	27129.7	78.354	12.52	16.65	3151
2000	3.30878	8.2928	0.0013	22253.0	30524.9	80.209	13.04	17.19	3306
2500	4.14356	10.3550	0.0010	29399.4	39758.3	86.665	15.89	20.25	3632
3000	5.03682	12.4171	0.0008	39266.7	51858.8	94.424	24.11	29.55	3898

* TWO-PHASE BOUNDARY

2.50 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.615	78.3836	705.3	0.25148	104.3378	0.00905	82.46	270.30	0.00059	1.25639	2.0913
15	78.1041	708.6	0.24920	102.5141	0.00924	85.73	257.35	0.00060	1.25541	1.9652
16	77.3614	706.3	0.24281	95.7904	0.00991	92.48	228.86	0.00061	1.25279	1.7326
17	76.5720	700.2	0.23596	88.6329	0.01065	97.14	205.81	0.00061	1.25001	1.5803
18	75.7402	700.3	0.22800	82.7863	0.01123	100.60	186.86	0.00061	1.24709	1.4608
19	74.8684	696.8	0.22111	76.9010	0.01190	102.83	171.05	0.00060	1.24403	1.3793
20	73.9536	691.6	0.21508	71.2964	0.01262	104.90	157.65	0.00058	1.24083	1.3118
21	72.9991	684.8	0.20968	65.9100	0.01341	107.28	146.15	0.00058	1.23750	1.2507
22	71.9949	675.5	0.20462	60.5553	0.01429	108.91	136.11	0.00056	1.23399	1.2066
23	70.9403	664.1	0.19987	55.2969	0.01529	109.91	127.25	0.00055	1.23032	1.1758
24	69.8221	650.3	0.19526	50.0652	0.01645	110.33	119.28	0.00053	1.22643	1.1565
25	68.6372	634.8	0.19073	44.9873	0.01777	110.24	112.05	0.00051	1.22232	1.1464
26	67.3769	617.1	0.18610	39.9903	0.01932	109.64	105.41	0.00049	1.21796	1.1460
27	66.0317	599.0	0.18121	35.3142	0.02104	108.61	99.24	0.00047	1.21332	1.1516
28	64.5913	579.1	0.17599	30.7942	0.02309	107.17	93.46	0.00045	1.20836	1.1658
29	63.0401	557.1	0.17040	26.4313	0.02558	105.35	87.98	0.00042	1.20304	1.1900
30	61.3589	532.4	0.16439	22.2056	0.02876	103.15	82.72	0.00040	1.19728	1.2278
31	59.5118	507.4	0.15779	18.3786	0.03256	100.15	77.61	0.00037	1.19098	1.2803
32	57.4635	479.8	0.15060	14.7479	0.03767	96.76	72.58	0.00034	1.18402	1.3555
33	55.1554	449.9	0.14279	11.4246	0.04460	92.91	67.56	0.00030	1.17621	1.4591
34	52.5200	419.4	0.13424	8.5493	0.05386	89.17	62.51	0.00027	1.16734	1.5836
35	49.4439	387.1	0.12479	6.0624	0.06732	86.23	57.37	0.00024	1.15704	1.7338
36	45.7965	355.0	0.11450	4.0682	0.08675	83.05	52.11	0.00021	1.14490	1.9321
37	41.4871	327.9	0.10455	2.6760	0.11154	79.63	46.84	0.00019	1.13068	2.1516
38	36.7123	307.7	0.09474	1.8688	0.13127	75.30	42.00	0.00018	1.11506	2.2526
39	32.1093	301.1	0.08882	1.5331	0.13282	70.09	38.12	0.00020	1.10014	2.1749
40	28.3274	304.5	0.08639	1.4810	0.11665	64.70	35.39	0.00023	1.08800	1.9429
42	23.2312	324.6	0.08336	1.6025	0.08349	57.52	32.25	0.00033	1.07177	1.5196
44	20.0928	350.1	0.08161	1.7516	0.06342	54.07	30.78	0.00044	1.06187	1.2640
46	17.9350	377.3	0.08014	1.8787	0.05118	52.45	30.17	0.00055	1.05510	1.1107
48	16.3274	405.2	0.07877	1.9804	0.04315	51.80	30.01	0.00065	1.05007	1.0132
50	15.0802	432.8	0.07748	2.0578	0.03762	51.72	30.14	0.00076	1.04618	0.9490
52	14.0443	461.5	0.07656	2.1241	0.03356	51.98	30.42	0.00086	1.04296	0.9062
54	13.1774	489.8	0.07533	2.1785	0.03028	52.45	30.80	0.00097	1.04027	0.8710
56	12.4383	517.8	0.07408	2.2229	0.02764	53.07	31.25	0.00107	1.03799	0.8427
58	11.7954	545.9	0.07303	2.2606	0.02550	53.81	31.75	0.00118	1.03600	0.8214
60	11.2294	574.3	0.07196	2.2926	0.02372	54.72	32.28	0.00129	1.03425	0.8035
65	10.0642	647.3	0.06911	2.3545	0.02031	57.53	33.69	0.00157	1.03066	0.7697
70	9.1511	724.6	0.06603	2.3985	0.01786	60.58	35.15	0.00184	1.02785	0.7508
75	8.4099	807.3	0.06278	2.4308	0.01600	63.37	36.63	0.00210	1.02557	0.7469
80	7.7927	896.1	0.05948	2.4551	0.01454	66.80	38.12	0.00237	1.02368	0.7434
85	7.2686	991.2	0.05625	2.4738	0.01335	71.46	39.59	0.00267	1.02207	0.7331
90	6.8166	1092.3	0.05320	2.4883	0.01236	76.14	41.05	0.00298	1.02069	0.7279
95	6.4219	1198.8	0.05038	2.4998	0.01152	80.84	42.49	0.00328	1.01948	0.7260
100	6.0735	1309.9	0.04783	2.5089	0.01080	91.16	46.12	0.00382	1.01842	0.7157
120	5.0075	1779.9	0.04030	2.5300	0.00868	117.44	54.10	0.00546	1.01517	0.7118
140	4.2715	2232.3	0.03659	2.5391	0.00730	136.23	59.26	0.00704	1.01293	0.7090
160	3.7295	2627.6	0.03517	2.5428	0.00632	148.48	63.14	0.00863	1.01128	0.7059
180	3.3124	2961.4	0.03506	2.5438	0.00558	156.01	66.38	0.01027	1.01002	0.7026
200	2.9807	3248.5	0.03562	2.5435	0.00500	160.74	69.27	0.01196	1.00901	0.6995
220	2.7103	3507.9	0.03646	2.5425	0.00453	164.11	71.96	0.01372	1.00819	0.6966
240	2.4854	3755.7	0.03733	2.5412	0.00414	167.06	74.52	0.01555	1.00751	0.6942
260	2.2954	4002.6	0.03810	2.5397	0.00382	170.09	77.00	0.01745	1.00693	0.6922
280	2.1326	4253.6	0.03874	2.5382	0.00354	173.40	79.44	0.01942	1.00644	0.6906
300	1.9914	4511.9	0.03921	2.5371	0.00330	177.03	81.84	0.02147	1.00601	0.6892
350	1.7093	5184.5	0.03988	2.5333	0.00283	187.44	87.75	0.02690	1.00516	0.6870
400	1.4975	5886.0	0.04011	2.5301	0.00248	198.93	93.58	0.03280	1.00452	0.6859
450	1.3325	6606.8	0.04013	2.5274	0.00220	211.00	99.34	0.03917	1.00402	0.6851
500	1.2004	7332.5	0.04009	2.5250	0.00198	223.12	105.05	0.04602	1.00362	0.6846
550	1.0921	8064.8	0.04002	2.5230	0.00180	235.31	110.69	0.05333	1.00329	0.6843
600	1.0018	8802.3	0.03992	2.5213	0.00165	247.50	116.27	0.06109	1.00302	0.6840
700	0.8596	10298.1	0.03966	2.5185	0.00142	271.95	127.24	0.07794	1.00259	0.6837
800	0.7528	11833.2	0.03928	2.5163	0.00124	296.66	137.95	0.09651	1.00227	0.6836
900	0.6696	13418.5	0.03878	2.5146	0.00110	321.86	148.41	0.11671	1.00202	0.6837
1000	0.6030	15061.5	0.03819	2.5132	0.00099	440.56	158.63	0.17552	1.00182	0.5396
1200	0.5029	18521.9	0.03685	2.5111	0.00083	511.13	178.40	0.23807	1.00152	0.5364
1400	0.4313	22209.3	0.03545	2.5095	0.00071	583.37	197.38	0.30807	1.00130	0.5347
1600	0.3776	26051.3	0.03419	2.5083	0.00062	655.96	215.68	0.38537	1.00114	0.5336
1800	0.3358	30062.4	0.03303	2.5074	0.00055	730.57	233.39	0.47039	1.00101	0.5320
2000	0.3022	34457.4	0.03171	2.5063	0.00050	815.37	250.59	0.56514	1.00091	0.5282
2500	0.2413	50601.4	0.02608	2.4990	0.00040	1204.64	291.96	0.88745	1.00073	0.4907
3000	0.1985	87415.3	0.01741	2.4653	0.00034	2345.90	333.45	1.43955	1.00060	0.4200

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

3.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.772	0.01272	1.3623	0.9470	-307.5	-269.4	5.036	4.81	6.38	1345
15	0.01274	1.3585	0.9492	-306.1	-267.9	5.135	4.86	6.47	1345
16	0.01286	1.2794	0.9544	-299.8	-261.2	5.568	5.05	6.93	1326
17	0.01299	1.2075	0.9510	-293.0	-254.1	6.000	5.22	7.37	1306
18	0.01313	1.1408	0.9404	-285.9	-246.5	6.433	5.37	7.78	1285
19	0.01327	1.0731	0.9266	-278.3	-238.5	6.865	5.52	8.20	1262
20	0.01343	1.0093	0.9118	-270.4	-230.1	7.296	5.65	8.62	1241
21	0.01360	0.9488	0.8960	-262.1	-221.3	7.726	5.76	9.05	1221
22	0.01378	0.8875	0.8787	-253.3	-212.0	8.157	5.86	9.50	1199
23	0.01397	0.8271	0.8595	-244.2	-202.3	8.590	5.95	9.97	1177
24	0.01419	0.7655	0.8386	-234.6	-192.1	9.024	6.03	10.47	1153
25	0.01442	0.7053	0.8155	-224.6	-181.4	9.462	6.10	11.00	1128
26	0.01467	0.6461	0.7904	-214.1	-170.1	9.904	6.16	11.57	1102
27	0.01494	0.5884	0.7629	-203.0	-158.2	10.352	6.21	12.17	1074
28	0.01525	0.5315	0.7331	-191.4	-145.7	10.806	6.25	12.84	1044
29	0.01559	0.4762	0.7011	-179.3	-132.5	11.270	6.29	13.57	1013
30	0.01597	0.4222	0.6670	-166.4	-118.5	11.744	6.33	14.39	980
31	0.01640	0.3688	0.6309	-152.9	-103.7	12.230	6.36	15.36	943
32	0.01689	0.3184	0.5926	-138.4	-87.8	12.735	6.40	16.47	905
33	0.01747	0.2698	0.5524	-123.1	-70.7	13.261	6.44	17.82	864
34	0.01815	0.2258	0.5101	-106.5	-52.1	13.815	6.48	19.38	822
35	0.01896	0.1858	0.4661	-88.7	-31.8	14.403	6.53	21.25	778
36	0.01997	0.1498	0.4207	-69.4	-9.4	15.034	6.59	23.55	732
37	0.02123	0.1196	0.3747	-48.3	15.4	15.714	6.66	26.24	686
38	0.02281	0.0967	0.3293	-25.5	43.0	16.450	6.75	28.93	644
39	0.02479	0.0809	0.2866	-1.2	73.1	17.233	6.84	31.20	607
40	0.02717	0.0718	0.2490	23.6	105.1	18.042	6.91	32.43	580
42	0.03273	0.0711	0.1916	69.8	168.0	19.579	6.93	30.16	556
44	0.03841	0.0830	0.1546	108.5	223.8	20.876	6.86	25.57	556
46	0.04369	0.0984	0.1306	140.0	271.1	21.928	6.79	22.00	565
48	0.04856	0.1144	0.1138	166.8	312.5	22.810	6.73	19.56	576
50	0.05311	0.1299	0.1015	190.5	349.8	23.572	6.70	17.89	589
52	0.05740	0.1449	0.0920	212.2	384.4	24.250	6.69	16.70	601
54	0.06150	0.1593	0.0844	232.4	416.9	24.863	6.70	15.83	614
56	0.06543	0.1732	0.0782	251.8	448.1	25.431	6.72	15.18	626
58	0.06925	0.1867	0.0731	270.3	478.0	25.956	6.74	14.70	638
60	0.07295	0.1998	0.0686	288.2	507.0	26.448	6.77	14.31	649
65	0.08185	0.2307	0.0598	331.2	576.7	27.564	6.91	13.65	675
70	0.09035	0.2599	0.0532	373.0	644.1	28.562	7.12	13.33	698
75	0.09858	0.2877	0.0480	414.7	710.4	29.478	7.39	13.23	718
80	0.10659	0.3145	0.0439	456.9	776.7	30.333	7.72	13.29	736
85	0.11445	0.3405	0.0405	500.2	843.5	31.143	8.09	13.45	752
90	0.12217	0.3658	0.0376	544.8	911.3	31.918	8.50	13.69	768
95	0.12980	0.3905	0.0351	591.1	980.5	32.666	8.92	13.97	782
100	0.13733	0.4149	0.0330	639.1	1051.1	33.391	9.34	14.29	797
120	0.16683	0.5085	0.0266	849.8	1350.3	36.113	10.90	15.55	852
140	0.19571	0.5987	0.0224	1083.1	1670.2	38.577	11.87	16.36	908
160	0.22421	0.6868	0.0194	1328.5	2001.1	40.786	12.25	16.65	966
180	0.25246	0.7736	0.0171	1576.2	2333.6	42.745	12.22	16.55	1024
200	0.28054	0.8595	0.0153	1820.3	2661.9	44.474	11.98	16.26	1080
220	0.30851	0.9446	0.0139	2058.1	2983.7	46.007	11.66	15.91	1135
240	0.33638	1.0293	0.0127	2289.4	3298.5	47.377	11.35	15.58	1189
260	0.36419	1.1135	0.0117	2514.7	3607.3	48.613	11.10	15.31	1239
280	0.39195	1.1975	0.0108	2735.3	3911.1	49.739	10.89	15.09	1288
300	0.41969	1.2816	0.0101	2952.7	4211.8	50.776	10.74	14.92	1334
350	0.48881	1.4900	0.0086	3484.6	4951.1	53.055	10.52	14.68	1442
400	0.55781	1.6977	0.0075	4009.0	5682.4	55.009	10.43	14.59	1540
450	0.62674	1.9049	0.0067	4530.3	6410.5	56.725	10.41	14.56	1632
500	0.69561	2.1119	0.0060	5051.3	7138.2	58.258	10.41	14.54	1718
550	0.76446	2.3187	0.0055	5571.9	7865.3	59.644	10.41	14.55	1800
600	0.83328	2.5254	0.0050	6093.3	8593.1	60.909	10.43	14.56	1878
700	0.97087	2.9385	0.0043	7138.9	10051.5	63.158	10.48	14.61	2024
800	1.10842	3.3513	0.0038	8191.8	11517.1	65.114	10.57	14.70	2159
900	1.24595	3.7640	0.0033	9255.4	12993.3	66.851	10.70	14.83	2284
1000	1.38347	4.1767	0.0030	10332.9	14483.3	68.423	10.86	14.99	2401
1200	1.65847	5.0018	0.0025	12543.4	17518.8	71.177	11.24	15.37	2615
1400	1.93345	5.8268	0.0021	14836.2	20636.6	73.584	11.68	15.80	2808
1600	2.20843	6.6518	0.0019	17215.2	23840.5	75.700	12.10	16.23	2986
1800	2.48346	7.4767	0.0017	19682.9	27133.3	77.602	12.52	16.65	3153
2000	2.75875	8.3016	0.0015	22249.8	30526.1	79.455	13.02	17.16	3308
2500	3.45369	10.3638	0.0012	29351.7	39712.7	85.891	15.69	20.03	3637
3000	4.19314	12.4259	0.0010	38968.3	51547.7	93.555	23.26	28.58	3904

* TWO-PHASE BOUNDARY

3.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.772	78.6428	721.9	0.25043	107.1338	0.00884	84.29	273.40	0.00060	1.25731	2.0698
15	78.4822	726.8	0.24911	106.6179	0.00890	86.21	265.60	0.00061	1.25674	1.9933
16	77.7515	722.4	0.24323	99.4716	0.00959	93.11	235.84	0.00062	1.25416	1.7554
17	76.9926	720.1	0.23670	92.9694	0.01023	97.93	212.07	0.00062	1.25149	1.5952
18	76.1868	718.9	0.22967	86.9158	0.01082	101.52	192.47	0.00062	1.24866	1.4746
19	75.3438	715.1	0.22288	80.8495	0.01146	103.89	176.15	0.00061	1.24570	1.3896
20	74.4611	710.3	0.21687	75.1511	0.01213	106.09	162.34	0.00060	1.24261	1.3188
21	73.5386	704.5	0.21146	69.7716	0.01284	108.60	150.50	0.00059	1.23938	1.2539
22	72.5731	696.3	0.20646	64.4117	0.01364	110.37	140.21	0.00058	1.23601	1.2066
23	71.5604	686.3	0.20172	59.1907	0.01452	111.51	131.14	0.00056	1.23248	1.1719
24	70.4955	673.7	0.19717	53.9663	0.01554	112.09	123.04	0.00055	1.22877	1.1492
25	69.3718	659.9	0.19271	48.9308	0.01667	112.17	115.72	0.00053	1.22487	1.1347
26	68.1839	644.6	0.18824	44.0539	0.01794	111.75	109.03	0.00051	1.22075	1.1284
27	66.9234	628.3	0.18359	39.3788	0.01937	110.92	102.85	0.00049	1.21640	1.1286
28	65.5849	610.4	0.17873	34.8590	0.02103	109.72	97.09	0.00047	1.21178	1.1361
29	64.1571	591.2	0.17362	30.5492	0.02295	108.16	91.68	0.00045	1.20687	1.1499
30	62.6303	570.4	0.16832	26.4435	0.02523	106.27	86.54	0.00042	1.20163	1.1717
31	60.9904	547.6	0.16254	22.4936	0.02805	103.67	81.63	0.00040	1.19603	1.2093
32	59.2057	523.9	0.15635	18.8488	0.03144	100.76	76.87	0.00037	1.18994	1.2565
33	57.2569	498.5	0.14980	15.4471	0.03576	97.54	72.21	0.00034	1.18332	1.3195
34	55.1099	472.8	0.14279	12.4434	0.04099	94.03	67.64	0.00032	1.17606	1.3942
35	52.7287	446.7	0.13536	9.7964	0.04758	90.55	63.12	0.00029	1.16804	1.4814
36	50.0718	420.0	0.12752	7.5024	0.05608	87.76	58.66	0.00027	1.15913	1.5742
37	47.1064	394.5	0.11939	5.6338	0.06651	84.75	54.27	0.00025	1.14925	1.6802
38	43.8311	372.3	0.11133	4.2386	0.07769	81.47	50.05	0.00023	1.13840	1.7772
39	40.3347	354.9	0.10392	3.2613	0.08789	77.98	46.15	0.00022	1.12689	1.8463
40	36.8045	344.0	0.09785	2.6409	0.09429	74.36	42.76	0.00022	1.11536	1.8651
42	30.5512	341.8	0.09054	2.1711	0.08823	67.12	37.90	0.00026	1.09513	1.7028
44	26.0341	357.2	0.08655	2.1601	0.07158	61.74	35.12	0.00033	1.08067	1.4545
46	22.8887	379.4	0.08406	2.2517	0.05799	58.56	33.56	0.00042	1.07069	1.2609
48	20.5912	404.6	0.08213	2.3549	0.04834	56.82	32.72	0.00051	1.06344	1.1262
50	18.8289	431.0	0.08045	2.4449	0.04152	55.98	32.34	0.00060	1.05790	1.0337
52	17.4203	458.3	0.07892	2.5248	0.03644	55.67	32.25	0.00069	1.05349	0.9676
54	16.2609	486.0	0.07748	2.5911	0.03258	55.74	32.37	0.00078	1.04986	0.9194
56	15.2835	514.0	0.07614	2.6476	0.02953	56.05	32.62	0.00087	1.04682	0.8831
58	14.4407	542.2	0.07508	2.6965	0.02711	56.56	32.95	0.00096	1.04420	0.8564
60	13.7071	570.7	0.07392	2.7380	0.02507	57.27	33.36	0.00105	1.04192	0.8333
65	12.2174	643.9	0.07078	2.8188	0.02120	59.70	34.55	0.00129	1.03730	0.7899
70	11.0676	721.4	0.06747	2.8764	0.01848	62.50	35.87	0.00152	1.03375	0.7653
75	10.1443	804.3	0.06404	2.9187	0.01645	65.00	37.26	0.00174	1.03090	0.7586
80	9.3815	893.3	0.06059	2.9505	0.01487	68.30	38.67	0.00197	1.02856	0.7524
85	8.7377	988.6	0.05723	2.9749	0.01360	72.86	40.09	0.00223	1.02658	0.7401
90	8.1851	1090.0	0.05406	2.9939	0.01256	77.47	41.51	0.00249	1.02488	0.7334
95	7.7044	1196.8	0.05115	3.0089	0.01168	82.10	42.92	0.00275	1.02341	0.7305
100	7.2815	1308.1	0.04853	3.0208	0.01092	91.66	46.29	0.00317	1.02211	0.7217
120	5.9941	1780.6	0.04075	3.0477	0.00873	117.65	54.18	0.00455	1.01818	0.7159
140	5.1097	2235.1	0.03692	3.0591	0.00732	136.36	59.33	0.00587	1.01548	0.7120
160	4.4602	2632.5	0.03545	3.0635	0.00632	148.59	63.21	0.00720	1.01350	0.7082
180	3.9610	2968.1	0.03530	3.0643	0.00558	156.14	66.45	0.00857	1.01199	0.7044
200	3.5645	3256.7	0.03584	3.0635	0.00499	160.90	69.35	0.00999	1.01078	0.7009
220	3.2414	3517.2	0.03666	3.0618	0.00452	164.28	72.03	0.01147	1.00980	0.6977
240	2.9728	3765.8	0.03751	3.0598	0.00414	167.25	74.60	0.01300	1.00899	0.6950
260	2.7458	4013.4	0.03827	3.0575	0.00381	170.30	77.09	0.01459	1.00830	0.6929
280	2.5514	4265.0	0.03889	3.0552	0.00354	173.63	79.53	0.01624	1.00771	0.6911
300	2.3827	4524.1	0.03936	3.0536	0.00330	177.28	81.94	0.01795	1.00720	0.6896
350	2.0458	5197.5	0.04001	3.0481	0.00283	187.71	87.86	0.02250	1.00618	0.6873
400	1.7927	5899.5	0.04022	3.0434	0.00247	199.24	93.70	0.02743	1.00541	0.6860
450	1.5956	6620.7	0.04022	3.0394	0.00220	211.34	99.49	0.03276	1.00482	0.6852
500	1.4376	7346.7	0.04018	3.0360	0.00198	223.50	105.21	0.03848	1.00434	0.6847
550	1.3081	8079.3	0.04010	3.0331	0.00180	235.73	110.87	0.04459	1.00395	0.6843
600	1.2001	8816.9	0.03999	3.0307	0.00165	247.96	116.47	0.05108	1.00362	0.6840
700	1.0300	10313.1	0.03972	3.0266	0.00142	272.48	127.48	0.06517	1.00311	0.6837
800	0.9022	11848.5	0.03933	3.0235	0.00124	297.28	138.22	0.08069	1.00272	0.6836
900	0.8026	13434.0	0.03883	3.0210	0.00110	322.53	148.71	0.09757	1.00242	0.6837
1000	0.7228	15077.2	0.03823	3.0190	0.00099	440.56	158.96	0.14642	1.00218	0.5407
1200	0.6030	18538.1	0.03688	3.0159	0.00083	511.13	178.80	0.19856	1.00182	0.5376
1400	0.5172	22225.9	0.03548	3.0137	0.00071	583.37	197.84	0.25692	1.00156	0.5360
1600	0.4528	26066.8	0.03422	3.0120	0.00062	655.89	216.20	0.32134	1.00136	0.5349
1800	0.4027	30069.6	0.03307	3.0106	0.00055	730.16	233.96	0.39214	1.00121	0.5334
2000	0.3625	34432.3	0.03178	3.0092	0.00050	813.70	251.21	0.47083	1.00109	0.5299
2500	0.2895	50083.3	0.02642	3.0008	0.00040	1184.25	292.67	0.73517	1.00087	0.4950
3000	0.2385	84685.3	0.01803	2.9634	0.00034	2242.45	334.06	1.18453	1.00072	0.4257

* TWO-PHASE BOUNDARY

3.50 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 14.927	0.01267	1.3929	0.9496	-307.2	-262.9	5.047	4.83	6.38	1357
15	0.01268	1.3951	0.9505	-306.8	-262.4	5.079	4.84	6.41	1358
16	0.01280	1.3237	0.9576	-300.5	-255.7	5.507	5.04	6.85	1342
17	0.01292	1.2538	0.9572	-293.9	-248.7	5.935	5.21	7.28	1324
18	0.01305	1.1850	0.9506	-286.9	-241.2	6.364	5.37	7.71	1304
19	0.01319	1.1224	0.9370	-279.5	-233.3	6.791	5.51	8.10	1284
20	0.01334	1.0577	0.9228	-271.7	-225.0	7.217	5.64	8.50	1263
21	0.01350	0.9958	0.9075	-263.5	-216.3	7.641	5.75	8.92	1243
22	0.01368	0.9357	0.8908	-255.0	-207.2	8.066	5.86	9.35	1222
23	0.01386	0.8759	0.8726	-246.1	-197.6	8.491	5.95	9.79	1201
24	0.01406	0.8161	0.8525	-236.8	-187.6	8.917	6.03	10.25	1178
25	0.01427	0.7561	0.8307	-227.0	-177.1	9.346	6.10	10.74	1154
26	0.01451	0.6973	0.8068	-216.9	-166.1	9.777	6.16	11.26	1130
27	0.01476	0.6399	0.7809	-206.2	-154.5	10.213	6.21	11.82	1104
28	0.01504	0.5828	0.7530	-195.1	-142.4	10.653	6.26	12.42	1076
29	0.01535	0.5285	0.7232	-183.4	-129.7	11.100	6.30	13.06	1047
30	0.01569	0.4773	0.6917	-171.2	-116.3	11.554	6.33	13.73	1017
31	0.01606	0.4258	0.6585	-158.4	-102.2	12.016	6.36	14.51	985
32	0.01649	0.3763	0.6236	-145.0	-87.2	12.491	6.40	15.39	951
33	0.01697	0.3294	0.5872	-130.8	-71.4	12.980	6.43	16.37	916
34	0.01752	0.2847	0.5494	-115.8	-54.4	13.485	6.46	17.53	879
35	0.01816	0.2442	0.5103	-99.8	-36.3	14.011	6.50	18.81	841
36	0.01891	0.2077	0.4703	-83.0	-16.8	14.560	6.54	20.25	802
37	0.01979	0.1756	0.4300	-65.0	4.3	15.137	6.58	21.83	763
38	0.02084	0.1481	0.3899	-46.0	27.0	15.743	6.63	23.57	726
39	0.02209	0.1257	0.3508	-25.9	51.4	16.377	6.68	25.32	690
40	0.02356	0.1099	0.3140	-5.1	77.4	17.035	6.73	26.65	660
42	0.02717	0.0926	0.2509	37.3	132.4	18.376	6.82	27.90	615
44	0.03140	0.0917	0.2035	77.2	187.1	19.649	6.84	26.43	595
46	0.03578	0.1007	0.1699	111.5	236.8	20.753	6.83	23.72	591
48	0.04000	0.1135	0.1462	141.6	281.6	21.707	6.79	21.24	596
50	0.04401	0.1278	0.1288	168.0	322.1	22.534	6.76	19.33	605
52	0.04782	0.1421	0.1156	191.9	359.2	23.263	6.75	17.92	614
54	0.05145	0.1564	0.1052	213.9	394.0	23.919	6.75	16.86	625
56	0.05495	0.1703	0.0967	234.8	427.1	24.521	6.76	16.05	636
58	0.05832	0.1839	0.0897	254.4	458.6	25.073	6.78	15.42	647
60	0.06159	0.1970	0.0838	273.3	488.9	25.587	6.81	14.93	657
65	0.06947	0.2289	0.0725	318.4	561.5	26.751	6.94	14.14	683
70	0.07695	0.2588	0.0640	361.7	631.0	27.781	7.15	13.71	705
75	0.08415	0.2874	0.0576	404.6	699.1	28.720	7.42	13.54	724
80	0.09115	0.3148	0.0524	447.7	766.7	29.593	7.74	13.54	742
85	0.09799	0.3413	0.0482	491.7	834.7	30.417	8.11	13.66	758
90	0.10472	0.3672	0.0447	537.0	903.5	31.204	8.51	13.87	774
95	0.11134	0.3924	0.0416	583.8	973.5	31.961	8.93	14.13	788
100	0.11788	0.4172	0.0390	632.3	1044.9	32.693	9.35	14.43	802
120	0.14339	0.5120	0.0313	844.5	1346.4	35.437	10.91	15.64	857
140	0.16830	0.6032	0.0263	1078.8	1667.9	37.913	11.88	16.43	913
160	0.19285	0.6921	0.0227	1324.9	1999.9	40.129	12.26	16.70	971
180	0.21716	0.7794	0.0200	1573.1	2333.2	42.093	12.23	16.59	1028
200	0.24130	0.8657	0.0179	1817.6	2662.2	43.825	11.98	16.29	1085
220	0.26533	0.9512	0.0162	2055.8	2984.4	45.361	11.66	15.94	1140
240	0.28927	1.0361	0.0148	2287.3	3299.7	46.733	11.36	15.60	1193
260	0.31314	1.1206	0.0136	2512.9	3608.9	47.970	11.10	15.32	1244
280	0.33697	1.2048	0.0126	2733.6	3913.0	49.098	10.90	15.10	1292
300	0.36079	1.2892	0.0118	2951.2	4214.0	50.136	10.74	14.93	1339
350	0.42009	1.4979	0.0101	3483.5	4953.8	52.416	10.52	14.69	1446
400	0.47926	1.7058	0.0088	4008.1	5685.5	54.371	10.44	14.59	1544
450	0.53837	1.9132	0.0078	4529.5	6413.8	56.088	10.41	14.56	1636
500	0.59742	2.1203	0.0070	5050.7	7141.7	57.621	10.41	14.55	1722
550	0.65644	2.3272	0.0064	5571.4	7868.9	59.007	10.41	14.55	1803
600	0.71544	2.5339	0.0058	6092.9	8596.9	60.272	10.43	14.56	1881
700	0.83339	2.9470	0.0050	7138.5	10055.4	62.522	10.48	14.61	2027
800	0.95131	3.3600	0.0044	8191.5	11521.1	64.478	10.57	14.70	2161
900	1.06920	3.7727	0.0039	9255.2	12997.4	66.215	10.70	14.83	2286
1000	1.18707	4.1854	0.0035	10332.7	14487.5	67.787	10.86	14.99	2403
1200	1.42280	5.0106	0.0029	12543.3	17523.1	70.542	11.24	15.37	2617
1400	1.65850	5.8356	0.0025	14836.1	20640.9	72.948	11.68	15.80	2810
1600	1.89420	6.6606	0.0022	17215.1	23844.8	75.065	12.10	16.23	2988
1800	2.12994	7.4855	0.0019	19682.4	27137.2	76.966	12.51	16.64	3155
2000	2.36588	8.3104	0.0018	22247.4	30528.0	78.818	13.01	17.15	3310
2500	2.96107	10.3726	0.0014	29314.6	39678.3	85.239	15.53	19.86	3641
3000	3.59160	12.4347	0.0012	38736.3	51306.9	92.829	22.59	27.82	3910

* TWO-PHASE BOUNDARY

3.50 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 14.927	78.8975	738.4	0.24927	109.8930	0.00864	86.07	276.50	0.00062	1.25820	2.0499
15	78.8440	741.3	0.24890	109.9949	0.00864	86.68	273.88	0.00062	1.25802	2.0242
16	78.1394	740.2	0.24329	103.4356	0.00926	93.74	243.10	0.00063	1.25553	1.7771
17	77.3997	738.6	0.23732	97.0466	0.00986	98.70	218.42	0.00063	1.25292	1.6121
18	76.6149	736.0	0.23117	90.7901	0.01047	102.42	198.10	0.00062	1.25016	1.4905
19	75.7943	735.1	0.22439	85.0704	0.01101	104.90	181.21	0.00062	1.24728	1.3987
20	74.9428	730.5	0.21842	79.2684	0.01164	107.22	167.01	0.00061	1.24429	1.3246
21	74.0524	724.8	0.21303	73.7426	0.01231	109.86	154.84	0.00060	1.24118	1.2571
22	73.1206	717.8	0.20806	68.4215	0.01302	111.77	144.27	0.00059	1.23792	1.2063
23	72.1477	708.8	0.20339	63.1958	0.01381	113.04	134.99	0.00058	1.23452	1.1687
24	71.1269	697.9	0.19890	58.0441	0.01469	113.76	126.73	0.00056	1.23097	1.1420
25	70.0562	685.1	0.19453	52.9693	0.01568	113.99	119.30	0.00055	1.22725	1.1244
26	68.9286	671.0	0.19016	48.0622	0.01679	113.73	112.54	0.00053	1.22333	1.1146
27	67.7393	655.9	0.18568	43.3471	0.01802	113.08	106.33	0.00051	1.21922	1.1111
28	66.4831	639.0	0.18105	38.7445	0.01944	112.07	100.56	0.00049	1.21488	1.1145
29	65.1537	621.7	0.17629	34.4343	0.02100	110.73	95.18	0.00047	1.21030	1.1223
30	63.7444	604.0	0.17143	30.4265	0.02273	109.09	90.10	0.00045	1.20545	1.1340
31	62.2492	584.1	0.16625	26.5052	0.02485	106.77	85.30	0.00043	1.20033	1.1593
32	60.6468	563.1	0.16074	22.8203	0.02733	104.19	80.69	0.00040	1.19485	1.1917
33	58.9266	541.4	0.15500	19.4131	0.03025	101.38	76.24	0.00038	1.18899	1.2314
34	57.0738	518.4	0.14897	16.2475	0.03382	98.37	71.93	0.00035	1.18270	1.2818
35	55.0661	495.5	0.14263	13.4449	0.03795	95.12	67.73	0.00033	1.17591	1.3393
36	52.8898	472.8	0.13606	10.9834	0.04282	91.89	63.65	0.00031	1.16858	1.4023
37	50.5307	450.6	0.12932	8.8738	0.04845	89.25	59.69	0.00029	1.16067	1.4600
38	47.9855	429.5	0.12258	7.1055	0.05487	86.47	55.87	0.00028	1.15217	1.5228
39	45.2729	410.5	0.11603	5.6889	0.06167	83.58	52.26	0.00026	1.14317	1.5829
40	42.4430	396.0	0.10991	4.6658	0.06730	80.55	48.93	0.00026	1.13382	1.6192
42	36.8054	379.0	0.09996	3.4086	0.07362	74.55	43.44	0.00026	1.11536	1.6258
44	31.8437	379.4	0.09348	2.9211	0.06968	69.12	39.67	0.00030	1.09929	1.5170
46	27.9523	392.7	0.08907	2.8134	0.06040	64.98	37.31	0.00035	1.08680	1.3616
48	25.0017	412.5	0.08614	2.8385	0.05150	62.26	35.85	0.00042	1.07739	1.2230
50	22.7238	435.8	0.08386	2.9033	0.04437	60.62	34.97	0.00050	1.07017	1.1152
52	20.9139	460.8	0.08192	2.9720	0.03889	59.71	34.48	0.00057	1.06445	1.0348
54	19.4351	487.3	0.08018	3.0397	0.03460	59.32	34.27	0.00065	1.05980	0.9739
56	18.1994	514.3	0.07859	3.0997	0.03120	59.27	34.26	0.00073	1.05593	0.9276
58	17.1469	541.7	0.07719	3.1526	0.02846	59.48	34.40	0.00081	1.05263	0.8917
60	16.2361	569.7	0.07582	3.1993	0.02621	59.96	34.64	0.00089	1.04979	0.8627
65	14.3943	643.0	0.07248	3.2950	0.02199	61.98	35.54	0.00110	1.04405	0.8107
70	12.9961	720.4	0.06895	3.3640	0.01904	64.48	36.68	0.00130	1.03971	0.7802
75	11.8836	803.2	0.06533	3.4150	0.01686	66.68	37.95	0.00149	1.03627	0.7705
80	10.9709	892.3	0.06171	3.4537	0.01517	69.83	39.27	0.00169	1.03345	0.7615
85	10.2046	987.6	0.05822	3.4833	0.01383	74.30	40.63	0.00192	1.03109	0.7471
90	9.5497	1089.1	0.05494	3.5064	0.01273	78.82	41.99	0.00214	1.02907	0.7389
95	8.9818	1196.1	0.05193	3.5245	0.01182	83.38	43.36	0.00236	1.02733	0.7349
100	8.4835	1307.7	0.04923	3.5390	0.01103	92.22	46.50	0.00271	1.02580	0.7275
120	6.9740	1782.2	0.04119	3.5710	0.00877	117.91	54.29	0.00389	1.02117	0.7200
140	5.9417	2238.7	0.03726	3.5842	0.00734	136.52	59.42	0.00503	1.01802	0.7150
160	5.1854	2638.1	0.03573	3.5888	0.00633	148.73	63.30	0.00618	1.01571	0.7105
180	4.6050	2975.3	0.03554	3.5892	0.00558	156.29	66.53	0.00737	1.01394	0.7062
200	4.1442	3265.2	0.03605	3.5876	0.00499	161.06	69.43	0.00859	1.01254	0.7023
220	3.7689	3526.7	0.03685	3.5850	0.00452	164.47	72.12	0.00986	1.01140	0.6988
240	3.4570	3776.2	0.03769	3.5819	0.00413	167.45	74.69	0.01118	1.01045	0.6959
260	3.1934	4024.4	0.03844	3.5787	0.00381	170.52	77.18	0.01255	1.00965	0.6935
280	2.9676	4276.5	0.03905	3.5754	0.00353	173.86	79.63	0.01396	1.00897	0.6917
300	2.7717	4536.5	0.03951	3.5733	0.00329	177.52	82.03	0.01544	1.00838	0.6900
350	2.3805	5210.5	0.04013	3.5657	0.00282	187.99	87.97	0.01935	1.00719	0.6875
400	2.0865	5913.1	0.04033	3.5592	0.00247	199.55	93.83	0.02359	1.00630	0.6861
450	1.8575	6634.7	0.04032	3.5537	0.00219	211.69	99.63	0.02818	1.00561	0.6853
500	1.6739	7360.9	0.04027	3.5490	0.00198	223.88	105.37	0.03310	1.00505	0.6847
550	1.5234	8093.7	0.04018	3.5451	0.00180	236.15	111.05	0.03835	1.00460	0.6843
600	1.3977	8831.6	0.04007	3.5417	0.00165	248.41	116.67	0.04393	1.00422	0.6840
700	1.1999	10328.0	0.03978	3.5362	0.00142	273.01	127.71	0.05605	1.00362	0.6837
800	1.0512	11863.7	0.03938	3.5319	0.00124	297.89	138.49	0.06938	1.00317	0.6836
900	0.9353	13449.4	0.03887	3.5285	0.00110	323.21	149.02	0.08390	1.00282	0.6837
1000	0.8424	15092.9	0.03827	3.5258	0.00099	440.56	159.30	0.12563	1.00254	0.5419
1200	0.7028	18554.3	0.03691	3.5216	0.00083	511.13	179.20	0.17034	1.00212	0.5388
1400	0.6030	22242.5	0.03550	3.5186	0.00071	583.36	198.30	0.22038	1.00182	0.5372
1600	0.5279	26082.6	0.03424	3.5163	0.00062	655.84	216.71	0.27561	1.00159	0.5362
1800	0.4695	30079.1	0.03310	3.5144	0.00055	729.84	234.53	0.33626	1.00142	0.5348
2000	0.4227	34416.8	0.03163	3.5126	0.00050	812.40	251.83	0.40353	1.00127	0.5315
2500	0.3377	49684.8	0.02669	3.5030	0.00040	1168.39	293.40	0.62723	1.00102	0.4986
3000	0.2784	82563.1	0.01855	3.4622	0.00034	2161.83	334.72	1.00469	1.00084	0.4308

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

4.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 15.080	0.01263	1.4112	0.9524	-306.9	-256.4	5.059	4.85	6.39	1364
16	0.01274	1.3667	0.9608	-301.3	-250.3	5.448	5.03	6.78	1358
17	0.01286	1.2950	0.9624	-294.7	-243.3	5.873	5.20	7.21	1340
18	0.01298	1.2281	0.9572	-287.8	-235.9	6.297	5.36	7.62	1322
19	0.01312	1.1684	0.9466	-280.5	-228.1	6.720	5.50	8.01	1304
20	0.01326	1.1021	0.9333	-272.9	-219.9	7.140	5.63	8.41	1283
21	0.01341	1.0393	0.9185	-264.9	-211.3	7.560	5.74	8.81	1263
22	0.01358	0.9817	0.9023	-256.6	-202.2	7.979	5.85	9.21	1244
23	0.01375	0.9227	0.8848	-247.8	-192.8	8.398	5.94	9.63	1223
24	0.01394	0.8638	0.8656	-238.7	-183.0	8.817	6.02	10.07	1202
25	0.01414	0.8051	0.8448	-229.3	-172.7	9.237	6.09	10.52	1179
26	0.01436	0.7467	0.8221	-219.4	-161.9	9.660	6.15	11.01	1156
27	0.01460	0.6877	0.7975	-209.1	-150.7	10.085	6.21	11.53	1130
28	0.01486	0.6334	0.7712	-198.3	-138.9	10.513	6.26	12.06	1105
29	0.01514	0.5804	0.7431	-187.1	-126.5	10.946	6.30	12.62	1078
30	0.01545	0.5290	0.7135	-175.4	-113.6	11.384	6.33	13.22	1051
31	0.01578	0.4784	0.6827	-163.2	-100.1	11.828	6.37	13.89	1022
32	0.01616	0.4311	0.6504	-150.4	-85.8	12.281	6.40	14.60	992
33	0.01657	0.3833	0.6169	-137.1	-70.8	12.742	6.43	15.43	959
34	0.01704	0.3410	0.5822	-123.2	-55.0	13.215	6.46	16.27	927
35	0.01757	0.2997	0.5466	-108.5	-38.2	13.700	6.48	17.26	893
36	0.01817	0.2623	0.5102	-93.1	-20.5	14.201	6.51	18.31	859
37	0.01886	0.2287	0.4736	-77.0	-1.6	14.718	6.55	19.45	824
38	0.01965	0.1993	0.4371	-60.1	18.5	15.253	6.58	20.64	791
39	0.02056	0.1742	0.4012	-42.5	39.7	15.805	6.61	21.84	759
40	0.02161	0.1532	0.3666	-24.3	62.1	16.372	6.64	23.02	729
42	0.02413	0.1259	0.3036	13.4	110.0	17.539	6.71	24.62	680
44	0.02719	0.1135	0.2519	51.0	159.8	18.698	6.76	24.95	647
46	0.03060	0.1131	0.2117	85.8	208.3	19.774	6.81	23.87	630
48	0.03412	0.1204	0.1813	117.7	254.2	20.753	6.81	22.06	625
50	0.03759	0.1314	0.1586	146.3	296.6	21.619	6.79	20.33	627
52	0.04095	0.1439	0.1413	172.0	335.8	22.387	6.79	18.88	633
54	0.04418	0.1571	0.1277	195.6	372.4	23.077	6.79	17.73	641
56	0.04730	0.1702	0.1168	217.9	407.1	23.710	6.80	16.83	649
58	0.05032	0.1836	0.1078	238.8	440.1	24.288	6.81	16.11	659
60	0.05325	0.1967	0.1003	258.7	471.7	24.824	6.84	15.54	668
65	0.06027	0.2283	0.0859	305.7	546.7	26.026	6.97	14.59	691
70	0.06699	0.2590	0.0754	350.6	618.5	27.090	7.17	14.07	713
75	0.07341	0.2880	0.0675	394.6	688.2	28.051	7.44	13.83	732
80	0.07964	0.3159	0.0612	438.6	757.2	28.942	7.76	13.78	749
85	0.08572	0.3430	0.0561	483.4	826.3	29.779	8.13	13.87	765
90	0.09168	0.3692	0.0519	529.3	896.0	30.577	8.52	14.04	780
95	0.09754	0.3949	0.0483	576.7	966.8	31.342	8.94	14.28	794
100	0.10333	0.4200	0.0452	625.6	1038.9	32.082	9.36	14.56	808
120	0.12584	0.5160	0.0361	839.3	1342.7	34.847	10.92	15.73	862
140	0.14777	0.6080	0.0303	1074.5	1665.6	37.334	11.89	16.49	918
160	0.16935	0.6975	0.0261	1321.3	1998.7	39.557	12.27	16.74	976
180	0.19069	0.7854	0.0230	1570.0	2332.8	41.526	12.23	16.63	1033
200	0.21188	0.8721	0.0205	1814.9	2662.4	43.261	11.99	16.32	1090
220	0.23295	0.9579	0.0186	2053.4	2985.2	44.800	11.67	15.96	1145
240	0.25394	1.0431	0.0169	2285.2	3300.9	46.174	11.36	15.62	1198
260	0.27486	1.1278	0.0156	2511.0	3610.4	47.413	11.10	15.34	1248
280	0.29574	1.2122	0.0144	2732.0	3914.9	48.541	10.90	15.12	1297
300	0.31662	1.2969	0.0135	2949.8	4216.3	49.581	10.74	14.94	1343
350	0.36854	1.5058	0.0115	3482.4	4956.6	51.862	10.53	14.70	1450
400	0.42035	1.7139	0.0100	4007.2	5688.6	53.819	10.44	14.60	1548
450	0.47209	1.9215	0.0089	4528.8	6417.2	55.536	10.42	14.56	1639
500	0.52378	2.1287	0.0080	5050.1	7145.2	57.069	10.41	14.55	1725
550	0.57543	2.3356	0.0073	5570.9	7872.6	58.455	10.41	14.55	1807
600	0.62706	2.5424	0.0067	6092.4	8600.7	59.721	10.43	14.57	1884
700	0.73029	2.9556	0.0057	7138.2	10059.4	61.971	10.48	14.62	2030
800	0.83347	3.3686	0.0050	8191.3	11525.2	63.927	10.57	14.70	2164
900	0.93663	3.7814	0.0044	9255.0	13001.6	65.664	10.70	14.83	2289
1000	1.03977	4.1941	0.0040	10332.6	14491.6	67.237	10.86	14.99	2406
1200	1.24604	5.0193	0.0033	12543.2	17527.3	69.991	11.24	15.37	2619
1400	1.45228	5.8443	0.0029	14836.1	20645.2	72.398	11.68	15.80	2812
1600	1.65852	6.6693	0.0025	17215.0	23849.1	74.514	12.10	16.23	2990
1800	1.86479	7.4942	0.0022	19681.9	27141.1	76.415	12.51	16.64	3157
2000	2.07123	8.3192	0.0020	22245.5	30530.4	78.266	12.99	17.13	3312
2500	2.59169	10.3813	0.0016	29284.7	39651.5	84.674	15.41	19.72	3645
3000	3.14109	12.4435	0.0013	38549.3	51113.7	92.205	22.06	27.21	3915

* TWO-PHASE BOUNDARY

4.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 15.080	79.1477	750.0	0.24825	111.6967	0.00853	87.81	279.60	0.00062	1.25909	2.0363
16	78.5151	757.3	0.24339	107.3080	0.00895	94.35	250.48	0.00064	1.25686	1.8001
17	77.7893	755.0	0.23774	100.7400	0.00955	99.43	224.78	0.00064	1.25430	1.6305
18	77.0297	753.5	0.23179	94.5996	0.01012	103.29	203.80	0.00063	1.25162	1.5044
19	76.2330	753.7	0.22567	89.0699	0.01063	105.88	186.36	0.00062	1.24882	1.4097
20	75.4072	748.8	0.21984	83.1052	0.01123	108.33	171.72	0.00061	1.24592	1.3330
21	74.5439	743.3	0.21449	77.4730	0.01186	111.09	159.18	0.00061	1.24290	1.2627
22	73.6412	738.1	0.20952	72.2903	0.01248	113.11	148.31	0.00060	1.23974	1.2080
23	72.7031	730.2	0.20492	67.0801	0.01319	114.51	138.81	0.00059	1.23646	1.1676
24	71.7214	720.6	0.20047	61.9556	0.01397	115.35	130.37	0.00058	1.23304	1.1378
25	70.6965	709.1	0.19619	56.9159	0.01484	115.72	122.82	0.00056	1.22947	1.1170
26	69.6206	696.1	0.19190	51.9873	0.01581	115.60	115.96	0.00054	1.22573	1.1041
27	68.4918	681.1	0.18756	47.1047	0.01693	115.10	109.69	0.00052	1.22182	1.0989
28	67.3048	666.8	0.18310	42.6332	0.01809	114.26	103.90	0.00051	1.21771	1.0968
29	66.0553	651.3	0.17857	38.3405	0.01938	113.10	98.51	0.00049	1.21340	1.0995
30	64.7413	634.6	0.17400	34.2491	0.02083	111.67	93.47	0.00047	1.20888	1.1067
31	63.3553	616.7	0.16924	30.3107	0.02252	109.56	88.72	0.00045	1.20412	1.1247
32	61.8867	598.8	0.16425	26.6805	0.02438	107.24	84.19	0.00043	1.19909	1.1459
33	60.3319	578.4	0.15908	23.1272	0.02667	104.73	79.88	0.00041	1.19378	1.1766
34	58.6740	559.2	0.15369	20.0072	0.02910	102.05	75.72	0.00038	1.18813	1.2073
35	56.9093	538.5	0.14811	17.0574	0.03204	99.20	71.72	0.00036	1.18215	1.2476
36	55.0254	518.1	0.14234	14.4332	0.03535	96.17	67.85	0.00034	1.17577	1.2920
37	53.0180	498.1	0.13646	12.1255	0.03906	93.18	64.12	0.00033	1.16901	1.3387
38	50.8854	479.0	0.13059	10.1427	0.04309	90.72	60.55	0.00031	1.16186	1.3777
39	48.6348	461.3	0.12484	8.4737	0.04735	88.15	57.15	0.00030	1.15434	1.4159
40	46.2851	445.2	0.11926	7.0906	0.05170	85.54	53.96	0.00029	1.14652	1.4520
42	41.4430	423.0	0.10917	5.2174	0.05819	80.22	48.39	0.00028	1.13053	1.4850
44	36.7771	413.5	0.10127	4.1750	0.06034	75.26	44.10	0.00030	1.11527	1.4621
46	32.6747	416.9	0.09513	3.6962	0.05727	70.99	41.07	0.00033	1.10197	1.3612
48	29.3046	429.5	0.09090	3.5296	0.05137	67.69	39.07	0.00038	1.09113	1.2733
50	26.6002	447.8	0.08777	3.4940	0.04540	65.41	37.76	0.00044	1.08248	1.1734
52	24.4207	469.6	0.08527	3.5143	0.04020	63.94	36.91	0.00050	1.07554	1.0900
54	22.6331	493.6	0.08313	3.5550	0.03592	63.07	36.40	0.00057	1.06988	1.0233
56	21.1407	518.8	0.08124	3.5988	0.03244	62.65	36.13	0.00063	1.06517	0.9707
58	19.8723	545.2	0.07962	3.6482	0.02955	62.55	36.05	0.00070	1.06118	0.9284
60	18.7786	572.4	0.07805	3.6932	0.02715	62.78	36.10	0.00077	1.05774	0.8938
65	16.5932	643.9	0.07423	3.7886	0.02266	64.35	36.67	0.00096	1.05090	0.8315
70	14.9280	721.3	0.07042	3.8661	0.01950	66.52	37.59	0.00114	1.04571	0.7949
75	13.6221	804.0	0.06663	3.9234	0.01721	68.42	38.70	0.00131	1.04165	0.7826
80	12.5567	892.8	0.06286	3.9672	0.01544	71.41	39.92	0.00149	1.03835	0.7706
85	11.6663	988.1	0.05923	4.0010	0.01403	75.77	41.20	0.00169	1.03560	0.7541
90	10.9079	1089.6	0.05583	4.0274	0.01289	80.20	42.51	0.00188	1.03326	0.7444
95	10.2521	1196.7	0.05272	4.0481	0.01194	84.69	43.83	0.00208	1.03123	0.7392
100	9.6782	1308.5	0.04993	4.0646	0.01113	92.82	46.74	0.00237	1.02947	0.7332
120	7.9469	1784.9	0.04163	4.1004	0.00881	118.22	54.43	0.00341	1.02415	0.7240
140	6.7673	2243.1	0.03760	4.1147	0.00735	136.72	59.53	0.00441	1.02054	0.7180
160	5.9050	2644.2	0.03600	4.1190	0.00633	148.90	63.39	0.00542	1.01791	0.7128
180	5.2440	2983.0	0.03578	4.1185	0.00557	156.46	66.63	0.00646	1.01589	0.7080
200	4.7197	3274.1	0.03626	4.1158	0.00498	161.24	69.52	0.00754	1.01429	0.7036
220	4.2927	3536.6	0.03705	4.1120	0.00451	164.66	72.21	0.00865	1.01299	0.6999
240	3.9379	3786.8	0.03788	4.1077	0.00413	167.66	74.78	0.00981	1.01192	0.6967
260	3.6382	4035.6	0.03861	4.1033	0.00380	170.74	77.27	0.01101	1.01100	0.6942
280	3.3814	4288.2	0.03921	4.0989	0.00353	174.10	79.72	0.01226	1.01023	0.6922
300	3.1584	4548.9	0.03965	4.0961	0.00329	177.77	82.13	0.01356	1.00955	0.6905
350	2.7134	5223.7	0.04026	4.0859	0.00281	188.27	88.09	0.01699	1.00820	0.6878
400	2.3790	5926.7	0.04044	4.0774	0.00246	199.86	93.96	0.02072	1.00719	0.6863
450	2.1183	6648.7	0.04041	4.0702	0.00219	212.03	99.78	0.02474	1.00640	0.6854
500	1.9092	7375.2	0.04035	4.0641	0.00197	224.26	105.54	0.02906	1.00576	0.6848
550	1.7378	8108.2	0.04025	4.0589	0.00179	236.57	111.24	0.03367	1.00525	0.6843
600	1.5947	8846.2	0.04014	4.0544	0.00165	248.87	116.87	0.03857	1.00481	0.6840
700	1.3693	10343.0	0.03984	4.0472	0.00141	273.54	127.95	0.04920	1.00413	0.6837
800	1.1998	11878.9	0.03943	4.0417	0.00124	298.49	138.76	0.06091	1.00362	0.6836
900	1.0677	13464.9	0.03892	4.0372	0.00110	323.89	149.32	0.07365	1.00322	0.6837
1000	0.9617	15108.6	0.03831	4.0336	0.00099	440.56	159.63	0.11004	1.00290	0.5430
1200	0.8025	18570.5	0.03695	4.0282	0.00083	511.13	179.59	0.14918	1.00242	0.5400
1400	0.6886	22259.1	0.03553	4.0242	0.00071	583.36	198.76	0.19297	1.00208	0.5385
1600	0.6029	26098.7	0.03427	4.0212	0.00062	655.79	217.23	0.24131	1.00182	0.5375
1800	0.5363	30090.2	0.03312	4.0188	0.00055	729.58	235.10	0.29436	1.00162	0.5362
2000	0.4828	34407.7	0.03188	4.0165	0.00050	811.35	252.45	0.35310	1.00146	0.5331
2500	0.3858	49367.3	0.02691	4.0056	0.00040	1155.60	294.12	0.54677	1.00116	0.5019
3000	0.3184	80853.3	0.01899	3.9615	0.00034	2096.71	335.42	0.87127	1.00096	0.4353

* TWO-PHASE BOUNDARY

5.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 15.382	0.01256	1.4746	0.9589	-306.2	-243.4	5.081	4.88	6.40	1390
16	0.01262	1.4419	0.9656	-302.5	-239.4	5.338	5.01	6.66	1384
17	0.01273	1.3771	0.9705	-296.2	-232.5	5.754	5.19	7.07	1370
18	0.01285	1.3108	0.9690	-289.5	-225.2	6.170	5.35	7.48	1354
19	0.01298	1.2480	0.9623	-282.5	-217.6	6.585	5.49	7.87	1337
20	0.01311	1.1937	0.9514	-275.1	-209.5	6.998	5.62	8.22	1322
21	0.01325	1.1291	0.9383	-267.4	-201.1	7.408	5.73	8.61	1302
22	0.01340	1.0703	0.9233	-259.3	-192.3	7.818	5.84	8.98	1284
23	0.01356	1.0116	0.9071	-250.9	-183.1	8.225	5.93	9.37	1264
24	0.01373	0.9542	0.8895	-242.2	-173.6	8.632	6.01	9.76	1245
25	0.01391	0.8976	0.8703	-233.2	-163.6	9.039	6.08	10.17	1225
26	0.01411	0.8409	0.8497	-223.8	-153.2	9.446	6.15	10.59	1204
27	0.01432	0.7852	0.8274	-214.0	-142.4	9.854	6.21	11.03	1181
28	0.01454	0.7307	0.8035	-203.9	-131.2	10.264	6.26	11.49	1158
29	0.01478	0.6782	0.7782	-193.3	-119.4	10.675	6.31	11.97	1134
30	0.01504	0.6262	0.7516	-182.4	-107.2	11.089	6.34	12.47	1109
31	0.01533	0.5776	0.7238	-171.1	-94.5	11.506	6.38	12.98	1084
32	0.01563	0.5319	0.6951	-159.4	-81.3	11.927	6.41	13.51	1059
33	0.01597	0.4873	0.6657	-147.3	-67.4	12.352	6.44	14.09	1033
34	0.01633	0.4434	0.6355	-134.7	-53.1	12.781	6.46	14.72	1005
35	0.01673	0.4034	0.6045	-121.7	-38.0	13.217	6.49	15.36	977
36	0.01717	0.3645	0.5731	-108.2	-22.3	13.659	6.51	16.07	949
37	0.01766	0.3303	0.5413	-94.2	-5.9	14.109	6.53	16.77	921
38	0.01820	0.2981	0.5095	-79.7	11.2	14.566	6.55	17.51	893
39	0.01879	0.2690	0.4779	-64.8	29.1	15.030	6.56	18.26	865
40	0.01945	0.2443	0.4470	-49.5	47.7	15.502	6.58	18.96	839
42	0.02098	0.2041	0.3883	-17.9	87.0	16.461	6.62	20.28	791
44	0.02281	0.1771	0.3356	14.6	128.6	17.428	6.66	21.22	751
46	0.02491	0.1615	0.2903	46.5	171.0	18.370	6.73	21.63	720
48	0.02724	0.1555	0.2525	77.9	214.1	19.287	6.78	21.39	701
50	0.02970	0.1565	0.2217	107.7	256.2	20.147	6.80	20.66	689
52	0.03222	0.1620	0.1967	135.5	296.6	20.939	6.82	19.71	684
54	0.03473	0.1706	0.1766	161.4	335.1	21.664	6.83	18.74	684
56	0.03721	0.1808	0.1604	185.9	371.9	22.335	6.85	17.88	687
58	0.03964	0.1920	0.1470	208.7	406.9	22.948	6.86	17.12	692
60	0.04202	0.2035	0.1358	230.4	440.5	23.518	6.89	16.50	698
65	0.04776	0.2333	0.1147	281.1	519.9	24.789	7.01	15.37	715
70	0.05325	0.2631	0.0997	328.7	594.9	25.902	7.21	14.72	733
75	0.05853	0.2918	0.0886	374.9	667.5	26.904	7.47	14.38	749
80	0.06365	0.3204	0.0799	420.8	739.0	27.827	7.79	14.25	765
85	0.06867	0.3483	0.0728	467.1	810.5	28.693	8.16	14.26	780
90	0.07355	0.3752	0.0670	514.2	882.0	29.511	8.55	14.37	794
95	0.07834	0.4014	0.0621	562.6	954.3	30.293	8.96	14.57	808
100	0.08306	0.4271	0.0580	612.5	1027.8	31.046	9.38	14.81	821
120	0.10133	0.5249	0.0459	829.2	1335.8	33.851	10.94	15.90	873
140	0.11907	0.6184	0.0383	1066.2	1661.6	36.360	11.91	16.61	929
160	0.13648	0.7090	0.0329	1314.3	1996.7	38.597	12.28	16.83	986
180	0.15367	0.7977	0.0289	1564.0	2332.4	40.574	12.25	16.70	1043
200	0.17071	0.8851	0.0258	1809.7	2663.2	42.317	12.00	16.38	1099
220	0.18764	0.9716	0.0233	2048.8	2987.0	43.860	11.68	16.01	1154
240	0.20449	1.0573	0.0213	2281.1	3303.5	45.237	11.37	15.66	1207
260	0.22128	1.1424	0.0196	2507.3	3613.7	46.479	11.11	15.37	1257
280	0.23802	1.2271	0.0181	2728.7	3918.8	47.610	10.91	15.14	1305
300	0.25478	1.3124	0.0169	2947.0	4220.9	48.651	10.75	14.97	1352
350	0.29639	1.5219	0.0144	3480.2	4962.1	50.936	10.53	14.72	1458
400	0.33788	1.7303	0.0126	4005.5	5694.9	52.894	10.44	14.61	1556
450	0.37930	1.9381	0.0112	4527.4	6423.9	54.612	10.42	14.57	1646
500	0.42067	2.1455	0.0100	5049.0	7152.3	56.146	10.41	14.56	1732
550	0.46201	2.3525	0.0091	5569.9	7880.0	57.533	10.42	14.56	1813
600	0.50333	2.5594	0.0083	6091.6	8608.3	58.799	10.43	14.57	1891
700	0.58593	2.9728	0.0072	7137.6	10067.3	61.049	10.49	14.62	2036
800	0.66849	3.3858	0.0063	8190.8	11533.3	63.006	10.58	14.71	2170
900	0.75103	3.7987	0.0056	9254.7	13009.8	64.743	10.70	14.83	2294
1000	0.83355	4.2114	0.0050	10332.3	14500.0	66.316	10.86	14.99	2411
1200	0.99857	5.0367	0.0042	12543.0	17535.9	69.070	11.24	15.37	2624
1400	1.16357	5.8618	0.0036	14835.9	20653.8	71.477	11.68	15.81	2816
1600	1.32856	6.6867	0.0031	17214.8	23857.6	73.593	12.10	16.23	2994
1800	1.49358	7.5117	0.0028	19681.2	27149.1	75.494	12.51	16.63	3161
2000	1.65871	8.3366	0.0025	22242.5	30536.1	77.344	12.97	17.11	3316
2500	2.07467	10.3988	0.0020	29239.1	39612.4	83.733	15.22	19.51	3651
3000	2.51137	12.4609	0.0017	38263.4	50820.3	91.173	21.24	26.28	3924

* TWO-PHASE BOUNDARY

5.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 15.382	79.6358	783.3	0.24654	117.4329	0.00817	91.17	285.79	0.00064	1.26081	2.0050
16	79.2264	787.3	0.24343	114.2398	0.00845	95.52	265.42	0.00065	1.25937	1.8493
17	78.5408	788.2	0.23818	108.1565	0.00897	100.86	237.88	0.00065	1.25695	1.6680
18	77.8155	787.1	0.23283	101.9981	0.00950	104.95	215.35	0.00065	1.25439	1.5345
19	77.0622	786.1	0.22740	96.1733	0.01001	107.77	196.75	0.00064	1.25174	1.4359
20	76.2761	787.1	0.22203	91.0477	0.01045	110.42	181.10	0.00063	1.24897	1.3490
21	75.4646	781.7	0.21690	85.2096	0.01101	113.42	167.84	0.00063	1.24612	1.2738
22	74.6146	777.0	0.21204	79.8570	0.01156	115.66	156.35	0.00062	1.24314	1.2145
23	73.7364	770.4	0.20750	74.5884	0.01216	117.28	146.37	0.00061	1.24007	1.1694
24	72.8222	762.8	0.20319	69.4868	0.01280	118.35	137.55	0.00060	1.23688	1.1348
25	71.8715	753.7	0.19904	64.5099	0.01349	118.95	129.69	0.00059	1.23356	1.1087
26	70.8805	743.0	0.19495	59.6058	0.01425	119.08	122.61	0.00057	1.23011	1.0906
27	69.8496	731.3	0.19081	54.8474	0.01509	118.84	116.19	0.00056	1.22653	1.0786
28	68.7720	718.7	0.18661	50.2511	0.01599	118.27	110.29	0.00054	1.22279	1.0717
29	67.6476	705.4	0.18239	45.8796	0.01696	117.41	104.84	0.00052	1.21890	1.0684
30	66.4752	690.6	0.17822	41.6295	0.01805	116.30	99.78	0.00051	1.21485	1.0697
31	65.2503	676.0	0.17391	37.6892	0.01920	114.51	95.05	0.00049	1.21063	1.0776
32	63.9697	661.5	0.16952	34.0273	0.02043	112.55	90.59	0.00047	1.20623	1.0877
33	62.6318	645.9	0.16512	30.5213	0.02181	110.43	86.38	0.00045	1.20164	1.1019
34	61.2349	629.0	0.16060	27.1527	0.02341	108.22	82.39	0.00043	1.19686	1.1208
35	59.7690	612.7	0.15593	24.1108	0.02507	105.87	78.58	0.00042	1.19186	1.1401
36	58.2355	595.4	0.15119	21.2278	0.02700	103.41	74.94	0.00040	1.18664	1.1648
37	56.6288	579.3	0.14635	18.7024	0.02894	100.85	71.46	0.00038	1.18120	1.1879
38	54.9544	562.9	0.14154	16.3795	0.03110	98.22	68.14	0.00037	1.17554	1.2145
39	53.2122	546.9	0.13682	14.3153	0.03339	95.62	64.97	0.00035	1.16967	1.2408
40	51.4071	532.7	0.13215	12.5594	0.03559	93.45	61.98	0.00035	1.16360	1.2573
42	47.6583	507.9	0.12317	9.7251	0.03993	89.06	56.55	0.00033	1.15109	1.2877
44	43.8420	490.8	0.11495	7.7629	0.04323	84.77	51.94	0.00033	1.13844	1.3002
46	40.1370	483.0	0.10743	6.4812	0.04479	80.84	48.24	0.00034	1.12625	1.2908
48	36.7078	483.4	0.10151	5.7089	0.04424	77.38	45.39	0.00035	1.11504	1.2545
50	33.6647	490.9	0.09677	5.2680	0.04208	74.53	43.31	0.00039	1.10517	1.2004
52	31.0368	503.9	0.09293	5.0278	0.03912	72.32	41.84	0.00043	1.09669	1.1404
54	28.7934	521.3	0.08977	4.9125	0.03596	70.71	40.81	0.00047	1.08949	1.0819
56	26.8763	541.6	0.08712	4.8583	0.03301	69.61	40.11	0.00052	1.08336	1.0301
58	25.2271	564.1	0.08487	4.8432	0.03034	68.90	39.64	0.00057	1.07811	0.9848
60	23.7978	588.2	0.08283	4.8435	0.02804	68.64	39.37	0.00063	1.07357	0.9461
65	20.9367	654.7	0.07812	4.8841	0.02348	69.25	39.24	0.00077	1.06453	0.8711
70	18.7801	728.8	0.07368	4.9402	0.02019	70.78	39.67	0.00092	1.05775	0.8248
75	17.0856	809.5	0.06937	4.9860	0.01776	72.04	40.43	0.00106	1.05244	0.8069
80	15.7118	897.8	0.06524	5.0342	0.01587	74.67	41.39	0.00120	1.04815	0.7897
85	14.5616	993.2	0.06130	5.0718	0.01435	78.78	42.47	0.00137	1.04457	0.7685
90	13.5961	1094.5	0.05763	5.1010	0.01313	83.01	43.63	0.00153	1.04157	0.7554
95	12.7650	1201.5	0.05432	5.1242	0.01213	87.34	44.83	0.00169	1.03900	0.7480
100	12.0401	1313.4	0.05136	5.1426	0.01128	94.20	47.31	0.00190	1.03675	0.7440
120	9.8688	1792.9	0.04252	5.1798	0.00887	118.99	54.78	0.00273	1.03005	0.7318
140	8.3984	2254.0	0.03826	5.1932	0.00737	137.23	59.80	0.00354	1.02554	0.7238
160	7.3272	2658.1	0.03655	5.1949	0.00633	149.31	63.63	0.00436	1.02225	0.7173
180	6.5075	2999.5	0.03625	5.1912	0.00557	156.85	66.84	0.00520	1.01975	0.7115
200	5.8579	3292.8	0.03669	5.1850	0.00497	161.64	69.72	0.00607	1.01776	0.7063
220	5.3293	3557.0	0.03744	5.1778	0.00450	165.08	72.40	0.00697	1.01615	0.7020
240	4.8902	3808.5	0.03824	5.1703	0.00411	168.10	74.97	0.00790	1.01481	0.6984
260	4.5191	4058.5	0.03895	5.1628	0.00379	171.20	77.47	0.00887	1.01368	0.6956
280	4.2013	4312.0	0.03952	5.1556	0.00351	174.58	79.92	0.00988	1.01272	0.6933
300	3.9249	4574.3	0.03994	5.1512	0.00327	178.27	82.34	0.01093	1.01188	0.6913
350	3.3740	5250.3	0.04051	5.1348	0.00280	188.83	88.32	0.01369	1.01020	0.6883
400	2.9596	5954.2	0.04066	5.1212	0.00245	200.48	94.22	0.01669	1.00895	0.6866
450	2.6365	6676.8	0.04060	5.1097	0.00218	212.72	100.07	0.01993	1.00797	0.6856
500	2.3772	7403.8	0.04052	5.1001	0.00197	225.02	105.86	0.02341	1.00718	0.6849
550	2.1644	8137.3	0.04041	5.0919	0.00179	237.40	111.60	0.02712	1.00654	0.6844
600	1.9868	8875.6	0.04028	5.0849	0.00164	249.77	117.27	0.03106	1.00600	0.6840
700	1.7067	10372.9	0.03996	5.0736	0.00141	274.59	128.42	0.03962	1.00515	0.6837
800	1.4959	11909.3	0.03953	5.0649	0.00123	299.69	139.30	0.04904	1.00451	0.6835
900	1.3315	13495.8	0.03901	5.0580	0.00110	325.24	149.93	0.05929	1.00402	0.6836
1000	1.1997	15140.0	0.03839	5.0524	0.00099	440.56	160.30	0.08821	1.00362	0.5454
1200	1.0014	18602.9	0.03701	5.0439	0.00083	511.13	180.39	0.11955	1.00302	0.5425
1400	0.8594	22292.3	0.03558	5.0377	0.00071	583.35	199.68	0.15461	1.00259	0.5410
1600	0.7527	26131.4	0.03431	5.0331	0.00062	655.72	218.26	0.19329	1.00227	0.5401
1800	0.6695	30115.3	0.03318	5.0293	0.00055	729.19	236.25	0.23572	1.00202	0.5389
2000	0.6029	34402.4	0.03196	5.0259	0.00050	809.75	253.70	0.28256	1.00182	0.5362
2500	0.4820	48890.6	0.02727	5.0123	0.00040	1136.04	295.60	0.43494	1.00145	0.5076
3000	0.3982	78243.2	0.01970	4.9618	0.00034	1996.91	336.92	0.68695	1.00120	0.4434

* TWO-PHASE BOUNDARY

6.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 15.678	0.01248	1.5352	0.9665	-305.5	-230.6	5.103	4.92	6.40	1414
16	0.01252	1.5184	0.9702	-303.6	-228.5	5.235	4.98	6.54	1411
17	0.01262	1.4521	0.9773	-297.4	-221.7	5.644	5.17	6.95	1397
18	0.01273	1.3891	0.9784	-291.0	-214.6	6.052	5.33	7.34	1383
19	0.01285	1.3275	0.9746	-284.1	-207.1	6.459	5.48	7.72	1368
20	0.01297	1.2678	0.9665	-277.0	-199.1	6.865	5.61	8.09	1352
21	0.01310	1.2171	0.9551	-269.5	-190.9	7.268	5.72	8.43	1339
22	0.01324	1.1548	0.9421	-261.7	-182.3	7.668	5.83	8.79	1320
23	0.01339	1.0975	0.9270	-253.6	-173.3	8.068	5.92	9.15	1302
24	0.01355	1.0404	0.9107	-245.2	-164.0	8.464	6.00	9.52	1284
25	0.01371	0.9847	0.8930	-236.5	-154.3	8.860	6.08	9.89	1265
26	0.01389	0.9301	0.8740	-227.5	-144.2	9.256	6.15	10.26	1246
27	0.01407	0.8757	0.8536	-218.2	-133.7	9.650	6.21	10.66	1226
28	0.01427	0.8223	0.8318	-208.5	-122.9	10.045	6.26	11.06	1205
29	0.01449	0.7702	0.8086	-198.5	-111.6	10.440	6.31	11.48	1183
30	0.01471	0.7202	0.7842	-188.2	-99.9	10.837	6.35	11.90	1161
31	0.01496	0.6722	0.7588	-177.6	-87.8	11.234	6.39	12.33	1139
32	0.01522	0.6260	0.7325	-166.6	-75.2	11.633	6.42	12.78	1116
33	0.01550	0.5802	0.7055	-155.2	-62.2	12.033	6.45	13.25	1092
34	0.01580	0.5386	0.6782	-143.6	-48.7	12.436	6.48	13.73	1068
35	0.01613	0.4990	0.6504	-131.6	-34.8	12.841	6.50	14.22	1045
36	0.01648	0.4609	0.6222	-119.2	-20.3	13.249	6.52	14.74	1020
37	0.01687	0.4244	0.5936	-106.5	-5.3	13.660	6.54	15.28	996
38	0.01728	0.3915	0.5651	-93.4	10.3	14.074	6.56	15.81	972
39	0.01773	0.3604	0.5364	-80.0	26.3	14.492	6.57	16.36	947
40	0.01822	0.3333	0.5082	-66.3	42.9	14.912	6.58	16.86	924
42	0.01931	0.2862	0.4536	-38.2	77.7	15.760	6.60	17.86	880
44	0.02058	0.2504	0.4027	-9.2	114.3	16.611	6.63	18.70	841
46	0.02204	0.2252	0.3568	19.6	151.9	17.446	6.70	19.33	806
48	0.02366	0.2085	0.3165	48.9	190.9	18.276	6.75	19.65	779
50	0.02542	0.2003	0.2818	77.7	230.2	19.078	6.79	19.60	760
52	0.02728	0.1977	0.2523	105.4	269.1	19.842	6.82	19.29	747
54	0.02921	0.1995	0.2273	132.0	307.2	20.560	6.85	18.78	739
56	0.03116	0.2049	0.2063	157.5	344.4	21.237	6.88	18.17	736
58	0.03311	0.2122	0.1887	181.4	380.1	21.864	6.90	17.56	735
60	0.03505	0.2211	0.1738	204.4	414.7	22.450	6.93	17.00	737
65	0.03981	0.2460	0.1456	257.9	496.8	23.764	7.05	15.92	745
70	0.04442	0.2737	0.1256	307.9	574.4	24.916	7.24	15.21	758
75	0.04887	0.3015	0.1109	356.1	649.3	25.949	7.50	14.81	771
80	0.05321	0.3291	0.0994	403.6	722.8	26.898	7.82	14.62	785
85	0.05743	0.3565	0.0903	451.2	795.8	27.783	8.18	14.60	798
90	0.06156	0.3834	0.0829	499.5	868.9	28.619	8.57	14.68	810
95	0.06562	0.4098	0.0766	549.0	942.7	29.417	8.98	14.85	823
100	0.06965	0.4362	0.0713	599.8	1017.7	30.186	9.40	15.05	836
120	0.08506	0.5350	0.0560	819.3	1329.7	33.027	10.97	16.05	885
140	0.09999	0.6296	0.0464	1058.1	1658.1	35.556	11.93	16.72	939
160	0.11460	0.7212	0.0398	1307.5	1995.1	37.806	12.30	16.92	996
180	0.12901	0.8107	0.0349	1558.1	2332.2	39.793	12.26	16.76	1053
200	0.14328	0.8987	0.0311	1804.6	2664.3	41.541	12.01	16.43	1109
220	0.15745	0.9856	0.0281	2044.3	2989.0	43.089	11.69	16.05	1163
240	0.17154	1.0718	0.0256	2277.1	3306.3	44.470	11.38	15.70	1216
260	0.18557	1.1573	0.0235	2503.8	3617.2	45.714	11.12	15.40	1266
280	0.19955	1.2423	0.0218	2725.5	3922.8	46.847	10.91	15.17	1314
300	0.21357	1.3282	0.0203	2944.2	4225.7	47.891	10.76	14.99	1360
350	0.24829	1.5381	0.0173	3478.1	4967.8	50.178	10.54	14.73	1466
400	0.28290	1.7469	0.0151	4003.8	5701.2	52.138	10.45	14.62	1564
450	0.31744	1.9548	0.0134	4526.0	6430.7	53.857	10.42	14.58	1654
500	0.35194	2.1623	0.0120	5047.8	7159.5	55.392	10.41	14.56	1739
550	0.38640	2.3695	0.0109	5569.0	7887.4	56.780	10.42	14.56	1820
600	0.42085	2.5765	0.0100	6090.8	8615.9	58.046	10.43	14.57	1897
700	0.48969	2.9900	0.0086	7137.0	10075.2	60.297	10.49	14.62	2042
800	0.55850	3.4031	0.0075	8190.4	11541.4	62.253	10.58	14.71	2175
900	0.62729	3.8160	0.0067	9254.4	13018.1	63.991	10.70	14.83	2300
1000	0.69606	4.2287	0.0060	10332.0	14508.4	65.564	10.86	14.99	2416
1200	0.83359	5.0540	0.0050	12542.9	17544.4	68.318	11.24	15.37	2628
1400	0.97109	5.8791	0.0043	14835.8	20662.4	70.725	11.68	15.81	2821
1600	1.10859	6.7041	0.0038	17214.7	23866.2	72.841	12.10	16.22	2998
1800	1.24610	7.5290	0.0033	19680.8	27157.4	74.741	12.50	16.63	3165
2000	1.38370	8.3539	0.0030	22240.3	30542.5	76.591	12.96	17.10	3320
2500	1.73009	10.4161	0.0024	29205.4	39585.9	82.966	15.08	19.35	3656
3000	2.09227	12.4783	0.0020	38052.4	50606.0	90.339	20.64	25.59	3932

* TWO-PHASE BOUNDARY

6.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 15.678	80.1084	815.0	0.24531	122.9816	0.00786	94.38	291.98	0.00066	1.26248	1.9813
16	79.9026	817.4	0.24368	121.3254	0.00800	96.62	280.92	0.00067	1.26176	1.9004
17	79.2468	818.3	0.23857	115.0744	0.00849	102.22	251.31	0.00067	1.25944	1.7087
18	78.5592	819.2	0.23347	109.1289	0.00897	106.54	227.24	0.00066	1.25701	1.5666
19	77.8398	819.0	0.22846	103.3346	0.00943	109.56	207.34	0.00066	1.25447	1.4619
20	77.0922	818.0	0.22351	97.7382	0.00989	112.41	190.68	0.00065	1.25184	1.3721
21	76.3144	819.4	0.21868	92.8849	0.01028	115.60	176.53	0.00065	1.24911	1.2867
22	75.5170	813.9	0.21407	87.2047	0.01080	118.06	164.45	0.00064	1.24631	1.2247
23	74.6827	809.0	0.20964	81.9628	0.01131	119.87	153.88	0.00063	1.24338	1.1746
24	73.8252	802.5	0.20543	76.8050	0.01186	121.15	144.65	0.00062	1.24038	1.1361
25	72.9346	795.0	0.20141	71.8215	0.01243	121.95	136.45	0.00061	1.23727	1.1061
26	72.0101	786.6	0.19746	66.9741	0.01305	122.28	129.09	0.00060	1.23404	1.0836
27	71.0541	776.9	0.19351	62.2237	0.01372	122.26	122.45	0.00058	1.23072	1.0675
28	70.0607	766.3	0.18952	57.6127	0.01444	121.91	116.40	0.00057	1.22726	1.0564
29	69.0310	754.8	0.18553	53.1672	0.01521	121.28	110.84	0.00055	1.22369	1.0492
30	67.9619	742.7	0.18162	48.9441	0.01602	120.41	105.70	0.00054	1.21999	1.0447
31	66.8519	730.4	0.17759	44.9390	0.01688	118.86	100.92	0.00052	1.21615	1.0470
32	65.7014	717.5	0.17353	41.1262	0.01781	117.16	96.46	0.00050	1.21218	1.0521
33	64.5097	703.3	0.16947	37.4312	0.01885	115.32	92.27	0.00049	1.20808	1.0605
34	63.2732	690.0	0.16545	34.0776	0.01990	113.39	88.31	0.00047	1.20384	1.0694
35	61.9922	676.5	0.16138	30.9365	0.02103	111.37	84.57	0.00045	1.19945	1.0801
36	60.6643	662.4	0.15723	27.9606	0.02225	109.25	81.02	0.00044	1.19491	1.0931
37	59.2908	647.8	0.15304	25.1656	0.02359	107.06	77.65	0.00043	1.19023	1.1083
38	57.8698	634.0	0.14889	22.6546	0.02494	104.80	74.43	0.00041	1.18540	1.1231
39	56.4047	619.8	0.14480	20.3267	0.02639	102.51	71.38	0.00040	1.18044	1.1390
40	54.8979	607.1	0.14075	18.2964	0.02778	100.19	68.49	0.00039	1.17534	1.1527
42	51.7818	583.5	0.13275	14.8206	0.03061	95.96	63.18	0.00037	1.16486	1.1757
44	48.5797	565.0	0.12507	12.1657	0.03310	92.17	58.53	0.00037	1.15415	1.1877
46	45.3752	553.4	0.11743	10.2169	0.03492	88.57	54.57	0.00036	1.14351	1.1908
48	42.2687	547.3	0.11097	8.8143	0.03591	85.29	51.32	0.00037	1.13325	1.1825
50	39.3388	548.0	0.10549	7.8782	0.03577	82.37	48.71	0.00038	1.12363	1.1591
52	36.6521	553.9	0.10085	7.2446	0.03482	79.91	46.70	0.00041	1.11486	1.1272
54	34.2378	564.4	0.09686	6.8315	0.03327	77.92	45.19	0.00044	1.10702	1.0890
56	32.0953	579.2	0.09346	6.5765	0.03137	76.36	44.08	0.00047	1.10010	1.0486
58	30.2035	596.6	0.09057	6.4089	0.02944	75.22	43.27	0.00051	1.09401	1.0105
60	28.5293	616.9	0.08797	6.3073	0.02756	74.52	42.71	0.00055	1.08864	0.9744
65	25.1194	675.9	0.08223	6.1803	0.02355	74.27	42.01	0.00067	1.07776	0.9003
70	22.5144	745.7	0.07708	6.1615	0.02039	75.12	41.98	0.00079	1.06951	0.8497
75	20.4609	823.7	0.07224	6.1681	0.01797	75.78	42.37	0.00090	1.06303	0.8279
80	18.7948	909.6	0.06768	6.1862	0.01608	78.02	43.05	0.00102	1.05779	0.8068
85	17.4128	1003.1	0.06342	6.2078	0.01455	81.89	43.91	0.00116	1.05346	0.7827
90	16.2435	1103.5	0.05951	6.2279	0.01331	85.91	44.89	0.00130	1.04981	0.7673
95	15.2387	1209.8	0.05599	6.2454	0.01227	90.05	45.96	0.00143	1.04668	0.7578
100	14.3578	1322.2	0.05282	6.2622	0.01138	95.79	48.01	0.00160	1.04394	0.7543
120	11.7562	1804.3	0.04339	6.2901	0.00890	119.95	55.24	0.00229	1.03588	0.7392
140	10.0012	2267.5	0.03893	6.2970	0.00737	137.88	60.15	0.00297	1.03046	0.7295
160	8.7257	2674.1	0.03709	6.2927	0.00633	149.83	63.92	0.00365	1.02654	0.7217
180	7.7511	3017.7	0.03673	6.2834	0.00555	157.31	67.09	0.00436	1.02355	0.7148
200	6.9792	3312.8	0.03711	6.2720	0.00496	162.09	69.95	0.00509	1.02119	0.7090
220	6.3512	3578.4	0.03782	6.2600	0.00449	165.54	72.62	0.00585	1.01927	0.7041
240	5.8296	3831.0	0.03859	6.2480	0.00410	168.57	75.18	0.00663	1.01768	0.7001
260	5.3888	4081.9	0.03928	6.2364	0.00377	171.68	77.68	0.00745	1.01633	0.6969
280	5.0112	4336.2	0.03983	6.2255	0.00350	175.08	80.13	0.00829	1.01518	0.6944
300	4.6823	4600.2	0.04023	6.2192	0.00326	178.79	82.56	0.00917	1.01418	0.6921
350	4.0275	5277.2	0.04075	6.1949	0.00279	189.39	88.55	0.01149	1.01219	0.6888
400	3.5348	5981.9	0.04087	6.1748	0.00244	201.11	94.48	0.01401	1.01069	0.6869
450	3.1502	6705.2	0.04079	6.1581	0.00217	213.41	100.36	0.01673	1.00952	0.6857
500	2.8414	7432.6	0.04069	6.1441	0.00196	225.78	106.19	0.01964	1.00859	0.6850
550	2.5880	8166.5	0.04056	6.1323	0.00178	238.23	111.96	0.02275	1.00782	0.6844
600	2.3762	8905.1	0.04041	6.1222	0.00164	250.67	117.67	0.02606	1.00716	0.6841
700	2.0421	10402.9	0.04007	6.1058	0.00141	275.64	128.88	0.03323	1.00617	0.6836
800	1.7905	11939.7	0.03963	6.0932	0.00123	300.89	139.84	0.04113	1.00541	0.6835
900	1.5942	13526.6	0.03909	6.0833	0.00110	326.59	150.53	0.04973	1.00481	0.6836
1000	1.4367	15171.3	0.03847	6.0752	0.00099	440.56	160.98	0.07365	1.00434	0.5477
1200	1.1996	18635.1	0.03707	6.0630	0.00082	511.13	181.19	0.09979	1.00362	0.5449
1400	1.0298	22325.5	0.03563	6.0541	0.00071	583.34	200.60	0.12903	1.00311	0.5435
1600	0.9020	26164.3	0.03436	6.0474	0.00062	655.67	219.30	0.16128	1.00272	0.5427
1800	0.8025	30142.9	0.03322	6.0421	0.00055	728.90	237.40	0.19663	1.00242	0.5416
2000	0.7227	34407.7	0.03203	6.0374	0.00050	808.56	254.96	0.23558	1.00218	0.5391
2500	0.5780	48548.7	0.02754	6.0206	0.00040	1121.60	297.09	0.36097	1.00174	0.5126
3000	0.4780	76323.3	0.02028	5.9640	0.00034	1923.06	338.48	0.56595	1.00144	0.4505

* TWO-PHASE BOUNDARY

7.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 15.968	0.01241	1.5524	0.9744	-304.7	-217.8	5.125	4.95	6.42	1437
16	0.01242	1.5910	0.9748	-304.5	-217.6	5.137	4.96	6.43	1437
17	0.01251	1.5282	0.9838	-298.5	-210.9	5.540	5.15	6.84	1424
18	0.01262	1.4642	0.9869	-292.2	-203.9	5.942	5.32	7.22	1410
19	0.01273	1.4027	0.9850	-285.6	-196.5	6.342	5.47	7.60	1396
20	0.01284	1.3450	0.9792	-278.6	-188.7	6.740	5.60	7.95	1382
21	0.01297	1.2874	0.9699	-271.4	-180.6	7.137	5.72	8.30	1367
22	0.01310	1.2395	0.9580	-263.8	-172.1	7.531	5.82	8.62	1354
23	0.01323	1.1794	0.9449	-256.0	-163.3	7.921	5.91	8.96	1337
24	0.01338	1.1240	0.9297	-247.8	-154.2	8.310	6.00	9.30	1320
25	0.01353	1.0684	0.9134	-239.4	-144.7	8.697	6.08	9.65	1303
26	0.01369	1.0143	0.8957	-230.7	-134.9	9.082	6.15	10.00	1285
27	0.01386	0.9618	0.8768	-221.8	-124.7	9.466	6.21	10.36	1267
28	0.01404	0.9094	0.8568	-212.5	-114.2	9.850	6.27	10.72	1247
29	0.01423	0.8584	0.8355	-202.9	-103.3	10.232	6.32	11.10	1228
30	0.01444	0.8083	0.8129	-193.1	-92.0	10.615	6.36	11.47	1207
31	0.01465	0.7604	0.7894	-182.9	-80.3	10.997	6.40	11.86	1187
32	0.01488	0.7147	0.7650	-172.5	-68.3	11.379	6.44	12.24	1166
33	0.01513	0.6708	0.7400	-161.8	-55.9	11.762	6.47	12.63	1144
34	0.01539	0.6287	0.7144	-150.7	-43.0	12.145	6.50	13.03	1123
35	0.01567	0.5885	0.6887	-139.5	-29.8	12.529	6.52	13.44	1101
36	0.01596	0.5506	0.6628	-127.9	-16.1	12.914	6.54	13.86	1080
37	0.01628	0.5134	0.6367	-116.0	-2.1	13.299	6.56	14.31	1058
38	0.01662	0.4800	0.6104	-103.9	12.4	13.686	6.58	14.72	1037
39	0.01698	0.4485	0.5841	-91.5	27.4	14.074	6.59	15.14	1015
40	0.01737	0.4194	0.5579	-78.9	42.7	14.463	6.59	15.55	995
42	0.01823	0.3681	0.5067	-53.0	74.6	15.241	6.61	16.34	954
44	0.01920	0.3261	0.4581	-26.4	108.1	16.019	6.63	17.07	916
46	0.02030	0.2935	0.4130	0.2	142.3	16.779	6.69	17.71	881
48	0.02152	0.2706	0.3721	27.5	178.2	17.542	6.74	18.11	853
50	0.02285	0.2544	0.3357	54.8	214.7	18.287	6.79	18.34	829
52	0.02427	0.2442	0.3036	81.5	251.4	19.008	6.83	18.39	811
54	0.02576	0.2400	0.2758	107.7	288.0	19.699	6.87	18.22	798
56	0.02731	0.2398	0.2516	133.3	324.5	20.362	6.90	17.92	789
58	0.02889	0.2428	0.2307	157.7	360.0	20.984	6.92	17.53	784
60	0.03048	0.2480	0.2127	181.3	394.6	21.572	6.96	17.12	781
65	0.03445	0.2667	0.1776	236.6	477.8	22.904	7.08	16.20	781
70	0.03836	0.2901	0.1526	288.5	557.0	24.078	7.27	15.54	788
75	0.04218	0.3157	0.1341	338.3	633.6	25.135	7.53	15.13	797
80	0.04592	0.3420	0.1198	387.2	708.6	26.104	7.84	14.92	807
85	0.04957	0.3686	0.1085	436.0	783.0	27.006	8.20	14.87	817
90	0.05315	0.3949	0.0992	485.4	857.5	27.857	8.59	14.93	828
95	0.05667	0.4211	0.0915	535.8	932.5	28.668	9.00	15.08	840
100	0.06013	0.4469	0.0850	587.4	1008.3	29.446	9.42	15.27	851
120	0.07350	0.5464	0.0662	809.8	1324.3	32.324	11.00	16.20	897
140	0.08640	0.6418	0.0547	1050.3	1655.1	34.872	11.95	16.83	951
160	0.09901	0.7340	0.0468	1300.8	1993.9	37.134	12.31	17.00	1006
180	0.11143	0.8241	0.0410	1552.4	2332.4	39.128	12.27	16.82	1063
200	0.12371	0.9126	0.0365	1799.6	2665.5	40.882	12.02	16.48	1119
220	0.13590	1.0000	0.0329	2039.9	2991.2	42.435	11.70	16.09	1173
240	0.14801	1.0865	0.0300	2273.2	3309.2	43.819	11.39	15.73	1225
260	0.16007	1.1724	0.0275	2500.3	3620.7	45.066	11.13	15.43	1275
280	0.17208	1.2577	0.0255	2722.3	3926.9	46.200	10.92	15.20	1323
300	0.18414	1.3443	0.0237	2941.5	4230.5	47.247	10.77	15.01	1369
350	0.21394	1.5545	0.0202	3476.0	4973.6	49.537	10.54	14.75	1475
400	0.24363	1.7635	0.0176	4002.2	5707.6	51.498	10.45	14.63	1571
450	0.27326	1.9716	0.0156	4524.7	6437.5	53.219	10.42	14.59	1661
500	0.30284	2.1793	0.0141	5046.8	7166.6	54.754	10.41	14.57	1746
550	0.33239	2.3865	0.0128	5568.0	7894.8	56.142	10.42	14.57	1827
600	0.36192	2.5936	0.0117	6090.0	8623.5	57.409	10.43	14.58	1903
700	0.42095	3.0071	0.0100	7136.5	10083.1	59.660	10.49	14.62	2048
800	0.47993	3.4203	0.0088	8190.0	11549.5	61.617	10.58	14.71	2181
900	0.53890	3.8332	0.0078	9254.0	13026.4	63.355	10.70	14.83	2305
1000	0.59785	4.2460	0.0070	10331.8	14516.8	64.928	10.86	14.99	2421
1200	0.71574	5.0713	0.0058	12542.7	17552.9	67.682	11.24	15.37	2633
1400	0.83360	5.8964	0.0050	14835.8	20671.0	70.089	11.68	15.81	2825
1600	0.95146	6.7213	0.0044	17214.6	23874.8	72.205	12.10	16.22	3002
1800	1.06933	7.5463	0.0039	19680.4	27165.7	74.105	12.50	16.63	3168
2000	1.18726	8.3712	0.0035	22238.7	30549.5	75.954	12.95	17.09	3323
2500	1.48400	10.4334	0.0028	29179.3	39567.3	82.318	14.97	19.23	3661
3000	1.79328	12.4955	0.0023	37888.4	50441.4	89.639	20.17	25.06	3938

* TWO-PHASE BOUNDARY

7.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	V(DH/DV)$_P$ KJ/KG	V(DP/DU)$_V$ MPA-CU M/KJ X 10^2	-V(DP/DV)$_T$ MPA	-(DV/DT)/V$_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 15.968	80.5666	844.9	0.24430	128.2933	0.00760	97.46	298.16	0.00068	1.26411	1.9633
16	80.5475	845.3	0.24413	128.1504	0.00761	97.68	297.03	0.00068	1.26404	1.9553
17	79.9143	848.5	0.23909	122.1251	0.00806	103.51	265.12	0.00068	1.26180	1.7507
18	79.2588	849.6	0.23410	116.0489	0.00850	108.05	239.40	0.00068	1.25948	1.6008
19	78.5724	850.1	0.22924	110.2150	0.00894	111.26	218.17	0.00067	1.25706	1.4898
20	77.8601	850.4	0.22459	104.7199	0.00935	114.31	200.45	0.00066	1.25455	1.3945
21	77.1150	849.3	0.22001	99.2809	0.00977	117.69	185.39	0.00066	1.25193	1.3069
22	76.3500	851.1	0.21557	94.6381	0.01012	120.32	172.53	0.00066	1.24923	1.2354
23	75.5655	845.5	0.21141	89.1232	0.01060	122.33	161.46	0.00065	1.24648	1.1831
24	74.7481	840.7	0.20730	84.0149	0.01107	123.78	151.72	0.00064	1.24361	1.1404
25	73.9086	834.2	0.20338	78.9602	0.01157	124.76	143.14	0.00063	1.24067	1.1072
26	73.0392	827.1	0.19956	74.0861	0.01209	125.27	135.47	0.00062	1.23764	1.0814
27	72.1426	819.5	0.19575	69.3888	0.01264	125.42	128.58	0.00060	1.23451	1.0617
28	71.2161	810.7	0.19194	64.7641	0.01323	125.26	122.32	0.00059	1.23128	1.0473
29	70.2596	801.1	0.18816	60.3127	0.01385	124.82	116.61	0.00058	1.22795	1.0366
30	69.2709	790.3	0.18445	55.9937	0.01452	124.14	111.36	0.00056	1.22452	1.0292
31	68.2493	779.5	0.18064	51.8953	0.01521	122.79	106.49	0.00055	1.22098	1.0283
32	67.1955	768.5	0.17681	48.0249	0.01593	121.28	101.97	0.00053	1.21734	1.0293
33	66.1095	757.1	0.17302	44.3451	0.01669	119.65	97.75	0.00052	1.21359	1.0321
34	64.9888	745.3	0.16922	40.8590	0.01749	117.94	93.78	0.00050	1.20973	1.0363
35	63.8360	733.3	0.16545	37.5682	0.01833	116.14	90.04	0.00049	1.20577	1.0423
36	62.6474	721.4	0.16171	34.4949	0.01921	114.25	86.51	0.00047	1.20169	1.0496
37	61.4259	708.6	0.15796	31.5377	0.02019	112.31	83.17	0.00046	1.19751	1.0594
38	60.1709	696.7	0.15423	28.8802	0.02113	110.31	80.00	0.00045	1.19323	1.0679
39	58.8836	684.7	0.15060	26.4106	0.02212	108.27	77.00	0.00044	1.18885	1.0768
40	57.5659	673.0	0.14699	24.1448	0.02311	106.21	74.14	0.00043	1.18437	1.0856
42	54.8551	651.4	0.13975	20.1923	0.02509	102.06	68.90	0.00041	1.17520	1.1033
44	52.0711	633.0	0.13262	16.9828	0.02697	98.31	64.24	0.00040	1.16583	1.1157
46	49.2584	620.1	0.12523	14.4590	0.02856	95.01	60.18	0.00039	1.15642	1.1217
48	46.4718	612.2	0.11872	12.5758	0.02958	91.89	56.70	0.00039	1.14714	1.1176
50	43.7729	608.7	0.11296	11.1370	0.03014	89.06	53.79	0.00040	1.13821	1.1080
52	41.2091	609.5	0.10789	10.0635	0.03017	86.56	51.41	0.00041	1.12976	1.0924
54	38.8158	615.6	0.10347	9.3166	0.02960	84.40	49.51	0.00043	1.12192	1.0689
56	36.6163	625.5	0.09960	8.7809	0.02865	82.62	48.02	0.00045	1.11475	1.0418
58	34.6166	638.8	0.09625	8.4036	0.02745	81.18	46.88	0.00048	1.10825	1.0126
60	32.8099	655.1	0.09319	8.1382	0.02613	80.18	46.02	0.00051	1.10241	0.9826
65	29.0283	706.2	0.08645	7.7421	0.02294	79.23	44.77	0.00061	1.09024	0.9156
70	26.0692	770.1	0.08055	7.5635	0.02018	79.48	44.34	0.00071	1.08079	0.8671
75	23.7060	844.3	0.07516	7.4838	0.01792	79.59	44.42	0.00080	1.07328	0.8445
80	21.7779	927.7	0.07016	7.4491	0.01609	81.44	44.82	0.00090	1.06718	0.8214
85	20.1741	1019.4	0.06555	7.4365	0.01459	85.04	45.46	0.00102	1.06212	0.7948
90	18.8139	1118.3	0.06137	7.4304	0.01336	88.84	46.26	0.00114	1.05785	0.7776
95	17.6464	1223.8	0.05761	7.4312	0.01232	92.80	47.17	0.00126	1.05419	0.7664
100	16.6298	1334.6	0.05429	7.4325	0.01144	97.56	48.83	0.00138	1.05102	0.7642
120	13.6060	1818.5	0.04426	7.4343	0.00891	121.08	55.79	0.00198	1.04160	0.7464
140	11.5745	2283.4	0.03958	7.4281	0.00737	138.67	60.57	0.00256	1.03531	0.7350
160	10.1003	2691.9	0.03763	7.4137	0.00631	150.44	64.26	0.00315	1.03077	0.7259
180	8.9746	3037.3	0.03719	7.3960	0.00554	157.85	67.38	0.00376	1.02730	0.7182
200	8.0834	3333.9	0.03753	7.3773	0.00494	162.59	70.21	0.00439	1.02457	0.7116
220	7.3585	3600.6	0.03821	7.3588	0.00447	166.03	72.86	0.00505	1.02235	0.7061
240	6.7563	3854.2	0.03895	7.3410	0.00408	169.07	75.41	0.00573	1.02051	0.7017
260	6.2474	4105.8	0.03961	7.3243	0.00376	172.19	77.90	0.00643	1.01895	0.6981
280	5.8112	4360.8	0.04013	7.3087	0.00348	175.59	80.35	0.00716	1.01762	0.6954
300	5.4307	4626.5	0.04051	7.3002	0.00324	179.32	82.78	0.00792	1.01646	0.6929
350	4.6743	5304.5	0.04100	7.2663	0.00278	189.96	88.79	0.00992	1.01415	0.6892
400	4.1046	6009.9	0.04108	7.2384	0.00243	201.73	94.75	0.01209	1.01242	0.6871
450	3.6596	6733.7	0.04098	7.2154	0.00217	214.10	100.66	0.01444	1.01107	0.6859
500	3.3021	7461.6	0.04086	7.1961	0.00195	226.53	106.52	0.01695	1.00998	0.6851
550	3.0085	8195.7	0.04071	7.1799	0.00178	239.05	112.32	0.01964	1.00909	0.6845
600	2.7630	8934.7	0.04055	7.1661	0.00163	251.57	118.06	0.02249	1.00835	0.6841
700	2.3756	10432.9	0.04019	7.1437	0.00140	276.69	129.35	0.02867	1.00718	0.6836
800	2.0836	11970.1	0.03974	7.1266	0.00123	302.09	140.37	0.03548	1.00629	0.6835
900	1.8556	13557.4	0.03918	7.1130	0.00109	327.94	151.14	0.04289	1.00560	0.6836
1000	1.6726	15202.5	0.03854	7.1020	0.00099	440.56	161.65	0.06326	1.00505	0.5500
1200	1.3972	18667.3	0.03714	7.0854	0.00082	511.13	181.99	0.08568	1.00422	0.5473
1400	1.1996	22358.6	0.03569	7.0733	0.00071	583.34	201.52	0.11076	1.00362	0.5460
1600	1.0510	26197.5	0.03440	7.0643	0.00062	655.63	220.34	0.13841	1.00317	0.5453
1800	0.9352	30172.1	0.03327	7.0570	0.00055	728.67	238.55	0.16871	1.00282	0.5443
2000	0.8423	34419.8	0.03209	7.0508	0.00050	807.64	256.23	0.20205	1.00254	0.5420
2500	0.6739	48291.4	0.02776	7.0306	0.00040	1110.37	298.60	0.30846	1.00203	0.5172
3000	0.5576	74837.9	0.02075	6.9679	0.00033	1865.56	340.11	0.48061	1.00168	0.4568

* TWO-PHASE BOUNDARY

8.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 16.253	0.01234	1.6420	1.010	-303.9	-205.1	5.142	4.99	6.53	1465
17	0.01241	1.6009	0.9901	-299.4	-200.1	5.442	5.13	6.73	1450
18	0.01251	1.5400	0.9949	-293.3	-193.2	5.838	5.30	7.11	1437
19	0.01262	1.4780	0.9947	-286.8	-185.9	6.232	5.46	7.48	1424
20	0.01273	1.4176	0.9904	-280.1	-178.3	6.624	5.59	7.83	1409
21	0.01284	1.3626	0.9829	-273.0	-170.3	7.014	5.71	8.16	1396
22	0.01296	1.3074	0.9726	-265.7	-161.9	7.402	5.82	8.49	1382
23	0.01309	1.2612	0.9603	-258.0	-153.3	7.786	5.91	8.79	1370
24	0.01323	1.2048	0.9469	-250.1	-144.3	8.168	6.00	9.12	1354
25	0.01337	1.1497	0.9317	-242.0	-135.0	8.547	6.07	9.45	1337
26	0.01352	1.0957	0.9153	-233.6	-125.4	8.924	6.14	9.78	1320
27	0.01367	1.0434	0.8978	-224.9	-115.5	9.299	6.21	10.11	1303
28	0.01384	0.9928	0.8791	-215.9	-105.2	9.672	6.27	10.44	1286
29	0.01401	0.9423	0.8593	-206.7	-94.6	10.045	6.33	10.79	1268
30	0.01420	0.8935	0.8385	-197.2	-83.7	10.416	6.37	11.13	1249
31	0.01439	0.8453	0.8166	-187.5	-72.4	10.786	6.41	11.48	1230
32	0.01460	0.7993	0.7939	-177.5	-60.7	11.156	6.45	11.83	1210
33	0.01481	0.7555	0.7704	-167.2	-48.7	11.525	6.48	12.17	1191
34	0.01504	0.7134	0.7465	-156.7	-36.4	11.893	6.51	12.52	1171
35	0.01529	0.6734	0.7222	-146.0	-23.7	12.261	6.54	12.87	1151
36	0.01554	0.6345	0.6978	-135.0	-10.7	12.628	6.56	13.24	1131
37	0.01582	0.5986	0.6734	-123.8	2.8	12.996	6.58	13.59	1112
38	0.01611	0.5644	0.6489	-112.3	16.5	13.363	6.60	13.95	1092
39	0.01641	0.5326	0.6244	-100.6	30.7	13.730	6.61	14.30	1073
40	0.01674	0.5024	0.5998	-88.8	45.1	14.097	6.62	14.64	1054
42	0.01745	0.4474	0.5516	-64.5	75.1	14.828	6.63	15.33	1017
44	0.01824	0.4026	0.5050	-39.6	106.4	15.555	6.65	15.93	982
46	0.01912	0.3647	0.4611	-14.7	138.3	16.263	6.71	16.51	947
48	0.02009	0.3360	0.4206	11.1	171.7	16.976	6.76	16.95	918
50	0.02114	0.3135	0.3835	36.9	206.0	17.675	6.80	17.28	893
52	0.02227	0.2983	0.3503	62.6	240.7	18.356	6.84	17.45	872
54	0.02346	0.2882	0.3206	88.0	275.7	19.015	6.88	17.49	856
56	0.02471	0.2824	0.2943	113.2	310.9	19.655	6.92	17.41	843
58	0.02600	0.2806	0.2712	137.5	345.5	20.264	6.95	17.23	834
60	0.02732	0.2819	0.2508	161.2	379.8	20.844	6.98	16.98	828
65	0.03068	0.2941	0.2100	217.5	462.9	22.176	7.11	16.28	821
70	0.03403	0.3128	0.1802	270.6	542.8	23.360	7.30	15.71	821
75	0.03734	0.3348	0.1580	321.7	620.3	24.430	7.55	15.35	825
80	0.04059	0.3590	0.1408	371.7	696.5	25.413	7.87	15.15	831
85	0.04380	0.3840	0.1271	421.6	772.0	26.329	8.22	15.09	839
90	0.04694	0.4096	0.1160	472.0	847.5	27.191	8.62	15.14	848
95	0.05004	0.4349	0.1068	523.1	923.5	28.013	9.02	15.27	858
100	0.05309	0.4605	0.0991	575.5	1000.2	28.800	9.44	15.44	868
120	0.06494	0.5604	0.0771	800.5	1320.1	31.714	11.02	16.39	913
140	0.07623	0.6547	0.0632	1042.7	1652.6	34.275	11.97	16.92	962
160	0.08733	0.7475	0.0539	1294.4	1993.0	36.548	12.33	17.07	1017
180	0.09825	0.8380	0.0471	1546.9	2332.9	38.550	12.29	16.88	1073
200	0.10904	0.9270	0.0419	1794.7	2667.1	40.310	12.03	16.53	1128
220	0.11974	1.0148	0.0377	2035.6	2993.5	41.866	11.71	16.13	1182
240	0.13037	1.1016	0.0343	2269.4	3312.3	43.253	11.40	15.76	1234
260	0.14095	1.1877	0.0315	2496.9	3624.4	44.503	11.13	15.46	1284
280	0.15148	1.2733	0.0292	2719.3	3931.1	45.639	10.93	15.22	1332
300	0.16207	1.3605	0.0271	2938.9	4235.5	46.688	10.77	15.03	1378
350	0.18818	1.5711	0.0231	3474.0	4979.4	48.980	10.55	14.76	1483
400	0.21418	1.7803	0.0202	4000.5	5714.0	50.944	10.45	14.64	1579
450	0.24012	1.9885	0.0179	4523.4	6444.4	52.665	10.43	14.60	1668
500	0.26602	2.1963	0.0161	5045.7	7173.8	54.201	10.42	14.58	1753
550	0.29188	2.4036	0.0146	5567.2	7902.2	55.590	10.42	14.57	1833
600	0.31773	2.6107	0.0134	6089.3	8631.2	56.857	10.44	14.58	1910
700	0.36939	3.0243	0.0114	7136.0	10091.0	59.108	10.49	14.63	2054
800	0.42101	3.4375	0.0100	8189.6	11557.7	61.065	10.58	14.71	2186
900	0.47261	3.8504	0.0089	9253.8	13034.6	62.803	10.70	14.83	2310
1000	0.52419	4.2632	0.0080	10331.6	14525.1	64.377	10.86	14.99	2426
1200	0.62735	5.0885	0.0067	12542.6	17561.4	67.131	11.25	15.37	2637
1400	0.73048	5.9135	0.0057	14835.7	20679.6	69.538	11.68	15.81	2829
1600	0.83361	6.7385	0.0050	17214.6	23883.4	71.655	12.10	16.22	3006
1800	0.93674	7.5634	0.0044	19680.1	27174.1	73.554	12.50	16.62	3172
2000	1.03993	8.3883	0.0040	22237.3	30556.8	75.402	12.94	17.08	3327
2500	1.29946	10.4505	0.0032	29158.2	39553.9	81.757	14.88	19.13	3666
3000	1.56927	12.5126	0.0027	37756.2	50310.4	89.037	19.79	24.63	3944

* TWO-PHASE BOUNDARY

8.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY, W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 16.253	81.0262	860.5	0.24956	133.0474	0.00759	100.44	304.73	0.00068	1.26573	1.9811
17	80.5578	876.8	0.23972	128.9649	0.00768	104.76	279.55	0.00070	1.26407	1.7963
18	79.9223	879.9	0.23480	123.0814	0.00808	109.49	251.89	0.00069	1.26183	1.6363
19	79.2669	880.9	0.23004	117.1587	0.00849	112.90	229.28	0.00069	1.25951	1.5190
20	78.5812	880.8	0.22547	111.3942	0.00889	116.11	210.37	0.00068	1.25709	1.4188
21	77.8729	881.4	0.22110	106.1125	0.00926	119.69	194.42	0.00068	1.25459	1.3262
22	77.1386	880.4	0.21681	100.8483	0.00964	122.49	180.78	0.00067	1.25201	1.2531
23	76.3826	882.0	0.21271	96.3300	0.00997	124.65	169.02	0.00067	1.24935	1.1922
24	75.6049	877.4	0.20886	91.0901	0.01040	126.26	158.77	0.00066	1.24662	1.1470
25	74.8090	872.1	0.20506	86.0107	0.01083	127.40	149.79	0.00065	1.24383	1.1107
26	73.9871	865.9	0.20134	81.0675	0.01129	128.07	141.79	0.00064	1.24095	1.0823
27	73.1404	859.3	0.19765	76.3177	0.01176	128.38	134.61	0.00063	1.23799	1.0599
28	72.2675	852.4	0.19397	71.7474	0.01225	128.38	128.13	0.00061	1.23494	1.0424
29	71.3703	844.2	0.19035	67.2527	0.01278	128.11	122.23	0.00060	1.23182	1.0292
30	70.4457	835.3	0.18684	62.9424	0.01332	127.59	116.83	0.00059	1.22860	1.0189
31	69.4946	825.6	0.18323	58.7436	0.01390	126.39	111.85	0.00057	1.22530	1.0156
32	68.5164	815.8	0.17958	54.7641	0.01450	125.04	107.23	0.00056	1.22191	1.0142
33	67.5114	805.9	0.17598	51.0066	0.01510	123.57	102.94	0.00054	1.21843	1.0140
34	66.4798	795.6	0.17238	47.4290	0.01574	122.03	98.93	0.00053	1.21487	1.0152
35	65.4218	785.3	0.16880	44.0567	0.01639	120.40	95.16	0.00051	1.21122	1.0175
36	64.3373	774.4	0.16524	40.8199	0.01709	118.70	91.62	0.00050	1.20749	1.0217
37	63.2256	764.1	0.16176	37.8475	0.01779	116.93	88.27	0.00049	1.20367	1.0262
38	62.0887	753.6	0.15835	35.0456	0.01852	115.12	85.10	0.00048	1.19978	1.0315
39	60.9269	743.1	0.15505	32.4475	0.01924	113.27	82.10	0.00047	1.19581	1.0365
40	59.7429	732.7	0.15174	30.0121	0.01999	111.40	79.26	0.00046	1.19177	1.0418
42	57.3140	712.5	0.14512	25.6429	0.02151	107.61	74.03	0.00044	1.18352	1.0543
44	54.8247	696.1	0.13848	22.0737	0.02288	103.88	69.35	0.00043	1.17510	1.0632
46	52.3052	683.1	0.13138	19.0754	0.02418	100.54	65.22	0.00042	1.16662	1.0714
48	49.7865	674.2	0.12502	16.7280	0.02514	97.60	61.61	0.00042	1.15818	1.0701
50	47.3102	668.3	0.11920	14.8314	0.02586	94.88	58.51	0.00042	1.14993	1.0658
52	44.9111	667.3	0.11397	13.3977	0.02614	92.38	55.88	0.00042	1.14197	1.0552
54	42.6222	669.9	0.10928	12.2818	0.02610	90.19	53.70	0.00044	1.13441	1.0410
56	40.4657	676.0	0.10512	11.4269	0.02576	88.30	51.91	0.00045	1.12732	1.0237
58	38.4552	685.6	0.10147	10.7920	0.02513	86.70	50.47	0.00047	1.12074	1.0029
60	36.5979	698.5	0.09812	10.3163	0.02431	85.51	49.34	0.00050	1.11469	0.9797
65	32.5995	743.2	0.09062	9.5875	0.02190	84.01	47.52	0.00057	1.10173	0.9207
70	29.3897	801.5	0.08403	9.1934	0.01960	83.75	46.69	0.00065	1.09140	0.8759
75	26.7843	871.1	0.07810	8.9679	0.01762	83.41	46.48	0.00073	1.08307	0.8550
80	24.6339	951.3	0.07266	8.8430	0.01592	84.88	46.64	0.00082	1.07622	0.8322
85	22.8327	1040.6	0.06770	8.7688	0.01450	88.22	47.08	0.00092	1.07051	0.8051
90	21.3028	1138.0	0.06323	8.7248	0.01330	91.80	47.70	0.00102	1.06568	0.7865
95	19.9830	1242.0	0.05924	8.6903	0.01229	95.56	48.46	0.00113	1.06152	0.7742
100	18.8344	1352.2	0.05572	8.6726	0.01142	99.49	49.75	0.00123	1.05792	0.7723
120	15.3987	1834.1	0.04545	8.6301	0.00893	122.37	56.44	0.00175	1.04718	0.7558
140	13.1174	2301.3	0.04023	8.5880	0.00735	139.58	61.06	0.00226	1.04009	0.7403
160	11.4504	2711.4	0.03817	8.5589	0.00630	151.15	64.65	0.00278	1.03493	0.7301
180	10.1779	3058.2	0.03766	8.5295	0.00552	158.45	67.71	0.00332	1.03101	0.7214
200	9.1706	3355.9	0.03795	8.5012	0.00492	163.14	70.49	0.00387	1.02791	0.7141
220	8.3512	3623.6	0.03859	8.4745	0.00445	166.56	73.12	0.00445	1.02539	0.7081
240	7.6703	3878.0	0.03930	8.4496	0.00407	169.59	75.65	0.00505	1.02330	0.7032
260	7.0948	4130.3	0.03993	8.4266	0.00374	172.71	78.13	0.00567	1.02154	0.6994
280	6.6015	4385.8	0.04044	8.4053	0.00347	176.12	80.58	0.00631	1.02003	0.6964
300	6.1701	4653.2	0.04080	8.3944	0.00323	179.86	83.01	0.00698	1.01872	0.6938
350	5.3141	5332.0	0.04124	8.3490	0.00277	190.54	89.03	0.00875	1.01610	0.6897
400	4.6690	6038.0	0.04129	8.3119	0.00242	202.36	95.02	0.01066	1.01414	0.6874
450	4.1646	6762.3	0.04116	8.2815	0.00216	214.78	100.95	0.01272	1.01260	0.6861
500	3.7592	7490.6	0.04102	8.2561	0.00195	227.28	106.85	0.01493	1.01137	0.6852
550	3.4260	8225.1	0.04086	8.2348	0.00177	239.87	112.68	0.01730	1.01036	0.6846
600	3.1473	8964.3	0.04069	8.2166	0.00163	252.47	118.46	0.01981	1.00951	0.6841
700	2.7072	10462.9	0.04030	8.1873	0.00140	277.73	129.82	0.02525	1.00818	0.6836
800	2.3753	12000.5	0.03983	8.1649	0.00123	303.29	140.91	0.03125	1.00717	0.6835
900	2.1159	13588.2	0.03927	8.1471	0.00109	329.29	151.74	0.03777	1.00639	0.6836
1000	1.9077	15233.8	0.03862	8.1328	0.00098	440.56	162.32	0.05546	1.00576	0.5523
1200	1.5940	18699.5	0.03720	8.1111	0.00082	511.13	182.80	0.07510	1.00481	0.5497
1400	1.3690	22391.6	0.03574	8.0954	0.00071	583.34	202.45	0.09705	1.00413	0.5486
1600	1.1996	26230.7	0.03445	8.0836	0.00062	655.60	221.39	0.12127	1.00362	0.5479
1800	1.0675	30202.3	0.03331	8.0742	0.00055	728.49	239.71	0.14778	1.00322	0.5470
2000	0.9616	34436.3	0.03214	8.0662	0.00050	806.90	257.50	0.17691	1.00290	0.5449
2500	0.7696	48091.1	0.02795	8.0422	0.00040	1101.32	300.12	0.26926	1.00232	0.5214
3000	0.6372	73647.0	0.02115	7.9735	0.00033	1819.14	341.77	0.41728	1.00192	0.4627

* TWO-PHASE BOUNDARY

10.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 16.808	0.01221	1.7491	1.024	-302.1	-179.9	5.181	5.07	6.58	1506
17	0.01223	1.7383	1.024	-301.0	-178.6	5.256	5.11	6.64	1503
18	0.01232	1.6821	1.021	-295.1	-171.8	5.645	5.27	6.97	1491
19	0.01241	1.6243	1.012	-288.9	-164.7	6.029	5.42	7.27	1476
20	0.01251	1.5672	1.011	-282.4	-157.3	6.411	5.57	7.61	1464
21	0.01262	1.5088	1.006	-275.7	-149.5	6.790	5.69	7.93	1450
22	0.01272	1.4503	0.9983	-268.7	-141.4	7.166	5.80	8.25	1436
23	0.01284	1.3999	0.9884	-261.4	-133.1	7.539	5.90	8.55	1424
24	0.01296	1.3481	0.9764	-253.9	-124.4	7.909	5.99	8.84	1410
25	0.01308	1.3034	0.9632	-246.2	-115.4	8.276	6.07	9.12	1399
26	0.01321	1.2515	0.9495	-238.2	-106.1	8.640	6.14	9.41	1385
27	0.01335	1.2002	0.9342	-230.0	-96.5	9.000	6.21	9.71	1370
28	0.01349	1.1494	0.9179	-221.6	-86.7	9.359	6.28	10.01	1354
29	0.01364	1.1003	0.9005	-212.9	-76.5	9.715	6.34	10.31	1338
30	0.01379	1.0532	0.8822	-204.0	-66.1	10.070	6.38	10.60	1322
31	0.01396	1.0079	0.8630	-194.9	-55.3	10.422	6.43	10.89	1307
32	0.01413	0.9630	0.8431	-185.5	-44.3	10.773	6.47	11.19	1290
33	0.01431	0.9196	0.8225	-176.0	-32.9	11.121	6.51	11.48	1273
34	0.01449	0.8772	0.8012	-166.3	-21.3	11.468	6.54	11.77	1256
35	0.01469	0.8367	0.7794	-156.3	-9.4	11.814	6.57	12.06	1239
36	0.01490	0.7978	0.7574	-146.2	2.8	12.157	6.60	12.34	1221
37	0.01511	0.7606	0.7352	-135.8	15.3	12.499	6.62	12.63	1204
38	0.01534	0.7254	0.7129	-125.3	28.0	12.840	6.64	12.90	1187
39	0.01557	0.6901	0.6906	-114.7	41.1	13.179	6.66	13.19	1170
40	0.01582	0.6588	0.6686	-103.8	54.4	13.516	6.66	13.46	1153
42	0.01635	0.6014	0.6249	-81.7	81.8	14.185	6.68	13.98	1121
44	0.01693	0.5501	0.5821	-59.1	110.3	14.847	6.70	14.47	1090
46	0.01757	0.5076	0.5408	-36.5	139.2	15.489	6.76	14.94	1059
48	0.01825	0.4709	0.5016	-13.0	169.5	16.133	6.81	15.35	1031
50	0.01899	0.4405	0.4649	10.7	200.5	16.767	6.85	15.69	1005
52	0.01977	0.4159	0.4308	34.5	232.2	17.388	6.89	15.96	982
54	0.02061	0.3968	0.3996	58.3	264.3	17.994	6.93	16.15	962
56	0.02148	0.3825	0.3711	82.2	297.0	18.589	6.97	16.27	945
58	0.02239	0.3723	0.3452	105.7	329.6	19.161	7.00	16.31	931
60	0.02334	0.3655	0.3218	128.9	362.3	19.714	7.04	16.30	920
65	0.02580	0.3615	0.2729	185.3	443.3	21.012	7.17	16.09	901
70	0.02835	0.3702	0.2352	239.6	523.0	22.193	7.36	15.76	891
75	0.03090	0.3855	0.2062	292.2	601.2	23.272	7.61	15.50	886
80	0.03345	0.4039	0.1835	343.8	678.3	24.267	7.91	15.38	886
85	0.03598	0.4247	0.1653	395.3	755.0	25.198	8.27	15.35	888
90	0.03848	0.4468	0.1505	447.1	831.9	26.077	8.66	15.41	892
95	0.04096	0.4702	0.1382	499.6	909.3	26.913	9.06	15.54	898
100	0.04342	0.4938	0.1278	553.2	987.4	27.714	9.48	15.71	905
120	0.05297	0.5907	0.0987	782.4	1312.1	30.672	11.05	16.61	942
140	0.06221	0.6861	0.0807	1028.0	1650.1	33.276	12.00	17.15	990
160	0.07104	0.7761	0.0682	1282.0	1992.4	35.562	12.36	17.21	1039
180	0.07985	0.8673	0.0595	1536.2	2334.7	37.578	12.31	16.99	1094
200	0.08854	0.9568	0.0528	1785.4	2670.8	39.348	12.05	16.62	1148
220	0.09715	1.0451	0.0475	2027.3	2998.8	40.912	11.73	16.21	1202
240	0.10570	1.1324	0.0432	2262.0	3319.0	42.305	11.41	15.83	1253
260	0.11419	1.2190	0.0396	2490.3	3632.2	43.559	11.15	15.51	1302
280	0.12265	1.3049	0.0366	2713.3	3939.9	44.699	10.94	15.27	1349
300	0.13119	1.3936	0.0340	2933.8	4245.7	45.752	10.79	15.07	1395
350	0.15212	1.6046	0.0290	3470.0	4991.2	48.050	10.56	14.79	1499
400	0.17295	1.8141	0.0252	3997.5	5727.0	50.016	10.46	14.66	1594
450	0.19373	2.0226	0.0224	4520.9	6458.2	51.740	10.43	14.61	1683
500	0.21446	2.2304	0.0201	5043.7	7188.3	53.277	10.42	14.59	1767
550	0.23517	2.4378	0.0182	5565.5	7917.2	54.666	10.43	14.58	1846
600	0.25586	2.6449	0.0167	6087.9	8646.5	55.934	10.44	14.59	1922
700	0.29720	3.0586	0.0143	7135.0	10106.9	58.187	10.49	14.63	2065
800	0.33850	3.4718	0.0125	8188.9	11573.9	60.144	10.58	14.71	2197
900	0.37979	3.8847	0.0111	9253.3	13051.2	61.882	10.71	14.84	2320
1000	0.42106	4.2974	0.0100	10331.2	14541.9	63.456	10.86	14.99	2435
1200	0.50359	5.1227	0.0083	12542.5	17578.4	66.211	11.25	15.37	2646
1400	0.58610	5.9477	0.0071	14835.7	20696.7	68.618	11.68	15.81	2837
1600	0.66860	6.7726	0.0062	17214.6	23900.6	70.734	12.10	16.22	3014
1800	0.75111	7.5975	0.0056	19679.8	27190.9	72.634	12.49	16.62	3179
2000	0.83366	8.4223	0.0050	22235.5	30572.0	74.481	12.93	17.06	3334
2500	1.04113	10.4844	0.0040	29126.2	39537.5	80.822	14.74	18.98	3674
3000	1.25599	12.5464	0.0033	37554.2	50114.1	88.037	19.21	23.97	3955

* TWO-PHASE BOUNDARY

10.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 16.808	81.8729	919.9	0.24645	143.2003	0.00715	106.03	316.91	0.00071	1.26874	1.9661
17	81.7600	922.0	0.24510	142.1202	0.00720	107.12	309.94	0.00071	1.26834	1.9216
18	81.1621	931.5	0.23860	136.5241	0.00748	112.22	278.08	0.00071	1.26621	1.7262
19	80.5558	939.9	0.23167	130.8463	0.00774	115.98	252.38	0.00071	1.26407	1.5825
20	79.9218	942.6	0.22727	125.2542	0.00807	119.53	230.97	0.00071	1.26182	1.4701
21	79.2664	943.0	0.22304	119.5946	0.00841	123.45	212.99	0.00071	1.25951	1.3687
22	78.5887	941.9	0.21893	113.9783	0.00876	126.57	197.68	0.00070	1.25711	1.2884
23	77.8936	942.9	0.21502	109.0437	0.00906	129.04	184.56	0.00070	1.25466	1.2223
24	77.1767	941.9	0.21121	104.0384	0.00939	130.93	173.15	0.00069	1.25214	1.1691
25	76.4428	942.9	0.20758	99.6355	0.00967	132.34	163.18	0.00068	1.24956	1.1240
26	75.6908	939.1	0.20418	94.7233	0.01002	133.27	154.38	0.00067	1.24692	1.0904
27	74.9239	934.7	0.20070	89.9250	0.01039	133.85	146.57	0.00066	1.24423	1.0633
28	74.1366	929.4	0.19723	85.2159	0.01077	134.11	139.55	0.00065	1.24147	1.0417
29	73.3292	923.7	0.19384	80.6838	0.01116	134.10	133.20	0.00064	1.23865	1.0241
30	72.5015	917.6	0.19059	76.3574	0.01155	133.85	127.43	0.00063	1.23576	1.0093
31	71.6523	911.6	0.18727	72.2213	0.01195	132.88	122.13	0.00061	1.23280	1.0011
32	70.7876	904.6	0.18397	68.1673	0.01237	131.78	117.27	0.00060	1.22979	0.9956
33	69.9029	897.2	0.18070	64.2854	0.01279	130.55	112.77	0.00059	1.22671	0.9915
34	68.9988	889.2	0.17743	60.5267	0.01324	129.26	108.59	0.00057	1.22358	0.9888
35	68.0764	881.1	0.17416	56.9585	0.01368	127.89	104.70	0.00056	1.22038	0.9871
36	67.1359	872.9	0.17091	53.5628	0.01414	126.44	101.05	0.00055	1.21713	0.9864
37	66.1783	864.5	0.16770	50.3323	0.01461	124.93	97.62	0.00054	1.21383	0.9867
38	65.2037	856.2	0.16457	47.2967	0.01507	123.38	94.40	0.00053	1.21047	0.9874
39	64.2133	846.5	0.16161	44.3160	0.01558	121.79	91.36	0.00052	1.20706	0.9896
40	63.2056	838.2	0.15871	41.6392	0.01606	120.18	88.48	0.00051	1.20360	0.9908
42	61.1498	822.5	0.15292	36.7751	0.01699	116.88	83.17	0.00049	1.19657	0.9945
44	59.0530	807.9	0.14703	32.4879	0.01792	113.60	78.42	0.00048	1.18942	0.9991
46	56.9271	798.2	0.14050	28.8948	0.01872	110.41	74.16	0.00047	1.18221	1.0034
48	54.7942	789.5	0.13451	25.8049	0.01944	107.36	70.37	0.00046	1.17499	1.0058
50	52.6712	783.0	0.12889	23.2021	0.02004	104.64	67.02	0.00046	1.16785	1.0048
52	50.5770	779.2	0.12366	21.0339	0.02048	102.27	64.09	0.00046	1.16082	1.0001
54	48.5318	778.5	0.11881	19.2554	0.02075	100.11	61.53	0.00046	1.15399	0.9930
56	46.5526	780.7	0.11439	17.8052	0.02084	98.15	59.34	0.00047	1.14741	0.9836
58	44.6539	785.5	0.11041	16.6230	0.02077	96.42	57.47	0.00048	1.14112	0.9723
60	42.8456	793.3	0.10669	15.6610	0.02055	95.05	55.91	0.00049	1.13515	0.9588
65	38.7532	825.8	0.09822	14.0104	0.01948	92.92	53.06	0.00054	1.12172	0.9186
70	35.2794	875.2	0.09063	13.0614	0.01801	91.90	51.41	0.00059	1.11040	0.8818
75	32.3603	938.1	0.08376	12.4759	0.01653	90.89	50.57	0.00065	1.10095	0.8627
80	29.8978	1011.8	0.07755	12.0748	0.01520	91.69	50.28	0.00072	1.09303	0.8431
85	27.7951	1096.0	0.07193	11.8046	0.01401	94.55	50.34	0.00080	1.08629	0.8172
90	25.9853	1189.0	0.06691	11.6098	0.01296	97.71	50.65	0.00088	1.08052	0.7991
95	24.4121	1290.5	0.06246	11.4780	0.01204	101.10	51.15	0.00096	1.07552	0.7861
100	23.0330	1398.1	0.05857	11.3739	0.01124	103.72	51.83	0.00103	1.07115	0.7852
120	18.8773	1876.1	0.04731	11.1500	0.00885	125.38	57.97	0.00144	1.05805	0.7680
140	16.0754	2343.2	0.04183	11.0295	0.00732	141.76	62.22	0.00185	1.04929	0.7527
160	14.0768	2754.6	0.03922	10.9245	0.00625	152.83	65.56	0.00227	1.04306	0.7382
180	12.5242	3103.3	0.03857	10.8616	0.00548	159.85	68.46	0.00270	1.03825	0.7278
200	11.2944	3402.7	0.03877	10.8066	0.00488	164.39	71.14	0.00315	1.03445	0.7191
220	10.2934	3671.7	0.03934	10.7578	0.00441	167.73	73.69	0.00362	1.03136	0.7120
240	9.4610	3927.2	0.03999	10.7141	0.00403	170.71	76.18	0.00410	1.02880	0.7063
260	8.7570	4180.5	0.04058	10.6747	0.00371	173.82	78.63	0.00461	1.02664	0.7019
280	8.1531	4436.9	0.04104	10.6392	0.00344	177.23	81.07	0.00513	1.02478	0.6984
300	7.6226	4707.8	0.04136	10.6229	0.00320	180.97	83.49	0.00567	1.02316	0.6954
350	6.5738	5387.9	0.04172	10.5486	0.00274	191.71	89.53	0.00710	1.01995	0.6906
400	5.7819	6095.0	0.04171	10.4889	0.00241	203.61	95.56	0.00865	1.01753	0.6880
450	5.1619	6820.1	0.04153	10.4403	0.00214	216.15	101.55	0.01032	1.01564	0.6864
500	4.6628	7549.0	0.04135	10.4000	0.00193	228.78	107.50	0.01211	1.01412	0.6854
550	4.2523	8284.0	0.04115	10.3662	0.00176	241.51	113.40	0.01402	1.01287	0.6847
600	3.9084	9023.6	0.04095	10.3375	0.00162	254.25	119.25	0.01605	1.01183	0.6842
700	3.3648	10523.1	0.04053	10.2915	0.00139	279.81	130.75	0.02046	1.01017	0.6836
800	2.9542	12061.3	0.04003	10.2563	0.00122	305.67	141.98	0.02532	1.00893	0.6834
900	2.6330	13649.8	0.03944	10.2286	0.00109	331.98	152.95	0.03059	1.00796	0.6835
1000	2.3749	15296.1	0.03877	10.2062	0.00098	440.56	163.66	0.04454	1.00717	0.5569
1200	1.9857	18763.6	0.03732	10.1723	0.00082	511.13	184.40	0.06028	1.00600	0.5546
1400	1.7062	22457.5	0.03584	10.1479	0.00070	583.33	204.31	0.07787	1.00515	0.5536
1600	1.4957	26297.3	0.03453	10.1295	0.00062	655.56	223.49	0.09726	1.00451	0.5531
1800	1.3314	30264.6	0.03339	10.1150	0.00055	728.21	242.05	0.11847	1.00402	0.5524
2000	1.1995	34478.0	0.03224	10.1029	0.00049	805.77	260.06	0.14174	1.00362	0.5506
2500	0.9605	47802.4	0.02824	10.0701	0.00040	1087.47	303.19	0.21469	1.00290	0.5293
3000	0.7962	71842.6	0.02179	9.9893	0.00033	1748.06	345.18	0.32975	1.00240	0.4733

* TWO-PHASE BOUNDARY

12.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 17.345	0.01210	1.8521	1.038	-300.1	-154.9	5.220	5.15	6.63	1544
18	0.01215	1.8168	1.037	-296.3	-150.5	5.469	5.25	6.83	1537
19	0.01224	1.7629	1.035	-290.4	-143.6	5.847	5.41	7.13	1525
20	0.01233	1.7091	1.031	-284.2	-136.3	6.220	5.54	7.43	1514
21	0.01242	1.6510	1.027	-277.7	-128.7	6.588	5.67	7.74	1501
22	0.01252	1.5973	1.021	-271.0	-120.9	6.955	5.79	8.04	1489
23	0.01262	1.5426	1.013	-264.1	-112.7	7.319	5.89	8.33	1477
24	0.01272	1.4862	1.003	-256.9	-104.2	7.679	5.98	8.61	1463
25	0.01284	1.4391	0.9916	-249.5	-95.5	8.036	6.07	8.88	1451
26	0.01295	1.3900	0.9786	-241.9	-86.4	8.390	6.14	9.15	1439
27	0.01307	1.3454	0.9647	-234.0	-77.2	8.740	6.21	9.41	1427
28	0.01320	1.2977	0.9507	-226.0	-67.6	9.087	6.28	9.68	1414
29	0.01333	1.2560	0.9353	-217.7	-57.8	9.431	6.34	9.95	1400
30	0.01346	1.2023	0.9191	-209.3	-47.7	9.773	6.40	10.22	1386
31	0.01360	1.1560	0.9019	-200.6	-37.4	10.112	6.45	10.48	1371
32	0.01375	1.1136	0.8840	-191.8	-26.8	10.449	6.49	10.74	1357
33	0.01391	1.0708	0.8655	-182.8	-15.9	10.784	6.53	11.00	1343
34	0.01406	1.0288	0.8465	-173.5	-4.8	11.116	6.57	11.25	1327
35	0.01423	0.9889	0.8269	-164.2	6.6	11.446	6.60	11.50	1313
36	0.01440	0.9495	0.8069	-154.6	18.2	11.773	6.63	11.75	1297
37	0.01458	0.9134	0.7866	-144.9	30.1	12.098	6.66	11.99	1282
38	0.01477	0.8776	0.7660	-135.0	42.2	12.421	6.68	12.22	1267
39	0.01496	0.8431	0.7455	-125.0	54.6	12.742	6.70	12.45	1252
40	0.01517	0.8101	0.7249	-114.9	67.1	13.060	6.71	12.68	1237
42	0.01559	0.7470	0.6841	-94.2	92.9	13.689	6.73	13.13	1207
44	0.01606	0.6919	0.6441	-73.1	119.6	14.309	6.76	13.56	1178
46	0.01655	0.6457	0.6052	-52.1	146.6	14.909	6.82	13.96	1150
48	0.01708	0.6042	0.5677	-30.1	174.9	15.511	6.86	14.33	1124
50	0.01765	0.5690	0.5319	-7.9	203.9	16.103	6.90	14.65	1099
52	0.01825	0.5385	0.4982	14.5	233.5	16.683	6.94	14.93	1076
54	0.01888	0.5129	0.4667	37.0	263.6	17.251	6.98	15.16	1055
56	0.01955	0.4916	0.4373	59.8	294.3	17.811	7.02	15.35	1036
58	0.02024	0.4753	0.4101	82.3	325.2	18.352	7.06	15.46	1021
60	0.02096	0.4623	0.3851	104.7	356.2	18.877	7.10	15.55	1007
65	0.02285	0.4435	0.3313	159.9	434.2	20.127	7.23	15.63	979
70	0.02485	0.4390	0.2881	214.1	512.3	21.284	7.42	15.59	961
75	0.02689	0.4458	0.2537	267.3	589.9	22.355	7.67	15.49	949
80	0.02895	0.4593	0.2260	319.8	667.2	23.353	7.97	15.42	943
85	0.03101	0.4755	0.2037	372.2	744.3	24.288	8.32	15.45	940
90	0.03307	0.4942	0.1853	425.0	821.8	25.173	8.70	15.54	939
95	0.03511	0.5142	0.1700	478.5	899.8	26.017	9.10	15.69	941
100	0.03714	0.5351	0.1571	533.0	978.7	26.826	9.51	15.88	945
120	0.04511	0.6260	0.1208	765.5	1306.8	29.815	11.09	16.78	973
140	0.05285	0.7197	0.0984	1013.8	1648.0	32.443	12.04	17.30	1017
160	0.06040	0.8125	0.0832	1270.3	1995.0	34.760	12.40	17.36	1067
180	0.06761	0.8980	0.0723	1526.1	2337.4	36.778	12.34	17.13	1116
200	0.07490	0.9879	0.0638	1776.5	2675.3	38.558	12.08	16.70	1169
220	0.08211	1.0765	0.0573	2019.5	3004.8	40.128	11.75	16.27	1221
240	0.08926	1.1642	0.0521	2255.0	3326.1	41.527	11.43	15.89	1272
260	0.09637	1.2510	0.0477	2484.0	3640.4	42.785	11.17	15.57	1321
280	0.10344	1.3372	0.0441	2707.7	3949.0	43.928	10.96	15.31	1367
300	0.11061	1.4275	0.0409	2928.9	4256.2	44.985	10.80	15.11	1413
350	0.12809	1.6388	0.0348	3466.3	5003.3	47.288	10.57	14.81	1516
400	0.14547	1.8484	0.0303	3994.5	5740.2	49.257	10.47	14.68	1610
450	0.16280	2.0569	0.0269	4518.6	6472.2	50.983	10.44	14.62	1697
500	0.18009	2.2648	0.0241	5041.8	7202.9	52.521	10.43	14.60	1780
550	0.19736	2.4722	0.0219	5564.0	7932.3	53.911	10.43	14.59	1859
600	0.21461	2.6793	0.0201	6086.7	8661.9	55.180	10.44	14.59	1935
700	0.24906	3.0929	0.0172	7134.1	10122.9	57.433	10.49	14.63	2077
800	0.28349	3.5060	0.0150	8188.3	11590.2	59.391	10.58	14.72	2208
900	0.31790	3.9188	0.0133	9252.9	13067.7	61.130	10.71	14.84	2330
1000	0.35230	4.3315	0.0120	10331.0	14558.6	62.703	10.87	14.99	2445
1200	0.42107	5.1566	0.0100	12542.5	17595.4	65.458	11.25	15.37	2655
1400	0.48983	5.9815	0.0086	14835.8	20713.8	67.866	11.68	15.81	2845
1600	0.55859	6.8063	0.0075	17214.8	23917.8	69.982	12.10	16.22	3021
1800	0.62734	7.6311	0.0067	19679.7	27207.8	71.881	12.49	16.62	3186
2000	0.69613	8.4559	0.0060	22234.2	30587.7	73.728	12.92	17.05	3341
2500	0.86894	10.5178	0.0048	29102.7	39530.0	80.059	14.64	18.87	3682
3000	1.04737	12.5798	0.0040	37405.3	49973.8	87.227	18.78	23.48	3965

* TWO-PHASE BOUNDARY

12.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 17.346	82.6756	977.1	0.24393	153.1232	0.00678	111.38	329.05	0.00073	1.27159	1.9572
18	82.3055	984.2	0.23990	149.5335	0.00694	114.78	306.11	0.00074	1.27027	1.8211
19	81.7264	993.1	0.23428	144.0750	0.00718	118.83	276.63	0.00073	1.26822	1.6609
20	81.1312	999.7	0.22926	138.6583	0.00744	122.68	252.39	0.00073	1.26611	1.5293
21	80.5315	1001.9	0.22488	132.9611	0.00772	126.94	232.38	0.00073	1.26398	1.4161
22	79.9020	1004.2	0.22092	127.6311	0.00800	130.37	215.25	0.00073	1.26175	1.3267
23	79.2534	1004.6	0.21711	122.2533	0.00829	133.10	200.58	0.00073	1.25946	1.2547
24	78.5874	1002.8	0.21339	116.7973	0.00859	135.25	187.90	0.00072	1.25711	1.1966
25	77.9078	1004.0	0.20984	112.1188	0.00884	136.90	176.88	0.00071	1.25471	1.1472
26	77.2094	1003.1	0.20637	107.3243	0.00912	138.06	167.16	0.00070	1.25225	1.1075
27	76.4976	1003.4	0.20295	102.9186	0.00937	138.85	158.57	0.00069	1.24975	1.0742
28	75.7724	1001.0	0.19973	98.3287	0.00967	139.32	150.91	0.00068	1.24720	1.0483
29	75.0316	997.5	0.19654	93.7885	0.00997	139.52	144.03	0.00067	1.24461	1.0269
30	74.2761	992.6	0.19348	89.3044	0.01029	139.48	137.80	0.00066	1.24196	1.0093
31	73.5041	987.7	0.19035	84.9711	0.01061	138.71	132.13	0.00065	1.23926	0.9987
32	72.7171	983.8	0.18725	80.9802	0.01092	137.78	126.94	0.00064	1.23651	0.9894
33	71.9154	978.4	0.18422	77.0050	0.01124	136.73	122.16	0.00062	1.23371	0.9825
34	71.1002	972.5	0.18122	73.1453	0.01157	135.62	117.75	0.00061	1.23088	0.9771
35	70.2703	966.7	0.17822	69.4894	0.01190	134.42	113.66	0.00060	1.22799	0.9727
36	69.4279	960.2	0.17523	65.9188	0.01224	133.15	109.84	0.00059	1.22507	0.9696
37	68.5720	954.7	0.17226	62.6369	0.01256	131.82	106.28	0.00058	1.22210	0.9665
38	67.7045	948.1	0.16936	59.4184	0.01289	130.44	102.93	0.00057	1.21910	0.9645
39	66.8261	941.1	0.16662	56.3441	0.01323	129.03	99.79	0.00056	1.21606	0.9629
40	65.9366	934.0	0.16391	53.4161	0.01357	127.60	96.83	0.00055	1.21299	0.9619
42	64.1275	919.3	0.15852	47.9026	0.01428	124.63	91.39	0.00053	1.20677	0.9627
44	62.2808	907.0	0.15309	43.0902	0.01495	121.65	86.50	0.00052	1.20044	0.9640
46	60.4123	900.1	0.14699	39.0098	0.01551	118.72	82.11	0.00051	1.19405	0.9658
48	58.5352	893.0	0.14137	35.3675	0.01605	115.90	78.17	0.00050	1.18766	0.9668
50	56.6572	887.8	0.13601	32.2400	0.01650	113.21	74.64	0.00049	1.18129	0.9658
52	54.7950	884.0	0.13096	29.5076	0.01688	110.69	71.49	0.00049	1.17500	0.9641
54	52.9589	882.3	0.12618	27.1606	0.01718	108.43	68.71	0.00049	1.16881	0.9606
56	51.1592	882.6	0.12172	25.1500	0.01739	106.49	66.24	0.00049	1.16277	0.9546
58	49.4060	885.5	0.11764	23.4846	0.01746	104.72	64.09	0.00049	1.15691	0.9464
60	47.7096	890.7	0.11377	22.0559	0.01746	103.29	62.21	0.00050	1.15126	0.9369
65	43.7550	915.6	0.10473	19.4053	0.01707	100.88	58.59	0.00053	1.13815	0.9078
70	40.2475	956.0	0.09651	17.6700	0.01631	99.42	56.20	0.00057	1.12661	0.8813
75	37.1910	1012.6	0.08898	16.5807	0.01530	98.00	54.74	0.00061	1.11662	0.8652
80	34.5429	1082.7	0.08212	15.8651	0.01425	98.23	53.93	0.00066	1.10801	0.8469
85	32.2500	1163.1	0.07593	15.3363	0.01328	100.70	53.61	0.00073	1.10060	0.8222
90	30.2433	1253.2	0.07043	14.9467	0.01240	103.49	53.61	0.00079	1.09414	0.8048
95	28.4826	1351.2	0.06558	14.6446	0.01161	106.56	53.85	0.00086	1.08849	0.7928
100	26.9263	1455.9	0.06135	14.4084	0.01091	108.27	54.15	0.00091	1.08352	0.7941
120	22.1672	1927.9	0.04913	13.8769	0.00870	128.84	59.77	0.00125	1.06841	0.7783
140	18.9214	2394.3	0.04319	13.6180	0.00722	144.34	63.60	0.00159	1.05819	0.7621
160	16.5567	2808.8	0.04053	13.4531	0.00618	154.82	66.65	0.00194	1.05079	0.7475
180	14.7907	3147.2	0.03960	13.2823	0.00544	161.48	69.34	0.00229	1.04528	0.7354
200	13.3517	3452.3	0.03957	13.1900	0.00484	165.82	71.88	0.00268	1.04081	0.7239
220	12.1790	3722.1	0.04007	13.1110	0.00437	169.03	74.35	0.00307	1.03718	0.7158
240	11.2029	3978.2	0.04067	13.0422	0.00399	171.94	76.77	0.00348	1.03417	0.7093
260	10.3766	4232.1	0.04121	12.9814	0.00368	175.00	79.19	0.00390	1.03162	0.7043
280	9.6672	4489.2	0.04163	12.9272	0.00341	178.39	81.60	0.00434	1.02943	0.7004
300	9.0407	4763.9	0.04191	12.9053	0.00317	182.13	84.01	0.00480	1.02751	0.6969
350	7.8071	5444.9	0.04219	12.7940	0.00272	192.90	90.05	0.00600	1.02372	0.6915
400	6.8741	6152.6	0.04212	12.7058	0.00239	204.88	96.11	0.00731	1.02087	0.6885
450	6.1424	6878.4	0.04189	12.6343	0.00213	217.52	102.15	0.00872	1.01863	0.6868
500	5.5527	7607.9	0.04167	12.5755	0.00192	230.27	108.16	0.01023	1.01683	0.6856
550	5.0669	8343.3	0.04144	12.5264	0.00175	243.14	114.12	0.01184	1.01535	0.6848
600	4.6597	9083.2	0.04122	12.4847	0.00161	256.01	120.03	0.01355	1.01411	0.6842
700	4.0150	10583.3	0.04075	12.4180	0.00138	281.87	131.67	0.01727	1.01215	0.6836
800	3.5275	12122.1	0.04022	12.3672	0.00121	308.03	143.04	0.02136	1.01067	0.6834
900	3.1456	13711.2	0.03961	12.3272	0.00108	334.66	154.15	0.02581	1.00951	0.6835
1000	2.8385	15358.3	0.03892	12.2950	0.00098	440.56	165.01	0.03727	1.00858	0.5616
1200	2.3749	18827.4	0.03744	12.2463	0.00082	511.13	186.02	0.05040	1.00717	0.5595
1400	2.0415	22523.1	0.03593	12.2113	0.00070	583.33	206.18	0.06507	1.00616	0.5587
1600	1.7902	26363.8	0.03462	12.1849	0.00062	655.52	225.61	0.08125	1.00540	0.5584
1800	1.5940	30328.2	0.03347	12.1642	0.00055	728.00	244.41	0.09894	1.00481	0.5579
2000	1.4365	34526.8	0.03232	12.1471	0.00049	804.93	262.64	0.11831	1.00433	0.5563
2500	1.1508	47608.5	0.02848	12.1042	0.00040	1077.25	306.32	0.17854	1.00347	0.5367
3000	0.9548	70529.5	0.02231	12.0108	0.00033	1695.49	348.70	0.27223	1.00288	0.4830

* TWO-PHASE BOUNDARY

14.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 17.869	0.01198	1.9517	1.052	-298.0	-130.2	5.258	5.21	6.67	1580
18	0.01199	1.9449	1.052	-297.2	-129.3	5.307	5.24	6.71	1579
19	0.01207	1.8929	1.051	-291.5	-122.5	5.678	5.39	7.00	1569
20	0.01216	1.8408	1.049	-285.5	-115.3	6.045	5.53	7.29	1559
21	0.01224	1.7889	1.045	-279.3	-107.9	6.407	5.65	7.57	1548
22	0.01233	1.7372	1.039	-272.8	-100.2	6.766	5.77	7.85	1537
23	0.01242	1.6804	1.036	-266.1	-92.2	7.119	5.87	8.14	1526
24	0.01252	1.6297	1.027	-259.2	-83.9	7.471	5.97	8.41	1515
25	0.01262	1.5784	1.017	-252.1	-75.4	7.820	6.06	8.67	1503
26	0.01273	1.5244	1.006	-244.8	-66.6	8.165	6.14	8.93	1489
27	0.01283	1.4799	0.9933	-237.2	-57.6	8.506	6.21	9.18	1479
28	0.01295	1.4333	0.9796	-229.5	-48.3	8.845	6.28	9.43	1466
29	0.01306	1.3879	0.9652	-221.6	-38.7	9.180	6.35	9.67	1454
30	0.01318	1.3439	0.9509	-213.5	-28.9	9.512	6.40	9.91	1442
31	0.01331	1.2995	0.9355	-205.2	-18.9	9.841	6.46	10.16	1430
32	0.01344	1.2548	0.9194	-196.8	-8.6	10.167	6.51	10.40	1416
33	0.01357	1.2134	0.9025	-188.1	1.9	10.491	6.55	10.63	1403
34	0.01371	1.1721	0.8851	-179.3	12.7	10.812	6.59	10.86	1390
35	0.01386	1.1320	0.8672	-170.4	23.6	11.130	6.63	11.09	1377
36	0.01401	1.0925	0.8490	-161.3	34.9	11.446	6.66	11.32	1363
37	0.01416	1.0568	0.8303	-152.0	46.3	11.759	6.69	11.53	1350
38	0.01432	1.0212	0.8114	-142.6	57.9	12.069	6.71	11.74	1336
39	0.01449	0.9864	0.7923	-133.1	69.8	12.377	6.73	11.94	1323
40	0.01466	0.9529	0.7731	-123.5	81.8	12.682	6.74	12.14	1310
42	0.01502	0.8909	0.7347	-103.9	106.4	13.283	6.77	12.51	1283
44	0.01541	0.8333	0.6969	-83.8	131.8	13.874	6.80	12.89	1257
46	0.01582	0.7799	0.6598	-63.9	157.5	14.443	6.86	13.29	1229
48	0.01625	0.7351	0.6238	-43.1	184.4	15.016	6.91	13.62	1204
50	0.01671	0.6957	0.5891	-22.0	212.0	15.579	6.96	13.92	1180
52	0.01720	0.6606	0.5560	-0.7	240.1	16.130	7.00	14.20	1158
54	0.01771	0.6313	0.5246	20.8	268.7	16.671	7.04	14.42	1137
56	0.01824	0.6055	0.4951	42.7	298.1	17.204	7.08	14.62	1118
58	0.01880	0.5834	0.4674	64.3	327.5	17.720	7.11	14.79	1101
60	0.01937	0.5657	0.4416	85.9	357.2	18.223	7.15	14.91	1086
65	0.02089	0.5344	0.3847	139.9	432.4	19.427	7.29	15.14	1054
70	0.02250	0.5198	0.3378	193.3	508.4	20.554	7.47	15.26	1030
75	0.02418	0.5164	0.2992	246.4	584.9	21.609	7.72	15.32	1012
80	0.02589	0.5221	0.2676	299.2	661.6	22.600	8.02	15.37	1000
85	0.02761	0.5335	0.2415	352.2	738.7	23.534	8.37	15.45	992
90	0.02933	0.5479	0.2199	405.6	816.2	24.421	8.75	15.58	988
95	0.03106	0.5648	0.2018	459.7	894.5	25.267	9.15	15.75	986
100	0.03278	0.5833	0.1865	514.9	973.8	26.081	9.55	15.96	987
120	0.03958	0.6666	0.1431	750.0	1304.1	29.089	11.12	16.90	1006
140	0.04623	0.7567	0.1163	1000.5	1647.7	31.736	12.07	17.42	1045
160	0.05272	0.8476	0.0980	1258.9	1997.0	34.068	12.43	17.47	1092
180	0.05909	0.9381	0.0849	1516.5	2343.8	36.112	12.37	17.20	1142
200	0.06537	1.0274	0.0749	1768.3	2683.4	37.900	12.10	16.77	1193
220	0.07138	1.1089	0.0672	2012.0	3011.3	39.463	11.77	16.34	1241
240	0.07753	1.1967	0.0610	2248.3	3333.8	40.866	11.45	15.94	1291
260	0.08365	1.2837	0.0559	2478.0	3649.1	42.128	11.18	15.61	1339
280	0.08973	1.3701	0.0516	2702.3	3958.5	43.275	10.97	15.35	1385
300	0.09592	1.4620	0.0479	2924.2	4267.1	44.336	10.82	15.14	1431
350	0.11093	1.6734	0.0407	3462.7	5015.7	46.643	10.58	14.84	1532
400	0.12585	1.8830	0.0354	3991.7	5753.6	48.615	10.48	14.70	1625
450	0.14071	2.0915	0.0314	4516.4	6486.4	50.342	10.45	14.64	1712
500	0.15554	2.2993	0.0282	5040.0	7217.6	51.882	10.43	14.61	1794
550	0.17035	2.5067	0.0256	5562.5	7947.4	53.273	10.44	14.60	1872
600	0.18514	2.7137	0.0234	6085.5	8677.4	54.542	10.45	14.60	1947
700	0.21468	3.1271	0.0200	7133.4	10138.9	56.796	10.50	14.64	2088
800	0.24419	3.5401	0.0175	8187.9	11606.5	58.754	10.59	14.72	2219
900	0.27369	3.9528	0.0156	9252.6	13084.3	60.493	10.71	14.84	2340
1000	0.30317	4.3654	0.0140	10330.9	14575.3	62.067	10.87	15.00	2454
1200	0.36213	5.1903	0.0117	12542.5	17612.3	64.822	11.25	15.37	2663
1400	0.42106	6.0150	0.0100	14836.0	20730.9	67.230	11.68	15.81	2853
1600	0.47999	6.8397	0.0087	17215.0	23934.9	69.346	12.10	16.22	3028
1800	0.53893	7.6644	0.0078	19679.8	27224.8	71.245	12.49	16.62	3193
2000	0.59788	8.4891	0.0070	22233.4	30603.8	73.091	12.91	17.04	3347
2500	0.74595	10.5509	0.0056	29084.7	39527.9	79.415	14.57	18.79	3689
3000	0.89849	12.6127	0.0047	37289.7	49868.5	86.546	18.44	23.11	3973

* TWO-PHASE BOUNDARY

14.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 17.869	83.4399	1032.3	0.24187	162.8525	0.00646	116.52	341.17	0.00075	1.27431	1.9531
18	83.3689	1033.9	0.24110	162.1439	0.00649	117.20	336.21	0.00075	1.27405	1.9250
19	82.8207	1044.6	0.23561	156.7682	0.00671	121.54	302.68	0.00075	1.27210	1.7445
20	82.2581	1052.9	0.23071	151.4246	0.00693	125.67	275.26	0.00075	1.27010	1.5972
21	81.6813	1059.2	0.22626	146.1222	0.00715	130.19	252.51	0.00076	1.26806	1.4687
22	81.0903	1063.9	0.22214	140.8714	0.00738	133.89	233.37	0.00076	1.26596	1.3678
23	80.4940	1063.1	0.21902	135.2625	0.00766	136.91	217.21	0.00075	1.26385	1.2913
24	79.8708	1065.2	0.21544	130.1661	0.00789	139.29	203.13	0.00075	1.26164	1.2261
25	79.2334	1065.7	0.21197	125.0644	0.00814	141.16	190.92	0.00074	1.25939	1.1725
26	78.5812	1063.8	0.20856	119.7910	0.00840	142.53	180.21	0.00073	1.25709	1.1295
27	77.9182	1065.5	0.20518	115.3118	0.00861	143.51	170.79	0.00072	1.25475	1.0932
28	77.2394	1065.2	0.20185	110.7064	0.00885	144.16	162.39	0.00071	1.25236	1.0617
29	76.5489	1064.3	0.19865	106.2418	0.00909	144.53	154.88	0.00070	1.24993	1.0362
30	75.8487	1062.5	0.19578	101.9367	0.00933	144.66	148.14	0.00069	1.24747	1.0150
31	75.1334	1059.9	0.19284	97.6386	0.00958	144.03	142.01	0.00068	1.24496	1.0013
32	74.4075	1056.2	0.18990	93.3670	0.00985	143.25	136.44	0.00067	1.24242	0.9906
33	73.6684	1053.1	0.18703	89.3899	0.01010	142.34	131.33	0.00065	1.23983	0.9810
34	72.9202	1049.1	0.18418	85.4730	0.01036	141.37	126.64	0.00064	1.23722	0.9732
35	72.1585	1044.8	0.18137	81.6823	0.01062	140.31	122.29	0.00063	1.23456	0.9668
36	71.3871	1039.8	0.17859	77.9869	0.01089	139.17	118.26	0.00062	1.23187	0.9619
37	70.6058	1036.2	0.17583	74.6181	0.01113	137.97	114.51	0.00061	1.22916	0.9570
38	69.8145	1031.4	0.17314	71.2911	0.01138	136.72	111.01	0.00060	1.22641	0.9532
39	69.0158	1025.9	0.17060	68.0748	0.01164	135.43	107.73	0.00059	1.22364	0.9498
40	68.2087	1020.3	0.16808	64.9973	0.01189	134.12	104.65	0.00058	1.22084	0.9470
42	66.5716	1010.1	0.16301	59.3071	0.01239	131.39	99.00	0.00057	1.21518	0.9429
44	64.9100	1000.2	0.15787	54.0908	0.01288	128.64	93.96	0.00055	1.20946	0.9412
46	63.2267	993.1	0.15202	49.3116	0.01338	125.91	89.42	0.00054	1.20368	0.9436
48	61.5326	987.9	0.14665	45.2351	0.01379	123.25	85.33	0.00053	1.19788	0.9432
50	59.8340	983.9	0.14153	41.6279	0.01415	120.69	81.64	0.00052	1.19208	0.9419
52	58.1427	980.7	0.13664	38.4099	0.01448	118.26	78.32	0.00052	1.18633	0.9402
54	56.4686	980.0	0.13197	35.6485	0.01472	115.98	75.35	0.00051	1.18065	0.9368
56	54.8188	980.3	0.12761	33.1922	0.01492	113.87	72.69	0.00051	1.17508	0.9333
58	53.1998	981.8	0.12355	31.0358	0.01506	111.97	70.31	0.00051	1.16962	0.9285
60	51.6176	986.1	0.11963	29.1990	0.01512	110.52	68.21	0.00052	1.16431	0.9204
65	47.8611	1006.8	0.11034	25.5765	0.01504	107.99	63.98	0.00054	1.15176	0.8973
70	44.4354	1043.3	0.10169	23.0981	0.01462	106.25	60.99	0.00056	1.14040	0.8757
75	41.3625	1093.8	0.09368	21.3608	0.01401	104.65	58.97	0.00059	1.13027	0.8634
80	38.6321	1158.9	0.08634	20.1711	0.01327	104.45	57.67	0.00063	1.12132	0.8489
85	36.2217	1236.3	0.07968	19.3230	0.01250	106.59	56.93	0.00069	1.11346	0.8253
90	34.0900	1323.5	0.07375	18.6790	0.01177	109.07	56.60	0.00074	1.10655	0.8085
95	32.1975	1419.6	0.06852	18.1847	0.01110	111.86	56.57	0.00079	1.10043	0.7967
100	30.5058	1522.9	0.06398	17.7952	0.01048	112.96	56.59	0.00084	1.09498	0.7994
120	25.2655	1988.9	0.05092	16.8430	0.00850	132.61	61.75	0.00112	1.07823	0.7867
140	21.6318	2452.0	0.04452	16.3678	0.00710	147.23	65.14	0.00141	1.06672	0.7706
160	18.9674	2865.2	0.04159	16.0775	0.00610	157.08	67.87	0.00171	1.05833	0.7549
180	16.9222	3217.1	0.04054	15.8753	0.00535	163.33	70.34	0.00202	1.05193	0.7407
200	15.2983	3519.1	0.04045	15.7172	0.00476	167.40	72.72	0.00235	1.04686	0.7284
220	14.0096	3774.3	0.04079	15.5346	0.00433	170.45	75.07	0.00268	1.04286	0.7195
240	12.8974	4030.7	0.04134	15.4341	0.00395	173.26	77.42	0.00303	1.03941	0.7123
260	11.9548	4284.9	0.04183	15.3466	0.00364	176.25	79.78	0.00340	1.03649	0.7067
280	11.1448	4542.4	0.04221	15.2694	0.00338	179.60	82.16	0.00378	1.03399	0.7023
300	10.4251	4821.1	0.04246	15.2420	0.00314	183.32	84.55	0.00418	1.03177	0.6984
350	9.0149	5502.6	0.04265	15.0854	0.00270	194.10	90.58	0.00522	1.02743	0.6924
400	7.9461	6210.9	0.04252	14.9625	0.00237	206.15	96.66	0.00636	1.02415	0.6891
450	7.1067	6937.2	0.04224	14.8637	0.00211	218.89	102.75	0.00758	1.02158	0.6871
500	6.4291	7667.1	0.04198	14.7826	0.00191	231.76	108.81	0.00888	1.01951	0.6858
550	5.8704	8402.8	0.04172	14.7150	0.00174	244.75	114.84	0.01028	1.01780	0.6849
600	5.4014	9143.0	0.04147	14.6579	0.00160	257.77	120.82	0.01177	1.01637	0.6843
700	4.6581	10643.5	0.04097	14.5667	0.00138	283.92	132.59	0.01499	1.01411	0.6836
800	4.0951	12182.9	0.04041	14.4973	0.00121	310.39	144.11	0.01854	1.01239	0.6834
900	3.6538	13772.6	0.03977	14.4428	0.00108	337.33	155.36	0.02240	1.01105	0.6835
1000	3.2984	15420.3	0.03906	14.3990	0.00097	440.56	166.35	0.03207	1.00997	0.5662
1200	2.7615	18891.0	0.03755	14.3328	0.00081	511.13	187.63	0.04334	1.00834	0.5644
1400	2.3749	22588.4	0.03603	14.2853	0.00070	583.33	208.06	0.05594	1.00717	0.5638
1600	2.0834	26430.1	0.03470	14.2496	0.00061	655.49	227.74	0.06982	1.00629	0.5637
1800	1.8555	30392.7	0.03355	14.2216	0.00055	727.84	246.78	0.08499	1.00560	0.5634
2000	1.6726	34580.1	0.03240	14.1986	0.00049	804.28	265.26	0.10158	1.00505	0.5621
2500	1.3406	47473.8	0.02867	14.1443	0.00040	1069.30	309.48	0.15283	1.00404	0.5438
3000	1.1130	69525.3	0.02273	14.0377	0.00033	1654.59	352.30	0.23163	1.00336	0.4920

* TWO-PHASE BOUNDARY

16.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 18.378	0.01188	2.0484	1.066	-295.7	-105.7	5.295	5.28	6.71	1615
19	0.01193	2.0171	1.066	-292.3	-101.4	5.522	5.37	6.89	1609
20	0.01200	1.9667	1.065	-286.4	-94.4	5.883	5.51	7.17	1600
21	0.01208	1.9163	1.062	-280.4	-87.1	6.239	5.64	7.44	1591
22	0.01217	1.8661	1.058	-274.2	-79.5	6.591	5.75	7.70	1581
23	0.01225	1.8161	1.052	-267.7	-71.7	6.940	5.86	7.96	1571
24	0.01234	1.7664	1.045	-261.0	-63.6	7.284	5.96	8.22	1561
25	0.01243	1.7119	1.041	-254.1	-55.3	7.624	6.05	8.49	1550
26	0.01253	1.6642	1.031	-247.1	-46.7	7.961	6.13	8.74	1540
27	0.01262	1.6158	1.020	-239.8	-37.8	8.296	6.21	8.98	1528
28	0.01273	1.5644	1.007	-232.3	-28.7	8.627	6.28	9.22	1515
29	0.01283	1.5218	0.9937	-224.7	-19.4	8.954	6.35	9.45	1505
30	0.01294	1.4775	0.9796	-216.9	-9.8	9.278	6.41	9.67	1493
31	0.01306	1.4313	0.9650	-208.9	-0.0	9.599	6.46	9.90	1481
32	0.01317	1.3906	0.9504	-200.8	10.0	9.917	6.52	10.12	1470
33	0.01329	1.3492	0.9351	-192.4	20.2	10.232	6.56	10.34	1458
34	0.01342	1.3072	0.9192	-184.0	30.7	10.544	6.61	10.56	1446
35	0.01355	1.2689	0.9026	-175.4	41.3	10.853	6.65	10.77	1434
36	0.01368	1.2299	0.8857	-166.6	52.2	11.159	6.68	10.98	1421
37	0.01381	1.1921	0.8684	-157.7	63.3	11.463	6.71	11.18	1409
38	0.01396	1.1571	0.8508	-148.7	74.6	11.764	6.74	11.37	1397
39	0.01410	1.1222	0.8330	-139.6	86.0	12.061	6.76	11.55	1385
40	0.01425	1.0890	0.8151	-130.3	97.7	12.356	6.78	11.73	1373
42	0.01456	1.0265	0.7789	-111.5	121.5	12.937	6.81	12.07	1349
44	0.01490	0.9676	0.7429	-92.4	146.0	13.506	6.84	12.41	1325
46	0.01525	0.9144	0.7075	-73.3	170.6	14.054	6.91	12.76	1300
48	0.01562	0.8633	0.6729	-53.4	196.5	14.604	6.96	13.10	1275
50	0.01601	0.8176	0.6391	-33.1	223.0	15.144	7.01	13.40	1251
52	0.01641	0.7824	0.6068	-12.6	250.0	15.675	7.05	13.64	1230
54	0.01684	0.7466	0.5758	8.1	277.5	16.194	7.09	13.89	1209
56	0.01729	0.7195	0.5463	29.2	305.7	16.708	7.13	14.07	1192
58	0.01775	0.6931	0.5184	50.1	334.1	17.204	7.16	14.25	1174
60	0.01823	0.6719	0.4922	71.0	362.7	17.690	7.20	14.39	1159
65	0.01949	0.6301	0.4336	123.6	435.5	18.855	7.34	14.70	1124
70	0.02083	0.6056	0.3840	176.2	509.6	19.953	7.53	14.93	1096
75	0.02224	0.5943	0.3425	228.8	584.6	20.988	7.78	15.09	1074
80	0.02368	0.5913	0.3076	281.6	660.5	21.967	8.08	15.25	1057
85	0.02515	0.5968	0.2785	334.8	737.1	22.896	8.42	15.40	1045
90	0.02663	0.6071	0.2539	388.5	814.5	23.781	8.79	15.57	1037
95	0.02811	0.6208	0.2332	443.1	892.9	24.629	9.19	15.76	1032
100	0.02959	0.6361	0.2155	498.7	972.2	25.443	9.59	15.99	1030
120	0.03550	0.7105	0.1654	735.7	1303.7	28.461	11.16	16.98	1040
140	0.04131	0.7966	0.1342	988.1	1649.0	31.122	12.10	17.51	1073
160	0.04700	0.8856	0.1130	1248.1	2000.2	33.466	12.46	17.56	1117
180	0.05259	0.9744	0.0977	1507.3	2348.8	35.520	12.41	17.28	1165
200	0.05810	1.0633	0.0861	1760.3	2689.9	37.317	12.14	16.84	1215
220	0.06353	1.1504	0.0770	2005.3	3021.7	38.899	11.79	16.37	1264
240	0.06875	1.2299	0.0700	2242.0	3341.9	40.292	11.47	15.98	1309
260	0.07411	1.3170	0.0641	2472.2	3658.0	41.558	11.20	15.66	1357
280	0.07945	1.4035	0.0592	2697.1	3968.2	42.707	10.98	15.39	1402
300	0.08491	1.4973	0.0548	2919.8	4278.4	43.772	10.83	15.18	1448
350	0.09806	1.7085	0.0466	3459.3	5028.3	46.083	10.59	14.86	1548
400	0.11113	1.9180	0.0405	3989.1	5767.2	48.058	10.49	14.71	1640
450	0.12415	2.1264	0.0359	4514.3	6500.6	49.787	10.45	14.65	1726
500	0.13713	2.3341	0.0322	5038.4	7232.4	51.328	10.44	14.62	1808
550	0.15009	2.5413	0.0292	5561.2	7962.6	52.720	10.44	14.60	1885
600	0.16303	2.7482	0.0268	6084.5	8693.0	53.989	10.45	14.61	1960
700	0.18889	3.1614	0.0229	7132.7	10154.9	56.244	10.50	14.64	2100
800	0.21471	3.5742	0.0200	8187.5	11622.9	58.203	10.59	14.72	2229
900	0.24052	3.9867	0.0178	9252.4	13100.8	59.942	10.71	14.84	2350
1000	0.26632	4.3991	0.0160	10330.8	14592.0	61.516	10.87	15.00	2464
1200	0.31791	5.2237	0.0133	12542.7	17629.2	64.271	11.25	15.38	2672
1400	0.36948	6.0483	0.0114	14836.3	20748.0	66.679	11.68	15.81	2860
1600	0.42104	6.8728	0.0100	17215.3	23952.0	68.795	12.10	16.22	3036
1800	0.47261	7.6974	0.0089	19680.0	27241.8	70.695	12.49	16.61	3200
2000	0.52419	8.5219	0.0080	22232.9	30620.0	72.540	12.91	17.04	3354
2500	0.65371	10.5835	0.0064	29070.3	39529.6	78.858	14.50	18.72	3696
3000	0.78689	12.6451	0.0053	37196.8	49787.0	85.959	18.18	22.80	3981

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

16.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 18.378	84.1703	1085.8	0.24014	172.4170	0.00618	121.39	353.30	0.00077	1.27691	1.9543
19	83.8438	1093.2	0.23686	169.1204	0.00630	124.11	330.57	0.00077	1.27574	1.8357
20	83.3088	1103.2	0.23204	163.8434	0.00650	128.51	299.59	0.00077	1.27384	1.6714
21	82.7610	1111.2	0.22767	158.5978	0.00670	133.30	273.99	0.00078	1.27189	1.5293
22	82.2006	1117.5	0.22362	153.3933	0.00689	137.24	252.55	0.00078	1.26990	1.4178
23	81.6276	1122.3	0.21989	148.2402	0.00710	140.47	234.38	0.00078	1.26787	1.3287
24	81.0422	1125.8	0.21637	143.1502	0.00730	143.08	218.82	0.00077	1.26579	1.2567
25	80.4489	1123.8	0.21388	137.7179	0.00756	145.17	205.41	0.00076	1.26369	1.2016
26	79.8365	1126.0	0.21059	132.8603	0.00776	146.73	193.63	0.00076	1.26152	1.1529
27	79.2100	1127.0	0.20728	127.9866	0.00797	147.88	183.25	0.00075	1.25931	1.1125
28	78.5728	1125.7	0.20401	122.9176	0.00819	148.69	174.06	0.00074	1.25706	1.0796
29	77.9254	1127.5	0.20084	118.5882	0.00838	149.22	165.88	0.00073	1.25478	1.0503
30	77.2670	1127.1	0.19786	114.1641	0.00858	149.50	158.54	0.00072	1.25246	1.0257
31	76.5983	1125.0	0.19488	109.6379	0.00880	148.99	151.91	0.00071	1.25011	1.0096
32	75.9211	1124.5	0.19209	105.5768	0.00900	148.33	145.91	0.00069	1.24773	0.9958
33	75.2310	1122.6	0.18937	101.4996	0.00921	147.53	140.41	0.00068	1.24530	0.9844
34	74.5334	1119.6	0.18667	97.4322	0.00943	146.67	135.39	0.00067	1.24286	0.9750
35	73.8266	1117.6	0.18398	93.6801	0.00964	145.72	130.76	0.00066	1.24039	0.9663
36	73.1104	1114.4	0.18132	89.9185	0.00985	144.69	126.48	0.00065	1.23788	0.9596
37	72.3861	1110.9	0.17870	86.2894	0.01006	143.59	122.51	0.00064	1.23536	0.9539
38	71.6542	1108.0	0.17618	82.9097	0.01026	142.43	118.81	0.00063	1.23280	0.9485
39	70.9152	1103.9	0.17379	79.5832	0.01047	141.24	115.36	0.00062	1.23023	0.9437
40	70.1694	1099.9	0.17144	76.4173	0.01067	140.01	112.12	0.00061	1.22764	0.9394
42	68.6604	1092.3	0.16668	70.4824	0.01105	137.46	106.22	0.00060	1.22240	0.9329
44	67.1339	1084.9	0.16182	64.9599	0.01144	134.87	100.98	0.00058	1.21712	0.9290
46	65.5916	1081.6	0.15618	59.9771	0.01180	132.29	96.27	0.00057	1.21180	0.9285
48	64.0397	1076.0	0.15100	55.2845	0.01217	129.77	92.03	0.00056	1.20647	0.9289
50	62.4792	1071.4	0.14602	51.0822	0.01251	127.31	88.19	0.00055	1.20112	0.9286
52	60.9229	1071.7	0.14129	47.6678	0.01273	124.96	84.72	0.00054	1.19580	0.9249
54	59.3772	1069.6	0.13674	44.3290	0.01299	122.74	81.59	0.00054	1.19053	0.9235
56	57.8466	1072.1	0.13244	41.6200	0.01313	120.65	78.75	0.00053	1.18532	0.9185
58	56.3397	1073.4	0.12844	39.0511	0.01328	118.72	76.21	0.00053	1.18022	0.9147
60	54.8590	1077.9	0.12455	36.8625	0.01335	117.10	73.92	0.00053	1.17521	0.9085
65	51.3040	1096.4	0.11516	32.3268	0.01341	114.40	69.21	0.00055	1.16326	0.8896
70	47.9986	1129.9	0.10628	29.0695	0.01321	112.50	65.71	0.00057	1.15222	0.8718
75	44.9729	1177.9	0.09793	26.7252	0.01281	110.83	63.20	0.00059	1.14217	0.8607
80	42.2333	1238.2	0.09021	24.9716	0.01232	110.30	61.47	0.00062	1.13313	0.8500
85	39.7686	1312.7	0.08318	23.7322	0.01173	112.20	60.33	0.00066	1.12504	0.8282
90	37.5586	1398.2	0.07687	22.8006	0.01114	114.43	59.66	0.00070	1.11782	0.8118
95	35.5736	1493.2	0.07132	22.0838	0.01056	116.97	59.34	0.00075	1.11136	0.7998
100	33.7906	1594.7	0.06648	21.4951	0.01003	117.66	59.08	0.00078	1.10558	0.8029
120	28.1711	2054.6	0.05263	20.0154	0.00826	136.57	63.85	0.00103	1.08750	0.7938
140	24.2091	2515.4	0.04581	19.2857	0.00696	150.35	66.82	0.00128	1.07487	0.7761
160	21.2755	2927.2	0.04263	18.8405	0.00600	159.55	69.21	0.00154	1.06559	0.7618
180	19.0141	3277.5	0.04142	18.5275	0.00527	165.35	71.43	0.00181	1.05848	0.7466
200	17.2120	3580.3	0.04121	18.3010	0.00470	169.12	73.63	0.00210	1.05283	0.7332
220	15.7408	3849.9	0.04148	18.1087	0.00425	171.97	75.85	0.00240	1.04824	0.7221
240	14.5460	4086.3	0.04195	17.8896	0.00391	174.66	78.12	0.00270	1.04452	0.7148
260	13.4930	4338.7	0.04244	17.7700	0.00361	177.57	80.41	0.00303	1.04125	0.7090
280	12.5871	4596.3	0.04278	17.6655	0.00335	180.87	82.75	0.00336	1.03845	0.7042
300	11.7759	4879.4	0.04300	17.6334	0.00311	184.56	85.12	0.00372	1.03594	0.7000
350	10.1977	5561.1	0.04311	17.4229	0.00267	195.32	91.13	0.00464	1.03107	0.6933
400	8.9985	6269.8	0.04291	17.2590	0.00235	207.42	97.23	0.00564	1.02738	0.6896
450	8.0551	6996.5	0.04259	17.1280	0.00209	220.25	103.35	0.00672	1.02448	0.6874
500	7.2924	7726.6	0.04229	17.0209	0.00189	233.23	109.47	0.00788	1.02215	0.6860
550	6.6628	8462.5	0.04200	16.9319	0.00173	246.35	115.55	0.00911	1.02022	0.6850
600	6.1338	9203.0	0.04173	16.8568	0.00159	259.51	121.60	0.01043	1.01860	0.6844
700	5.2942	10703.9	0.04118	16.7372	0.00137	285.96	133.51	0.01328	1.01604	0.6836
800	4.6574	12243.7	0.04059	16.6464	0.00120	312.74	145.16	0.01642	1.01410	0.6834
900	4.1576	13833.9	0.03993	16.5752	0.00107	339.99	156.56	0.01984	1.01258	0.6834
1000	3.7548	15482.3	0.03920	16.5179	0.00097	440.56	167.69	0.02817	1.01136	0.5708
1200	3.1456	18954.4	0.03766	16.4316	0.00081	511.13	189.25	0.03805	1.00951	0.5693
1400	2.7065	22653.4	0.03612	16.3698	0.00070	583.32	209.95	0.04908	1.00818	0.5690
1600	2.3751	26496.2	0.03478	16.3233	0.00061	655.47	229.89	0.06124	1.00717	0.5690
1800	2.1159	30457.5	0.03362	16.2870	0.00055	727.71	249.18	0.07452	1.00639	0.5689
2000	1.9077	34636.1	0.03248	16.2573	0.00049	803.76	267.90	0.08904	1.00576	0.5678
2500	1.5297	47379.1	0.02883	16.1900	0.00040	1062.89	312.69	0.13362	1.00462	0.5507
3000	1.2708	68730.0	0.02308	16.0698	0.00033	1621.58	355.97	0.20147	1.00383	0.5005

* TWO-PHASE BOUNDARY

18.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 18.874	0.01178	2.1426	1.080	-293.4	-81.3	5.332	5.33	6.76	1648
19	0.01179	2.1364	1.080	-292.7	-80.5	5.377	5.35	6.79	1647
20	0.01186	2.0875	1.080	-287.1	-73.5	5.732	5.49	7.06	1639
21	0.01194	2.0386	1.078	-281.2	-66.3	6.083	5.62	7.32	1630
22	0.01201	1.9897	1.075	-275.1	-58.9	6.430	5.74	7.58	1621
23	0.01209	1.9409	1.070	-268.9	-51.2	6.772	5.85	7.83	1612
24	0.01217	1.8923	1.064	-262.4	-43.2	7.111	5.95	8.07	1603
25	0.01226	1.8441	1.057	-255.7	-35.0	7.445	6.04	8.31	1593
26	0.01235	1.7964	1.049	-248.9	-26.6	7.776	6.12	8.55	1584
27	0.01244	1.7451	1.043	-241.8	-17.9	8.103	6.20	8.81	1574
28	0.01253	1.7001	1.032	-234.6	-9.0	8.427	6.28	9.04	1564
29	0.01263	1.6542	1.020	-227.2	0.1	8.749	6.35	9.26	1553
30	0.01273	1.6057	1.007	-219.6	9.5	9.066	6.41	9.48	1541
31	0.01283	1.5650	0.9933	-211.9	19.1	9.380	6.47	9.69	1531
32	0.01294	1.5226	0.9789	-204.0	28.9	9.691	6.52	9.90	1520
33	0.01305	1.4807	0.9642	-196.0	38.9	9.999	6.57	10.10	1508
34	0.01316	1.4380	0.9496	-187.8	49.1	10.303	6.62	10.31	1497
35	0.01328	1.3992	0.9343	-179.5	59.5	10.605	6.66	10.51	1486
36	0.01339	1.3617	0.9186	-171.0	70.1	10.904	6.70	10.70	1475
37	0.01352	1.3241	0.9024	-162.4	80.9	11.200	6.73	10.89	1463
38	0.01364	1.2873	0.8859	-153.7	91.9	11.493	6.76	11.08	1452
39	0.01377	1.2532	0.8692	-144.9	103.0	11.783	6.78	11.24	1441
40	0.01391	1.2192	0.8523	-136.0	114.4	12.070	6.80	11.41	1430
42	0.01419	1.1548	0.8181	-117.8	137.5	12.634	6.84	11.74	1408
44	0.01448	1.0969	0.7838	-99.3	161.3	13.187	6.87	12.04	1386
46	0.01478	1.0427	0.7499	-81.0	185.2	13.718	6.94	12.37	1363
48	0.01511	0.9914	0.7165	-61.7	210.2	14.250	7.00	12.67	1340
50	0.01544	0.9454	0.6840	-42.2	235.8	14.773	7.05	12.95	1318
52	0.01580	0.9019	0.6523	-22.4	262.0	15.286	7.09	13.22	1296
54	0.01617	0.8648	0.6217	-2.3	288.6	15.789	7.14	13.45	1276
56	0.01655	0.8327	0.5924	18.1	316.0	16.287	7.18	13.64	1258
58	0.01694	0.8033	0.5646	38.5	343.5	16.769	7.21	13.82	1241
60	0.01735	0.7794	0.5381	58.9	371.3	17.240	7.25	13.97	1225
65	0.01843	0.7289	0.4784	110.2	442.0	18.373	7.39	14.32	1189
70	0.01958	0.6962	0.4270	161.9	514.3	19.444	7.58	14.61	1158
75	0.02078	0.6762	0.3832	214.0	588.0	20.460	7.82	14.86	1133
80	0.02202	0.6677	0.3459	266.5	662.8	21.426	8.12	15.07	1113
85	0.02329	0.6663	0.3142	319.6	738.7	22.347	8.47	15.30	1097
90	0.02457	0.6711	0.2872	373.5	815.8	23.228	8.84	15.52	1085
95	0.02587	0.6806	0.2641	428.3	894.0	24.073	9.24	15.75	1077
100	0.02717	0.6927	0.2442	484.3	973.3	24.887	9.64	15.99	1072
120	0.03237	0.7587	0.1876	722.7	1305.3	27.910	11.19	17.02	1074
140	0.03751	0.8391	0.1523	976.6	1651.8	30.580	12.14	17.58	1102
160	0.04258	0.9252	0.1281	1238.1	2004.5	32.934	12.49	17.64	1143
180	0.04756	1.0128	0.1106	1498.5	2354.6	34.997	12.44	17.35	1189
200	0.05246	1.1000	0.0974	1752.8	2697.1	36.801	12.17	16.91	1236
220	0.05730	1.1874	0.0870	1998.8	3030.2	38.389	11.83	16.43	1284
240	0.06208	1.2728	0.0786	2236.6	3354.1	39.798	11.50	15.99	1331
260	0.06670	1.3507	0.0720	2467.0	3667.6	41.054	11.22	15.66	1373
280	0.07145	1.4373	0.0667	2692.1	3978.3	42.205	11.00	15.43	1420
300	0.07635	1.5332	0.0618	2915.5	4289.9	43.274	10.85	15.21	1466
350	0.08806	1.7441	0.0524	3456.1	5041.1	45.589	10.60	14.88	1565
400	0.09968	1.9533	0.0456	3986.6	5780.9	47.566	10.50	14.73	1655
450	0.11126	2.1615	0.0404	4512.4	6515.0	49.297	10.46	14.66	1740
500	0.12281	2.3690	0.0362	5036.8	7247.3	50.839	10.45	14.62	1821
550	0.13433	2.5760	0.0329	5560.0	7977.9	52.231	10.45	14.61	1898
600	0.14584	2.7827	0.0301	6083.5	8708.6	53.501	10.46	14.61	1972
700	0.16882	3.1956	0.0258	7132.2	10170.9	55.757	10.50	14.65	2111
800	0.19178	3.6082	0.0225	8187.2	11639.2	57.716	10.59	14.72	2240
900	0.21472	4.0205	0.0200	9252.3	13117.4	59.456	10.71	14.84	2360
1000	0.23766	4.4327	0.0180	10330.9	14608.7	61.030	10.87	15.00	2473
1200	0.28351	5.2570	0.0150	12543.0	17646.1	63.785	11.25	15.38	2680
1400	0.32935	6.0812	0.0128	14836.7	20765.0	66.193	11.69	15.81	2868
1600	0.37518	6.9056	0.0112	17215.8	23969.1	68.309	12.10	16.22	3043
1800	0.42102	7.7300	0.0100	19680.4	27258.7	70.209	12.49	16.61	3207
2000	0.46687	8.5544	0.0090	22232.7	30636.3	72.054	12.90	17.03	3360
2500	0.58196	10.6157	0.0072	29058.5	39533.8	76.366	14.45	18.66	3702
3000	0.70014	12.6772	0.0060	37119.9	49722.4	85.443	17.95	22.55	3989

* TWO-PHASE BOUNDARY

18.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 18.874	84.8704	1137.7	0.23871	181.8403	0.00594	126.03	365.44	0.00079	1.27940	1.9595
19	84.8070	1139.4	0.23807	181.1834	0.00596	126.57	360.52	0.00079	1.27918	1.9347
20	84.2955	1151.0	0.23330	175.9684	0.00614	131.23	325.55	0.00079	1.27735	1.7520
21	83.7725	1160.5	0.22897	170.7764	0.00631	136.27	296.78	0.00080	1.27549	1.5953
22	83.2381	1168.4	0.22497	165.6158	0.00649	140.45	272.79	0.00080	1.27359	1.4725
23	82.6924	1174.6	0.22129	160.4964	0.00667	143.88	252.54	0.00080	1.27165	1.3744
24	82.1357	1179.6	0.21783	155.4285	0.00685	146.69	235.26	0.00080	1.26967	1.2951
25	81.5680	1183.3	0.21458	150.4231	0.00703	148.95	220.37	0.00079	1.26765	1.2300
26	80.9895	1186.2	0.21145	145.4917	0.00721	150.69	207.42	0.00078	1.26560	1.1769
27	80.4001	1184.7	0.20915	140.3040	0.00744	152.01	196.07	0.00077	1.26352	1.1362
28	79.7998	1187.5	0.20598	135.6647	0.00761	152.98	186.04	0.00076	1.26139	1.0988
29	79.1848	1188.9	0.20288	130.9867	0.00779	153.64	177.07	0.00075	1.25922	1.0670
30	78.5637	1187.5	0.19997	126.1467	0.00798	154.05	169.09	0.00074	1.25703	1.0405
31	77.9345	1189.4	0.19701	121.9677	0.00814	153.66	161.92	0.00073	1.25481	1.0207
32	77.2941	1189.6	0.19413	117.6904	0.00832	153.09	155.41	0.00072	1.25255	1.0045
33	76.6471	1188.8	0.19138	113.4883	0.00850	152.40	149.51	0.00071	1.25028	0.9909
34	75.9926	1186.6	0.18878	109.2804	0.00869	151.63	144.12	0.00070	1.24798	0.9800
35	75.3265	1185.5	0.18621	105.3932	0.00886	150.76	139.15	0.00069	1.24564	0.9700
36	74.6560	1184.3	0.18368	101.6578	0.00904	149.82	134.59	0.00068	1.24329	0.9614
37	73.9771	1182.2	0.18116	97.9564	0.00921	148.80	130.37	0.00066	1.24091	0.9542
38	73.2918	1179.5	0.17874	94.3467	0.00939	147.72	126.45	0.00066	1.23852	0.9480
39	72.6014	1177.1	0.17646	90.9873	0.00955	146.61	122.80	0.00065	1.23611	0.9418
40	71.9051	1173.9	0.17423	87.6682	0.00972	145.45	119.39	0.00064	1.23368	0.9367
42	70.4961	1167.8	0.16972	81.4092	0.01005	143.03	113.19	0.00062	1.22877	0.9287
44	69.0729	1163.7	0.16510	75.7670	0.01035	140.56	107.70	0.00061	1.22383	0.9225
46	67.6380	1163.0	0.15967	70.5258	0.01063	138.09	102.80	0.00059	1.21887	0.9205
48	66.1964	1160.5	0.15468	65.6252	0.01092	135.66	98.39	0.00058	1.21389	0.9190
50	64.7504	1158.9	0.14988	61.2150	0.01117	133.30	94.41	0.00057	1.20891	0.9171
52	63.3028	1156.8	0.14524	57.0946	0.01142	131.01	90.79	0.00056	1.20394	0.9158
54	61.8615	1157.0	0.14078	53.5005	0.01162	128.84	87.51	0.00056	1.19900	0.9132
56	60.4295	1158.8	0.13655	50.3192	0.01177	126.78	84.53	0.00055	1.19411	0.9096
58	59.0159	1160.6	0.13261	47.4072	0.01191	124.85	81.83	0.00055	1.18930	0.9059
60	57.6214	1165.7	0.12873	44.9082	0.01198	123.23	79.38	0.00055	1.18456	0.8998
65	54.2514	1183.9	0.11935	39.5450	0.01210	120.30	74.26	0.00056	1.17316	0.8840
70	51.0762	1216.2	0.11033	35.5587	0.01201	118.25	70.34	0.00057	1.16250	0.8689
75	48.1267	1261.7	0.10175	32.5426	0.01177	116.58	67.41	0.00059	1.15264	0.8591
80	45.4163	1321.5	0.09375	30.3250	0.01141	115.80	65.28	0.00061	1.14364	0.8497
85	42.9418	1392.9	0.08643	28.6114	0.01098	117.52	63.78	0.00064	1.13547	0.8302
90	40.6944	1475.8	0.07982	27.3084	0.01052	119.55	62.78	0.00068	1.12807	0.8151
95	38.6540	1569.0	0.07397	26.3060	0.01004	121.88	62.18	0.00072	1.12139	0.8035
100	36.8044	1669.4	0.06887	25.4928	0.00958	122.30	61.57	0.00075	1.11536	0.8052
120	30.8955	2126.8	0.05427	23.4407	0.00800	140.63	66.03	0.00096	1.09624	0.7993
140	26.6567	2582.5	0.04707	22.3681	0.00681	153.64	68.60	0.00118	1.08266	0.7849
160	23.4862	2992.0	0.04366	21.7295	0.00590	162.19	70.64	0.00141	1.07258	0.7682
180	21.0273	3341.9	0.04229	21.2970	0.00519	167.52	72.60	0.00165	1.06481	0.7521
200	19.0621	3642.5	0.04197	20.9689	0.00464	170.97	74.60	0.00191	1.05863	0.7380
220	17.4520	3914.2	0.04214	20.7219	0.00420	173.60	76.69	0.00218	1.05359	0.7259
240	16.1070	4169.2	0.04246	20.5002	0.00384	176.14	78.86	0.00246	1.04938	0.7161
260	14.9925	4404.1	0.04280	20.2510	0.00355	178.95	81.09	0.00274	1.04591	0.7094
280	13.9953	4650.8	0.04334	20.1147	0.00332	182.18	83.38	0.00304	1.04281	0.7060
300	13.0969	4938.7	0.04353	20.0796	0.00308	185.83	85.71	0.00336	1.04002	0.7014
350	11.3563	5620.3	0.04356	19.8062	0.00265	196.56	91.69	0.00419	1.03464	0.6942
400	10.0318	6329.1	0.04330	19.5952	0.00233	208.70	97.80	0.00509	1.03056	0.6902
450	8.9880	7056.1	0.04293	19.4272	0.00208	221.61	103.96	0.00605	1.02735	0.6878
500	8.1430	7786.4	0.04260	19.2904	0.00188	234.70	110.12	0.00709	1.02475	0.6862
550	7.4445	8522.5	0.04227	19.1769	0.00171	247.95	116.27	0.00821	1.02261	0.6851
600	6.8570	9263.1	0.04197	19.0812	0.00158	261.24	122.37	0.00939	1.02081	0.6844
700	5.9234	10764.3	0.04139	18.9292	0.00136	287.98	134.42	0.01195	1.01796	0.6836
800	5.2143	12304.5	0.04077	18.8141	0.00120	315.07	146.22	0.01477	1.01580	0.6833
900	4.6572	13895.1	0.04009	18.7239	0.00107	342.65	157.76	0.01784	1.01410	0.6834
1000	4.2077	15544.1	0.03934	18.6515	0.00096	440.56	169.04	0.02513	1.01274	0.5754
1200	3.5272	19017.6	0.03777	18.5425	0.00081	511.13	190.88	0.03393	1.01067	0.5742
1400	3.0363	22718.2	0.03621	18.4645	0.00070	583.32	211.85	0.04375	1.00918	0.5741
1600	2.6654	26562.1	0.03485	18.4059	0.00061	655.45	232.06	0.05457	1.00805	0.5744
1800	2.3752	30522.5	0.03369	18.3602	0.00054	727.61	251.61	0.06638	1.00717	0.5745
2000	2.1419	34694.0	0.03255	18.3229	0.00049	803.32	270.57	0.07928	1.00647	0.5736
2500	1.7183	47312.7	0.02897	18.2413	0.00039	1057.58	315.94	0.11872	1.00519	0.5575
3000	1.4283	68083.8	0.02339	18.1067	0.00033	1594.22	359.72	0.17820	1.00431	0.5088

* TWO-PHASE BOUNDARY

20.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 19.360	0.01169	2.2344	1.094	-291.0	-57.2	5.367	5.38	6.80	1680
20	0.01173	2.2040	1.094	-287.4	-52.8	5.591	5.47	6.97	1675
21	0.01180	2.1564	1.093	-281.7	-45.7	5.937	5.60	7.22	1667
22	0.01187	2.1087	1.090	-275.8	-38.3	6.279	5.72	7.47	1659
23	0.01195	2.0611	1.087	-269.7	-30.7	6.616	5.83	7.71	1651
24	0.01203	2.0136	1.082	-263.4	-22.9	6.950	5.93	7.95	1642
25	0.01210	1.9664	1.075	-256.9	-14.8	7.279	6.03	8.18	1634
26	0.01219	1.9195	1.068	-250.2	-6.5	7.604	6.11	8.41	1625
27	0.01227	1.8731	1.060	-243.4	2.0	7.926	6.20	8.63	1615
28	0.01236	1.8274	1.051	-236.4	10.7	8.244	6.28	8.86	1606
29	0.01245	1.7797	1.044	-229.2	19.7	8.560	6.35	9.10	1597
30	0.01254	1.7369	1.032	-221.8	28.9	8.872	6.41	9.30	1588
31	0.01263	1.6937	1.019	-214.3	38.3	9.180	6.47	9.51	1577
32	0.01273	1.6480	1.006	-206.7	47.9	9.485	6.53	9.71	1566
33	0.01283	1.6088	0.9921	-198.8	57.8	9.787	6.58	9.90	1556
34	0.01293	1.5685	0.9777	-190.9	67.7	10.085	6.63	10.09	1546
35	0.01304	1.5277	0.9630	-182.8	77.9	10.381	6.67	10.28	1535
36	0.01315	1.4861	0.9483	-174.6	88.3	10.673	6.71	10.48	1523
37	0.01326	1.4494	0.9331	-166.3	98.9	10.963	6.75	10.66	1513
38	0.01337	1.4146	0.9177	-157.8	109.6	11.249	6.78	10.83	1503
39	0.01349	1.3793	0.9019	-149.3	120.5	11.533	6.81	10.99	1493
40	0.01361	1.3444	0.8859	-140.6	131.6	11.813	6.83	11.15	1482
42	0.01386	1.2803	0.8533	-123.0	154.2	12.364	6.86	11.45	1462
44	0.01412	1.2210	0.8206	-105.1	177.4	12.904	6.90	11.74	1441
46	0.01440	1.1649	0.7880	-87.3	200.7	13.421	6.98	12.06	1419
48	0.01468	1.1145	0.7558	-68.6	225.1	13.940	7.03	12.34	1398
50	0.01498	1.0671	0.7242	-49.6	250.0	14.449	7.09	12.60	1378
52	0.01529	1.0229	0.6935	-30.4	275.5	14.948	7.13	12.85	1358
54	0.01562	0.9819	0.6636	-10.9	301.4	15.438	7.18	13.09	1338
56	0.01595	0.9463	0.6346	9.0	328.1	15.923	7.22	13.29	1319
58	0.01630	0.9139	0.6067	28.8	354.8	16.392	7.26	13.47	1302
60	0.01666	0.8863	0.5803	48.8	381.9	16.851	7.30	13.63	1286
65	0.01760	0.8298	0.5197	99.0	451.0	17.957	7.44	13.99	1249
70	0.01860	0.7893	0.4671	149.9	521.8	19.006	7.62	14.32	1217
75	0.01964	0.7626	0.4216	201.3	594.1	20.004	7.87	14.62	1190
80	0.02073	0.7461	0.3823	253.4	667.9	20.956	8.17	14.90	1167
85	0.02184	0.7398	0.3486	306.3	743.1	21.867	8.51	15.17	1148
90	0.02297	0.7396	0.3195	360.2	819.6	22.742	8.89	15.44	1134
95	0.02412	0.7444	0.2943	415.1	897.5	23.584	9.28	15.71	1123
100	0.02527	0.7532	0.2725	471.3	976.7	24.397	9.68	15.97	1115
120	0.02990	0.8101	0.2096	710.7	1308.7	27.421	11.22	17.04	1109
140	0.03451	0.8842	0.1702	965.9	1656.0	30.096	12.17	17.63	1132
160	0.03906	0.9669	0.1432	1228.6	2009.8	32.458	12.52	17.70	1169
180	0.04355	1.0521	0.1235	1490.2	2361.1	34.528	12.47	17.42	1212
200	0.04796	1.1390	0.1087	1745.6	2704.9	36.339	12.20	16.97	1259
220	0.05233	1.2245	0.0970	1992.7	3039.2	37.932	11.86	16.49	1305
240	0.05664	1.3105	0.0876	2231.4	3364.3	39.347	11.53	16.05	1350
260	0.06091	1.3950	0.0800	2462.8	3681.0	40.615	11.25	15.67	1394
280	0.06514	1.4793	0.0735	2688.2	3991.0	41.764	11.02	15.36	1436
300	0.06951	1.5696	0.0688	2911.4	4301.6	42.828	10.86	15.24	1484
350	0.08005	1.7800	0.0583	3453.0	5054.1	45.147	10.61	14.90	1581
400	0.09053	1.9889	0.0507	3984.2	5794.8	47.126	10.51	14.74	1671
450	0.10095	2.1968	0.0449	4510.5	6529.5	48.858	10.47	14.67	1755
500	0.11135	2.4040	0.0403	5035.4	7262.3	50.401	10.45	14.63	1835
550	0.12172	2.6108	0.0365	5558.9	7993.3	51.795	10.45	14.62	1911
600	0.13208	2.8173	0.0334	6082.7	8724.2	53.065	10.46	14.62	1984
700	0.15277	3.2299	0.0286	7131.7	10187.0	55.321	10.51	14.65	2122
800	0.17343	3.6420	0.0250	8187.0	11655.6	57.281	10.59	14.73	2250
900	0.19408	4.0541	0.0222	9252.3	13133.9	59.021	10.72	14.85	2370
1000	0.21472	4.4660	0.0200	10331.0	14625.4	60.595	10.87	15.00	2482
1200	0.25599	5.2899	0.0167	12543.3	17663.0	63.351	11.25	15.38	2688
1400	0.29724	6.1139	0.0143	14837.2	20781.9	65.758	11.69	15.81	2876
1600	0.33849	6.9380	0.0125	17216.3	23986.1	67.875	12.10	16.22	3050
1800	0.37974	7.7622	0.0111	19680.9	27275.7	69.774	12.49	16.61	3213
2000	0.42100	8.5865	0.0100	22232.7	30652.7	71.619	12.90	17.02	3367
2500	0.52456	10.6475	0.0080	29048.8	39540.0	77.927	14.41	18.61	3709
3000	0.63076	12.7087	0.0067	37055.1	49670.3	84.983	17.77	22.33	3996

* TWO-PHASE BOUNDARY

20.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 19.360	85.5433	1188.4	0.23748	191.1415	0.00572	130.46	377.62	0.00081	1.28181	1.9680
20	85.2277	1196.5	0.23452	187.8410	0.00582	133.83	353.32	0.00081	1.28068	1.8393
21	84.7262	1207.5	0.23021	182.7004	0.00598	139.12	321.04	0.00082	1.27889	1.6668
22	84.2142	1216.9	0.22624	177.5827	0.00614	143.52	294.22	0.00082	1.27706	1.5318
23	83.6921	1224.6	0.22258	172.4970	0.00630	147.16	271.67	0.00082	1.27520	1.4241
24	83.1599	1231.0	0.21916	167.4527	0.00646	150.15	252.50	0.00082	1.27331	1.3370
25	82.6179	1236.0	0.21594	162.4598	0.00662	152.58	236.03	0.00081	1.27138	1.2657
26	82.0662	1240.2	0.21286	157.5289	0.00678	154.47	221.76	0.00081	1.26942	1.2072
27	81.5050	1243.8	0.20984	152.6707	0.00694	155.94	209.29	0.00080	1.26743	1.1589
28	80.9346	1246.8	0.20687	147.8964	0.00710	157.06	198.32	0.00079	1.26541	1.1185
29	80.3501	1246.2	0.20469	142.9994	0.00730	157.84	188.54	0.00078	1.26334	1.0868
30	79.7603	1248.6	0.20186	138.5345	0.00745	158.37	179.85	0.00077	1.26125	1.0564
31	79.1617	1250.3	0.19899	134.0749	0.00760	158.07	172.05	0.00076	1.25914	1.0348
32	78.5555	1249.9	0.19617	129.4586	0.00777	157.59	165.02	0.00074	1.25700	1.0172
33	77.9419	1251.7	0.19344	125.3936	0.00791	156.98	158.65	0.00073	1.25483	1.0009
34	77.3220	1252.1	0.19078	121.2815	0.00806	156.30	152.86	0.00072	1.25265	0.9871
35	76.6946	1251.2	0.18820	117.1683	0.00822	155.51	147.55	0.00071	1.25044	0.9757
36	76.0619	1249.0	0.18574	113.0376	0.00839	154.64	142.68	0.00070	1.24822	0.9667
37	75.4195	1248.5	0.18331	109.3153	0.00854	153.69	138.17	0.00069	1.24597	0.9581
38	74.7739	1247.9	0.18099	105.7719	0.00868	152.68	134.00	0.00068	1.24370	0.9503
39	74.1217	1245.9	0.17881	102.2326	0.00882	151.62	130.13	0.00067	1.24142	0.9434
40	73.4653	1243.3	0.17665	98.7645	0.00897	150.53	126.52	0.00066	1.23912	0.9374
42	72.1398	1239.8	0.17232	92.3572	0.00924	148.21	119.99	0.00065	1.23450	0.9274
44	70.8011	1237.3	0.16788	86.4488	0.00949	145.83	114.23	0.00063	1.22984	0.9200
46	69.4518	1238.2	0.16263	80.9077	0.00974	143.45	109.10	0.00062	1.22515	0.9172
48	68.0970	1239.0	0.15780	75.8970	0.00996	141.09	104.50	0.00060	1.22045	0.9139
50	66.7399	1239.3	0.15316	71.2198	0.01017	138.79	100.35	0.00059	1.21576	0.9113
52	65.3829	1239.6	0.14868	66.8821	0.01037	136.56	96.59	0.00059	1.21109	0.9091
54	64.0296	1239.9	0.14433	62.8680	0.01056	134.42	93.17	0.00058	1.20643	0.9072
56	62.6829	1242.1	0.14015	59.3154	0.01070	132.39	90.06	0.00057	1.20181	0.9040
58	61.3466	1244.4	0.13624	56.0628	0.01082	130.47	87.22	0.00057	1.19724	0.9003
60	60.0282	1249.4	0.13241	53.2057	0.01091	128.85	84.63	0.00057	1.19274	0.8950
65	56.8213	1269.0	0.12301	47.1485	0.01102	125.90	79.15	0.00057	1.18185	0.8795
70	53.7734	1300.9	0.11393	42.4454	0.01100	123.59	74.87	0.00058	1.17155	0.8673
75	50.9103	1345.9	0.10521	38.8224	0.01086	121.93	71.57	0.00059	1.16194	0.8580
80	48.2479	1403.2	0.09699	36.0001	0.01062	120.97	69.08	0.00061	1.15305	0.8510
85	45.7912	1474.3	0.08943	33.8776	0.01029	122.55	67.25	0.00064	1.14488	0.8324
90	43.5352	1556.0	0.08259	32.2001	0.00992	124.43	65.95	0.00067	1.13742	0.8182
95	41.4668	1647.3	0.07650	30.8672	0.00953	126.60	65.07	0.00070	1.13061	0.8074
100	39.5742	1747.1	0.07116	29.8080	0.00914	126.84	64.04	0.00072	1.12440	0.8064
120	33.4477	2202.9	0.05584	27.0964	0.00774	144.72	68.24	0.00091	1.10447	0.8036
140	28.9793	2654.0	0.04827	25.6237	0.00664	157.04	70.44	0.00111	1.09008	0.7907
160	25.6015	3060.1	0.04465	24.7531	0.00578	164.96	72.14	0.00131	1.07930	0.7741
180	22.9647	3407.2	0.04314	24.1615	0.00511	169.80	73.83	0.00153	1.07093	0.7574
200	20.8486	3708.7	0.04272	23.7458	0.00458	172.91	75.64	0.00176	1.06425	0.7424
220	19.1108	3978.1	0.04279	23.4010	0.00415	175.31	77.58	0.00200	1.05878	0.7297
240	17.6549	4235.6	0.04305	23.1363	0.00379	177.68	79.64	0.00226	1.05422	0.7192
260	16.4175	4489.0	0.04328	22.9019	0.00349	180.38	81.79	0.00252	1.05035	0.7106
280	15.3509	4746.1	0.04344	22.7079	0.00324	183.53	84.03	0.00280	1.04703	0.7035
300	14.3862	4998.7	0.04405	22.5803	0.00305	187.13	86.33	0.00307	1.04403	0.7029
350	12.4914	5680.0	0.04400	22.2353	0.00262	197.82	92.27	0.00383	1.03815	0.6951
400	11.0465	6388.9	0.04368	21.9708	0.00231	209.98	98.38	0.00464	1.03368	0.6907
450	9.9058	7116.0	0.04326	21.7611	0.00206	222.96	104.57	0.00552	1.03017	0.6881
500	8.9811	7846.4	0.04289	21.5907	0.00186	236.16	110.78	0.00647	1.02732	0.6864
550	8.2157	8582.7	0.04254	21.4496	0.00170	249.53	116.98	0.00748	1.02497	0.6853
600	7.5713	9323.4	0.04222	21.3309	0.00157	262.96	123.15	0.00855	1.02300	0.6845
700	6.5460	10824.8	0.04160	21.1426	0.00135	289.99	135.33	0.01089	1.01986	0.6836
800	5.7660	12365.2	0.04094	21.0002	0.00119	317.40	147.27	0.01346	1.01748	0.6833
900	5.1525	13956.3	0.04024	20.8888	0.00106	345.30	158.95	0.01625	1.01561	0.6834
1000	4.6572	15605.7	0.03948	20.7994	0.00096	440.56	170.38	0.02270	1.01410	0.5801
1200	3.9065	19080.6	0.03788	20.6651	0.00081	511.13	192.51	0.03063	1.01182	0.5791
1400	3.3643	22782.6	0.03630	20.5690	0.00069	583.32	213.76	0.03948	1.01017	0.5793
1600	2.9543	26627.7	0.03493	20.4971	0.00061	655.44	234.24	0.04923	1.00893	0.5798
1800	2.6334	30587.5	0.03375	20.4409	0.00054	727.51	254.05	0.05987	1.00796	0.5801
2000	2.3753	34753.2	0.03261	20.3953	0.00049	802.95	273.27	0.07148	1.00717	0.5794
2500	1.9054	47267.3	0.02910	20.2979	0.00039	1053.09	319.24	0.10683	1.00576	0.5643
3000	1.5854	67548.4	0.02365	20.1484	0.00033	1571.05	363.54	0.15972	1.00478	0.5168

* TWO-PHASE BOUNDARY

22.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 19.835	0.01160	2.3243	1.107	-288.5	-33.2	5.401	5.43	6.84	1711
20	0.01161	2.3167	1.107	-287.6	-32.1	5.458	5.45	6.88	1710
21	0.01168	2.2703	1.107	-282.0	-25.1	5.800	5.59	7.13	1702
22	0.01175	2.2238	1.105	-276.2	-17.8	6.138	5.71	7.37	1695
23	0.01182	2.1773	1.102	-270.3	-10.3	6.471	5.82	7.61	1687
24	0.01189	2.1308	1.098	-264.1	-2.6	6.799	5.92	7.84	1680
25	0.01196	2.0846	1.093	-257.8	5.4	7.124	6.02	8.07	1672
26	0.01204	2.0385	1.086	-251.3	13.5	7.445	6.11	8.29	1663
27	0.01212	1.9928	1.079	-244.6	21.9	7.762	6.19	8.50	1655
28	0.01220	1.9476	1.070	-237.8	30.5	8.075	6.27	8.72	1646
29	0.01228	1.9030	1.061	-230.8	39.4	8.384	6.34	8.93	1637
30	0.01236	1.8591	1.051	-223.6	48.4	8.691	6.41	9.14	1628
31	0.01245	1.8157	1.043	-216.3	57.7	8.995	6.47	9.35	1620
32	0.01254	1.7748	1.031	-208.8	67.1	9.295	6.53	9.55	1611
33	0.01264	1.7338	1.018	-201.2	76.8	9.592	6.58	9.73	1601
34	0.01273	1.6912	1.004	-193.5	86.6	9.885	6.63	9.92	1590
35	0.01283	1.6534	0.9903	-185.6	96.6	10.175	6.68	10.10	1581
36	0.01293	1.6150	0.9760	-177.6	106.8	10.462	6.72	10.27	1571
37	0.01303	1.5756	0.9615	-169.5	117.2	10.746	6.76	10.45	1560
38	0.01314	1.5350	0.9468	-161.3	127.7	11.027	6.80	10.62	1549
39	0.01324	1.5001	0.9318	-152.9	138.4	11.305	6.82	10.78	1540
40	0.01335	1.4676	0.9167	-144.5	149.2	11.580	6.85	10.93	1531
42	0.01358	1.4030	0.8856	-127.4	171.4	12.120	6.89	11.22	1512
44	0.01382	1.3406	0.8542	-109.9	194.1	12.649	6.93	11.50	1492
46	0.01407	1.2848	0.8227	-92.6	216.9	13.154	7.01	11.80	1471
48	0.01433	1.2332	0.7915	-74.4	240.8	13.663	7.07	12.07	1451
50	0.01459	1.1839	0.7609	-55.9	265.2	14.161	7.12	12.33	1432
52	0.01487	1.1394	0.7309	-37.2	290.1	14.649	7.17	12.56	1413
54	0.01516	1.0982	0.7017	-18.2	315.4	15.127	7.22	12.78	1395
56	0.01546	1.0601	0.6734	1.3	341.5	15.601	7.26	12.99	1377
58	0.01577	1.0243	0.6458	20.7	367.6	16.060	7.30	13.17	1359
60	0.01609	0.9927	0.6193	40.2	394.1	16.509	7.34	13.34	1343
65	0.01692	0.9299	0.5583	89.5	461.8	17.592	7.48	13.72	1306
70	0.01780	0.8831	0.5046	139.5	531.2	18.621	7.67	14.07	1273
75	0.01873	0.8498	0.4577	190.3	602.4	19.603	7.92	14.40	1243
80	0.01969	0.8291	0.4170	242.0	675.2	20.542	8.21	14.72	1219
85	0.02068	0.8156	0.3814	294.7	749.5	21.444	8.55	15.04	1197
90	0.02168	0.8110	0.3506	348.4	825.5	22.312	8.93	15.34	1181
95	0.02271	0.8116	0.3237	403.4	902.9	23.149	9.32	15.64	1167
100	0.02374	0.8163	0.3002	459.6	981.9	23.959	9.72	15.94	1157
120	0.02790	0.8643	0.2314	699.9	1313.7	26.982	11.26	17.05	1144
140	0.03207	0.9309	0.1880	955.9	1661.4	29.660	12.20	17.66	1161
160	0.03620	1.0099	0.1582	1219.7	2016.0	32.028	12.55	17.75	1195
180	0.04028	1.0936	0.1365	1482.4	2368.5	34.104	12.50	17.47	1236
200	0.04430	1.1784	0.1200	1738.8	2713.3	35.920	12.23	17.03	1281
220	0.04827	1.2638	0.1071	1986.9	3048.7	37.519	11.89	16.54	1326
240	0.05219	1.3483	0.0966	2226.5	3374.8	38.938	11.56	16.09	1370
260	0.05608	1.4326	0.0881	2458.8	3692.5	40.209	11.28	15.72	1412
280	0.05993	1.5155	0.0810	2684.9	4003.3	41.362	11.06	15.41	1453
300	0.06392	1.6065	0.0758	2907.5	4313.7	42.423	10.88	15.26	1501
350	0.07351	1.8164	0.0642	3450.1	5067.3	44.746	10.63	14.92	1597
400	0.08303	2.0248	0.0558	3982.0	5808.8	46.728	10.52	14.76	1686
450	0.09252	2.2323	0.0494	4508.8	6544.2	48.461	10.48	14.68	1769
500	0.10197	2.4392	0.0443	5034.1	7277.4	50.005	10.46	14.64	1848
550	0.11140	2.6457	0.0402	5557.9	8008.7	51.399	10.46	14.62	1923
600	0.12082	2.8520	0.0368	6081.9	8740.0	52.670	10.47	14.62	1996
700	0.13963	3.2641	0.0315	7131.3	10203.1	54.927	10.51	14.65	2133
800	0.15841	3.6759	0.0275	8186.9	11672.0	56.887	10.60	14.73	2260
900	0.17718	4.0876	0.0244	9252.4	13150.5	58.627	10.72	14.85	2379
1000	0.19595	4.4993	0.0220	10331.3	14642.1	60.201	10.88	15.00	2491
1200	0.23346	5.3227	0.0183	12543.7	17679.9	62.957	11.26	15.38	2697
1400	0.27096	6.1463	0.0157	14837.7	20798.9	65.365	11.69	15.81	2883
1600	0.30846	6.9702	0.0137	17217.0	24003.1	67.482	12.10	16.22	3057
1800	0.34596	7.7941	0.0122	19681.5	27292.6	69.381	12.49	16.61	3220
2000	0.38347	8.6182	0.0110	22232.9	30669.2	71.226	12.89	17.02	3373
2500	0.47759	10.6788	0.0088	29040.7	39547.7	77.530	14.37	18.57	3715
3000	0.57401	12.7398	0.0073	36999.6	49627.8	84.567	17.60	22.15	4003

* TWO-PHASE BOUNDARY

22.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 19.835	86.1915	1237.7	0.23646	200.3367	0.00553	135.33	389.82	0.00083	1.28412	1.9701
20	86.1126	1240.0	0.23571	199.4935	0.00555	136.34	383.11	0.00083	1.28384	1.9336
21	85.6298	1252.5	0.23141	194.4029	0.00569	141.86	346.91	0.00084	1.28211	1.7439
22	85.1375	1263.3	0.22745	189.3277	0.00584	146.47	316.97	0.00084	1.28036	1.5959
23	84.6359	1272.4	0.22380	184.2761	0.00598	150.31	291.88	0.00084	1.27857	1.4779
24	84.1251	1280.1	0.22039	179.2570	0.00613	153.47	270.62	0.00084	1.27675	1.3826
25	83.6054	1286.5	0.21719	174.2797	0.00627	156.07	252.43	0.00083	1.27489	1.3045
26	83.0769	1291.9	0.21414	169.3539	0.00641	158.10	236.71	0.00083	1.27301	1.2405
27	82.5398	1296.7	0.21115	164.4893	0.00656	159.71	223.02	0.00082	1.27110	1.1875
28	81.9943	1300.9	0.20822	159.6962	0.00670	160.95	211.00	0.00081	1.26917	1.1432
29	81.4407	1304.3	0.20543	154.9848	0.00685	161.87	200.38	0.00080	1.26720	1.1057
30	80.8791	1306.6	0.20282	150.3656	0.00699	162.51	190.94	0.00079	1.26521	1.0734
31	80.3017	1307.3	0.20073	145.8000	0.00716	162.27	182.41	0.00078	1.26317	1.0515
32	79.7230	1310.3	0.19798	141.4923	0.00729	161.98	174.79	0.00077	1.26112	1.0308
33	79.1391	1312.1	0.19533	137.2131	0.00742	161.34	167.92	0.00075	1.25906	1.0131
34	78.5491	1312.2	0.19275	132.8393	0.00756	160.73	161.68	0.00074	1.25697	0.9981
35	77.9518	1314.1	0.19018	128.8886	0.00768	160.01	155.98	0.00073	1.25487	0.9843
36	77.3507	1314.7	0.18769	124.9214	0.00781	159.20	150.76	0.00072	1.25275	0.9728
37	76.7426	1314.0	0.18527	120.9139	0.00795	158.31	145.96	0.00071	1.25061	0.9633
38	76.1310	1311.4	0.18300	116.8606	0.00810	157.37	141.53	0.00070	1.24846	0.9556
39	75.5108	1310.6	0.18088	113.2708	0.00823	156.36	137.41	0.00069	1.24629	0.9475
40	74.8894	1310.3	0.17882	109.9089	0.00834	155.31	133.59	0.00068	1.24411	0.9400
42	73.6316	1308.6	0.17463	103.3082	0.00857	153.08	126.68	0.00067	1.23970	0.9284
44	72.3632	1306.5	0.17031	97.0078	0.00881	150.78	120.62	0.00065	1.23528	0.9203
46	71.0858	1310.2	0.16518	91.3284	0.00901	148.46	115.24	0.00064	1.23083	0.9162
48	69.8029	1312.7	0.16049	86.0786	0.00920	146.15	110.43	0.00062	1.22637	0.9120
50	68.5179	1314.3	0.15598	81.1197	0.00938	143.89	106.10	0.00061	1.22191	0.9090
52	67.2339	1316.7	0.15163	76.6029	0.00954	141.70	102.18	0.00060	1.21747	0.9060
54	65.9530	1319.6	0.14741	72.4282	0.00969	139.60	98.62	0.00060	1.21305	0.9032
56	64.6783	1322.5	0.14336	68.5652	0.00982	137.58	95.38	0.00059	1.20866	0.9004
58	63.4126	1324.9	0.13950	64.9510	0.00994	135.66	92.41	0.00058	1.20431	0.8973
60	62.1590	1329.5	0.13569	61.7071	0.01004	134.07	89.70	0.00058	1.20002	0.8928
65	59.0971	1350.3	0.12630	54.9559	0.01016	131.10	83.90	0.00058	1.18957	0.8779
70	56.1677	1382.7	0.11713	49.6016	0.01017	128.72	79.30	0.00059	1.17964	0.8665
75	53.3927	1427.6	0.10831	45.3741	0.01009	126.94	75.67	0.00059	1.17027	0.8585
80	50.7897	1486.2	0.09996	42.1081	0.00990	125.83	72.86	0.00061	1.16154	0.8522
85	48.3638	1555.0	0.09219	39.4447	0.00967	127.32	70.72	0.00063	1.15343	0.8353
90	46.1163	1636.5	0.08516	37.3989	0.00937	129.07	69.13	0.00066	1.14596	0.8218
95	44.0399	1727.2	0.07888	35.7421	0.00906	131.11	68.00	0.00069	1.13909	0.8114
100	42.1248	1825.7	0.07335	34.3878	0.00873	131.27	66.46	0.00070	1.13277	0.8071
120	35.8380	2281.6	0.05737	30.9735	0.00747	148.80	70.45	0.00088	1.11222	0.8072
140	31.1839	2727.2	0.04943	29.0286	0.00648	160.50	72.33	0.00105	1.09716	0.7960
160	27.6265	3130.0	0.04562	27.8988	0.00567	167.82	73.70	0.00123	1.08575	0.7796
180	24.8290	3476.2	0.04397	27.1517	0.00503	172.19	75.12	0.00143	1.07684	0.7623
200	22.5752	3775.1	0.04345	26.6016	0.00451	174.95	76.73	0.00164	1.06970	0.7467
220	20.7183	4045.6	0.04345	26.1833	0.00409	177.09	78.51	0.00186	1.06384	0.7333
240	19.1592	4301.9	0.04362	25.8330	0.00374	179.29	80.46	0.00209	1.05894	0.7222
260	17.8323	4556.1	0.04379	25.5464	0.00345	181.86	82.53	0.00234	1.05478	0.7132
280	16.6866	4811.8	0.04389	25.2890	0.00320	184.93	84.71	0.00259	1.05119	0.7059
300	15.6457	5059.5	0.04456	25.1355	0.00302	188.46	86.97	0.00284	1.04795	0.7043
350	13.6037	5746.3	0.04444	24.7099	0.00260	199.09	92.86	0.00353	1.04160	0.6960
400	12.0431	6449.1	0.04406	24.3855	0.00229	211.27	98.97	0.00428	1.03676	0.6913
450	10.8089	7176.2	0.04359	24.1293	0.00205	224.32	105.18	0.00509	1.03295	0.6885
500	9.8070	7906.7	0.04319	23.9216	0.00185	237.61	111.43	0.00596	1.02986	0.6866
550	8.9766	8643.0	0.04281	23.7498	0.00169	251.10	117.69	0.00689	1.02731	0.6854
600	8.2769	9383.8	0.04246	23.6056	0.00156	264.66	123.92	0.00787	1.02516	0.6846
700	7.1619	10885.3	0.04180	23.3771	0.00135	291.99	136.23	0.01002	1.02175	0.6836
800	6.3126	12426.0	0.04112	23.2044	0.00119	319.71	148.32	0.01238	1.01915	0.6833
900	5.6438	14017.4	0.04039	23.0696	0.00106	347.94	160.15	0.01495	1.01711	0.6834
1000	5.1034	15667.3	0.03961	22.9615	0.00096	440.56	171.72	0.02072	1.01546	0.5847
1200	4.2834	19143.4	0.03799	22.7992	0.00080	511.13	194.15	0.02794	1.01297	0.5841
1400	3.6905	22846.9	0.03639	22.6834	0.00069	583.32	215.68	0.03599	1.01116	0.5845
1600	3.2419	26693.0	0.03500	22.5966	0.00061	655.42	236.44	0.04486	1.00980	0.5853
1800	2.8905	30652.5	0.03382	22.5290	0.00054	727.44	256.52	0.05454	1.00874	0.5857
2000	2.6078	34813.3	0.03268	22.4743	0.00049	802.64	276.00	0.06510	1.00788	0.5853
2500	2.0938	47237.8	0.02921	22.3597	0.00039	1049.23	322.58	0.09713	1.00632	0.5710
3000	1.7421	67097.7	0.02389	22.1945	0.00033	1551.11	367.42	0.14470	1.00526	0.5247

* TWO-PHASE BOUNDARY

24.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 20.300	0.01152	2.4124	1.120	-285.9	-9.4	5.435	5.48	6.88	1741
21	0.01156	2.3807	1.120	-282.0	-4.5	5.671	5.57	7.05	1736
22	0.01163	2.3354	1.119	-276.4	2.6	6.004	5.69	7.29	1729
23	0.01169	2.2899	1.117	-270.6	10.0	6.333	5.81	7.52	1722
24	0.01176	2.2445	1.113	-264.6	17.7	6.658	5.91	7.74	1715
25	0.01183	2.1991	1.109	-258.4	25.5	6.979	6.01	7.96	1707
26	0.01190	2.1539	1.103	-252.0	33.6	7.295	6.10	8.18	1700
27	0.01197	2.1089	1.096	-245.5	41.9	7.608	6.18	8.39	1692
28	0.01205	2.0643	1.089	-238.8	50.4	7.917	6.26	8.60	1683
29	0.01213	2.0202	1.080	-232.0	59.1	8.222	6.34	8.80	1675
30	0.01221	1.9767	1.071	-225.0	68.0	8.524	6.41	9.00	1666
31	0.01229	1.9338	1.061	-217.9	77.1	8.822	6.47	9.20	1658
32	0.01237	1.8918	1.051	-210.6	86.4	9.117	6.53	9.39	1649
33	0.01246	1.8526	1.042	-203.1	95.9	9.411	6.59	9.59	1642
34	0.01255	1.8136	1.029	-195.6	105.6	9.700	6.64	9.76	1633
35	0.01264	1.7746	1.016	-187.9	115.4	9.986	6.69	9.94	1624
36	0.01273	1.7350	1.002	-180.1	125.5	10.268	6.73	10.11	1614
37	0.01283	1.6987	0.9882	-172.2	135.7	10.547	6.77	10.27	1605
38	0.01292	1.6620	0.9740	-164.2	146.0	10.823	6.81	10.43	1596
39	0.01302	1.6240	0.9596	-156.0	156.5	11.096	6.84	10.59	1586
40	0.01312	1.5846	0.9451	-147.8	167.2	11.366	6.86	10.74	1575
42	0.01333	1.5207	0.9154	-131.1	188.9	11.897	6.91	11.02	1558
44	0.01355	1.4602	0.8853	-114.0	211.2	12.416	6.95	11.29	1540
46	0.01378	1.4025	0.8548	-97.1	233.6	12.912	7.03	11.58	1520
48	0.01401	1.3475	0.8245	-79.3	257.0	13.411	7.09	11.85	1500
50	0.01426	1.2986	0.7946	-61.2	281.0	13.900	7.15	12.09	1482
52	0.01451	1.2533	0.7653	-42.9	305.4	14.379	7.20	12.32	1464
54	0.01477	1.2109	0.7367	-24.3	330.3	14.848	7.25	12.54	1447
56	0.01504	1.1701	0.7089	-5.2	355.8	15.312	7.30	12.74	1429
58	0.01532	1.1345	0.6820	13.7	381.5	15.763	7.34	12.92	1413
60	0.01561	1.1015	0.6558	32.9	407.5	16.203	7.38	13.09	1398
65	0.01636	1.0314	0.5943	81.3	473.9	17.267	7.52	13.48	1359
70	0.01715	0.9787	0.5398	130.6	542.2	18.279	7.71	13.84	1325
75	0.01798	0.9401	0.4919	180.8	612.3	19.245	7.96	14.20	1295
80	0.01884	0.9126	0.4499	232.1	684.1	20.173	8.26	14.55	1268
85	0.01972	0.8956	0.4130	284.4	757.7	21.065	8.60	14.89	1246
90	0.02063	0.8860	0.3806	338.0	833.0	21.926	8.97	15.23	1227
95	0.02155	0.8823	0.3522	392.8	910.0	22.759	9.36	15.56	1211
100	0.02248	0.8836	0.3273	449.1	988.7	23.565	9.76	15.88	1199
120	0.02626	0.9203	0.2531	689.9	1320.1	26.584	11.29	17.05	1179
140	0.03005	0.9814	0.2057	946.7	1667.9	29.263	12.23	17.68	1191
160	0.03382	1.0549	0.1732	1211.4	2023.2	31.635	12.58	17.79	1221
180	0.03756	1.1359	0.1494	1475.0	2376.5	33.716	12.53	17.52	1260
200	0.04125	1.2194	0.1313	1732.4	2722.3	35.538	12.26	17.07	1303
220	0.04489	1.3032	0.1171	1981.3	3058.6	37.141	11.92	16.59	1346
240	0.04849	1.3873	0.1057	2221.8	3385.6	38.564	11.60	16.14	1389
260	0.05206	1.4706	0.0963	2454.9	3704.2	39.839	11.32	15.76	1431
280	0.05559	1.5537	0.0885	2681.8	4015.9	40.994	11.09	15.45	1471
300	0.05925	1.6440	0.0828	2903.8	4325.9	42.054	10.89	15.29	1519
350	0.06806	1.8531	0.0701	3447.3	5080.6	44.380	10.64	14.94	1613
400	0.07679	2.0610	0.0609	3979.9	5822.9	46.364	10.53	14.77	1701
450	0.08549	2.2681	0.0539	4507.2	6558.9	48.099	10.49	14.69	1783
500	0.09415	2.4746	0.0483	5032.9	7292.6	49.644	10.47	14.65	1861
550	0.10280	2.6808	0.0438	5557.0	8024.2	51.039	10.46	14.63	1936
600	0.11143	2.8867	0.0401	6081.3	8755.7	52.310	10.47	14.63	2008
700	0.12868	3.2983	0.0343	7131.1	10219.3	54.567	10.52	14.66	2144
800	0.14589	3.7096	0.0300	8186.9	11688.4	56.528	10.60	14.73	2270
900	0.16310	4.1209	0.0266	9252.6	13167.0	58.268	10.72	14.85	2389
1000	0.18030	4.5323	0.0240	10331.6	14658.8	59.842	10.88	15.00	2500
1200	0.21468	5.3553	0.0200	12544.3	17696.7	62.598	11.26	15.38	2705
1400	0.24906	6.1785	0.0171	14838.4	20815.8	65.006	11.69	15.81	2890
1600	0.28343	7.0020	0.0150	17217.7	24020.0	67.123	12.10	16.22	3063
1800	0.31780	7.8257	0.0133	19682.2	27309.5	69.022	12.49	16.61	3226
2000	0.35219	8.6496	0.0120	22233.2	30685.7	70.866	12.89	17.02	3379
2500	0.43845	10.7098	0.0096	29033.7	39556.5	77.167	14.34	18.54	3721
3000	0.52673	12.7705	0.0080	36951.3	49592.8	84.189	17.46	21.99	4009

* TWO-PHASE BOUNDARY

24.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 20.300	86.8172	1285.9	0.23558	209.4394	0.00535	140.60	402.08	0.00085	1.28636	1.9669
21	86.4899	1295.6	0.23260	205.9105	0.00544	144.52	374.57	0.00085	1.28519	1.8271
22	86.0150	1307.8	0.22862	200.8776	0.00557	149.33	341.16	0.00086	1.28349	1.6649
23	85.5314	1318.2	0.22497	196.8609	0.00570	153.35	313.28	0.00086	1.28176	1.5359
24	85.0394	1327.3	0.22156	190.8687	0.00583	156.68	289.73	0.00086	1.28001	1.4318
25	84.5393	1334.9	0.21837	185.9097	0.00596	159.43	269.64	0.00085	1.27822	1.3465
26	84.0311	1341.6	0.21532	180.9929	0.00609	161.61	252.34	0.00085	1.27641	1.2766
27	83.5151	1347.6	0.21235	176.1274	0.00622	163.34	237.31	0.00084	1.27457	1.2187
28	82.9915	1352.9	0.20944	171.3226	0.00635	164.70	224.16	0.00083	1.27271	1.1702
29	82.4604	1357.4	0.20668	166.5879	0.00649	165.72	212.57	0.00082	1.27082	1.1291
30	81.9220	1360.7	0.20411	161.9329	0.00662	166.47	202.29	0.00081	1.26891	1.0938
31	81.3766	1363.9	0.20153	157.3672	0.00674	166.34	193.11	0.00080	1.26698	1.0679
32	80.8245	1366.7	0.19900	152.9007	0.00687	166.02	184.88	0.00079	1.26502	1.0460
33	80.2547	1368.7	0.19700	148.6770	0.00701	165.51	177.35	0.00077	1.26300	1.0275
34	79.6883	1371.6	0.19447	144.5215	0.00712	164.95	170.61	0.00076	1.26100	1.0100
35	79.1188	1373.7	0.19199	140.4044	0.00723	164.29	164.49	0.00075	1.25899	0.9950
36	78.5450	1374.6	0.18957	136.2770	0.00735	163.54	158.91	0.00074	1.25696	0.9824
37	77.9637	1376.6	0.18717	132.4359	0.00746	162.70	153.77	0.00073	1.25491	0.9708
38	77.3810	1377.2	0.18490	128.6050	0.00757	161.81	149.05	0.00072	1.25286	0.9608
39	76.7910	1375.8	0.18280	124.7123	0.00769	160.85	144.67	0.00071	1.25078	0.9521
40	76.2003	1372.7	0.18078	120.7474	0.00783	159.85	140.62	0.00070	1.24871	0.9452
42	75.0009	1373.2	0.17671	114.0513	0.00803	157.69	133.31	0.00069	1.24450	0.9318
44	73.7929	1374.3	0.17251	107.7547	0.00822	155.45	126.92	0.00067	1.24027	0.9218
46	72.5767	1379.2	0.16747	101.7880	0.00840	153.18	121.26	0.00066	1.23602	0.9169
48	71.3536	1382.0	0.16287	96.1475	0.00858	150.92	116.22	0.00064	1.23176	0.9127
50	70.1302	1386.1	0.15845	91.0690	0.00873	148.69	111.70	0.00063	1.22750	0.9085
52	68.9070	1390.3	0.15420	86.3606	0.00886	146.53	107.61	0.00062	1.22326	0.9049
54	67.6870	1394.6	0.15008	81.9636	0.00899	144.44	103.90	0.00061	1.21904	0.9018
56	66.4728	1398.0	0.14612	77.7819	0.00911	142.44	100.52	0.00061	1.21484	0.8992
58	65.2660	1402.7	0.14240	74.0437	0.00921	140.54	97.43	0.00060	1.21068	0.8957
60	64.0694	1408.5	0.13866	70.5749	0.00929	138.93	94.60	0.00060	1.20657	0.8912
65	61.1381	1429.8	0.12926	63.0573	0.00943	135.96	88.52	0.00059	1.19653	0.8774
70	58.3171	1463.3	0.12004	57.0761	0.00946	133.52	83.62	0.00060	1.18692	0.8667
75	55.6308	1509.2	0.11113	52.3013	0.00941	131.66	79.71	0.00060	1.17782	0.8594
80	53.0883	1566.9	0.10266	48.4474	0.00929	130.42	76.60	0.00061	1.16925	0.8547
85	50.7035	1637.5	0.09477	45.4103	0.00910	131.84	74.19	0.00063	1.16125	0.8380
90	48.4772	1718.6	0.08756	42.9526	0.00886	133.51	72.33	0.00065	1.15381	0.8252
95	46.4056	1808.9	0.08111	40.9421	0.00860	135.43	70.95	0.00068	1.14692	0.8153
100	44.4809	1907.3	0.07541	39.3019	0.00833	135.57	68.84	0.00069	1.14055	0.8064
120	38.0809	2361.2	0.05885	35.0463	0.00722	152.83	72.66	0.00085	1.11952	0.8106
140	33.2795	2806.4	0.05056	32.6598	0.00630	163.99	74.23	0.00100	1.10392	0.8003
160	29.5650	3203.1	0.04656	31.1885	0.00555	170.74	75.30	0.00117	1.09196	0.7845
180	26.6240	3546.3	0.04479	30.2420	0.00494	174.65	76.46	0.00135	1.08255	0.7670
200	24.2438	3844.2	0.04416	29.5624	0.00444	177.05	77.86	0.00154	1.07498	0.7507
220	22.2769	4112.8	0.04408	29.0318	0.00403	178.94	79.48	0.00174	1.06876	0.7368
240	20.6220	4369.3	0.04419	28.6092	0.00369	180.95	81.31	0.00196	1.06353	0.7252
260	19.2104	4623.5	0.04429	28.2515	0.00341	183.38	83.30	0.00218	1.05910	0.7158
280	17.9895	4881.2	0.04433	27.9499	0.00316	186.35	85.42	0.00241	1.05527	0.7080
300	16.8763	5120.8	0.04506	27.7448	0.00299	189.82	87.63	0.00265	1.05179	0.7057
350	14.6938	5800.9	0.04487	27.2296	0.00258	200.38	93.46	0.00329	1.04498	0.6968
400	13.0222	6509.5	0.04443	26.8391	0.00227	212.56	99.56	0.00398	1.03979	0.6918
450	11.6977	7236.7	0.04392	26.5315	0.00203	225.67	105.80	0.00473	1.03569	0.6888
500	10.6210	7967.2	0.04347	26.2827	0.00184	239.06	112.09	0.00553	1.03237	0.6869
550	9.7276	8703.5	0.04306	26.0774	0.00168	252.66	118.40	0.00639	1.02962	0.6856
600	8.9739	9444.3	0.04269	25.9051	0.00155	266.35	124.68	0.00731	1.02730	0.6847
700	7.7715	10945.9	0.04199	25.6324	0.00134	293.98	137.14	0.00929	1.02361	0.6837
800	6.8542	12486.7	0.04128	25.4266	0.00118	322.01	149.37	0.01148	1.02081	0.6833
900	6.1311	14078.5	0.04053	25.2661	0.00105	350.57	161.34	0.01386	1.01860	0.6834
1000	5.5463	15728.8	0.03974	25.1375	0.00095	440.56	173.07	0.01906	1.01681	0.5893
1200	4.6580	19206.1	0.03809	24.9447	0.00080	511.13	195.79	0.02569	1.01411	0.5890
1400	4.0151	22910.9	0.03647	24.8072	0.00069	583.32	217.61	0.03308	1.01215	0.5898
1600	3.5282	26758.1	0.03507	24.7043	0.00061	655.41	238.65	0.04122	1.01067	0.5908
1800	3.1466	30717.4	0.03388	24.6243	0.00054	727.37	259.01	0.05010	1.00951	0.5915
2000	2.8394	34874.1	0.03274	24.5597	0.00049	802.36	278.76	0.05978	1.00858	0.5912
2500	2.2808	47220.8	0.02931	24.4266	0.00039	1045.86	325.98	0.08905	1.00689	0.5778
3000	1.8985	66713.6	0.02411	24.2450	0.00033	1533.71	371.37	0.13225	1.00573	0.5325

* TWO-PHASE BOUNDARY

26.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 20.756	0.01144	2.4989	1.133	-283.2	14.2	5.467	5.52	6.92	1769
21	0.01145	2.4882	1.133	-281.9	15.9	5.548	5.55	6.97	1768
22	0.01151	2.4439	1.133	-276.4	23.0	5.878	5.68	7.21	1762
23	0.01158	2.3994	1.131	-270.7	30.3	6.204	5.79	7.43	1755
24	0.01164	2.3549	1.128	-264.8	37.9	6.525	5.90	7.65	1748
25	0.01171	2.3104	1.124	-258.7	45.6	6.841	5.99	7.87	1741
26	0.01177	2.2660	1.119	-252.5	53.6	7.154	6.09	8.08	1734
27	0.01184	2.2218	1.113	-246.1	61.8	7.463	6.17	8.28	1727
28	0.01191	2.1778	1.106	-239.6	70.2	7.768	6.26	8.49	1719
29	0.01199	2.1342	1.098	-232.9	78.7	8.069	6.33	8.69	1711
30	0.01206	2.0911	1.090	-226.1	87.5	8.367	6.40	8.88	1703
31	0.01214	2.0485	1.080	-219.1	96.5	8.662	6.47	9.07	1695
32	0.01222	2.0066	1.071	-212.0	105.7	8.953	6.53	9.26	1687
33	0.01230	1.9655	1.060	-204.7	115.0	9.240	6.59	9.44	1678
34	0.01238	1.9252	1.049	-197.3	124.6	9.525	6.64	9.62	1670
35	0.01247	1.8904	1.039	-189.8	134.4	9.809	6.69	9.80	1664
36	0.01255	1.8533	1.026	-182.2	144.2	10.087	6.74	9.96	1655
37	0.01264	1.8160	1.013	-174.4	154.3	10.363	6.78	10.12	1647
38	0.01273	1.7794	0.9998	-166.5	164.5	10.634	6.82	10.28	1638
39	0.01282	1.7444	0.9858	-158.6	174.8	10.904	6.85	10.42	1629
40	0.01292	1.7093	0.9718	-150.5	185.3	11.169	6.87	10.56	1621
42	0.01311	1.6348	0.9433	-134.2	206.7	11.691	6.92	10.85	1601
44	0.01331	1.5740	0.9141	-117.5	228.7	12.202	6.97	11.11	1584
46	0.01352	1.5171	0.8848	-100.9	250.7	12.690	7.06	11.40	1565
48	0.01374	1.4625	0.8553	-83.5	273.7	13.180	7.12	11.65	1547
50	0.01396	1.4113	0.8261	-65.8	297.3	13.661	7.18	11.89	1529
52	0.01420	1.3625	0.7972	-47.8	321.3	14.132	7.23	12.12	1511
54	0.01444	1.3197	0.7692	-29.6	345.8	14.594	7.28	12.33	1495
56	0.01468	1.2797	0.7419	-10.9	370.9	15.051	7.33	12.52	1478
58	0.01494	1.2422	0.7153	7.8	396.1	15.493	7.37	12.70	1463
60	0.01520	1.2077	0.6895	26.6	421.7	15.927	7.42	12.87	1448
65	0.01588	1.1337	0.6285	74.3	487.0	16.973	7.56	13.27	1411
70	0.01659	1.0741	0.5733	122.9	554.3	17.970	7.75	13.65	1375
75	0.01734	1.0313	0.5243	172.5	623.4	18.924	8.00	14.01	1344
80	0.01812	0.9976	0.4812	223.3	694.5	19.840	8.29	14.39	1316
85	0.01892	0.9759	0.4432	275.3	767.3	20.724	8.63	14.76	1292
90	0.01975	0.9621	0.4096	328.6	842.0	21.578	9.01	15.12	1271
95	0.02058	0.9548	0.3798	383.4	918.5	22.405	9.40	15.48	1254
100	0.02143	0.9522	0.3535	439.6	996.8	23.208	9.79	15.82	1240
120	0.02488	0.9781	0.2744	680.8	1327.7	26.221	11.32	17.04	1213
140	0.02836	1.0328	0.2233	938.3	1675.6	28.901	12.26	17.69	1221
160	0.03183	1.1016	0.1881	1203.6	2031.1	31.274	12.61	17.81	1247
180	0.03527	1.1794	0.1623	1468.1	2385.0	33.360	12.56	17.56	1284
200	0.03867	1.2608	0.1426	1726.2	2731.8	35.186	12.29	17.12	1325
220	0.04204	1.3439	0.1271	1976.0	3069.0	36.793	11.95	16.63	1367
240	0.04536	1.4264	0.1147	2217.3	3396.7	38.219	11.63	16.18	1409
260	0.04866	1.5096	0.1045	2451.1	3716.2	39.498	11.35	15.80	1450
280	0.05191	1.5918	0.0959	2678.8	4028.6	40.656	11.12	15.49	1489
300	0.05531	1.6819	0.0898	2900.3	4338.4	41.714	10.91	15.31	1537
350	0.06344	1.8902	0.0760	3444.6	5094.1	44.043	10.65	14.96	1629
400	0.07151	2.0975	0.0660	3977.9	5837.1	46.029	10.54	14.78	1716
450	0.07954	2.3040	0.0584	4505.7	6573.7	47.765	10.49	14.70	1797
500	0.08754	2.5101	0.0523	5031.8	7307.8	49.311	10.47	14.66	1874
550	0.09552	2.7159	0.0475	5556.2	8039.8	50.707	10.47	14.64	1948
600	0.10349	2.9215	0.0435	6080.7	8771.5	51.979	10.48	14.63	2020
700	0.11941	3.3324	0.0372	7130.9	10235.4	54.236	10.52	14.66	2155
800	0.13530	3.7433	0.0325	8187.0	11704.8	56.197	10.60	14.73	2280
900	0.15118	4.1542	0.0289	9252.9	13183.6	57.937	10.73	14.85	2398
1000	0.16706	4.5652	0.0260	10332.0	14675.5	59.512	10.88	15.00	2509
1200	0.19879	5.3876	0.0216	12544.9	17713.5	62.268	11.26	15.38	2713
1400	0.23052	6.2104	0.0185	14839.1	20832.7	64.676	11.69	15.81	2898
1600	0.26225	7.0335	0.0162	17218.5	24037.0	66.792	12.11	16.22	3070
1800	0.29397	7.8569	0.0144	19683.0	27326.3	68.692	12.49	16.61	3232
2000	0.32571	8.6806	0.0130	22233.7	30702.2	70.536	12.89	17.01	3385
2500	0.40532	10.7403	0.0104	29027.8	39566.2	76.834	14.31	18.51	3726
3000	0.48673	12.8008	0.0087	36909.0	49563.9	83.842	17.34	21.85	4015

* TWO-PHASE BOUNDARY

26.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 20.756	87.4223	1333.3	0.23481	218.4609	0.00519	145.73	414.39	0.00087	1.28853	1.9666
21	87.3115	1336.9	0.23377	217.2446	0.00522	147.09	404.17	0.00087	1.28813	1.9164
22	86.8520	1350.5	0.22978	212.2542	0.00534	152.10	366.94	0.00087	1.28649	1.7390
23	86.3845	1362.3	0.22612	207.2732	0.00546	156.30	335.97	0.00088	1.28481	1.5982
24	85.9092	1372.7	0.22269	202.3095	0.00558	159.79	309.91	0.00087	1.28311	1.4846
25	85.4264	1381.6	0.21949	197.3713	0.00570	162.69	287.75	0.00087	1.28139	1.3917
26	84.9362	1389.5	0.21644	192.4670	0.00581	164.99	268.72	0.00087	1.27964	1.3156
27	84.4389	1396.6	0.21347	187.6052	0.00593	166.85	252.24	0.00086	1.27786	1.2524
28	83.9345	1403.1	0.21057	182.7946	0.00605	168.31	237.85	0.00085	1.27607	1.1996
29	83.4234	1408.7	0.20782	178.0440	0.00617	169.44	225.21	0.00084	1.27425	1.1548
30	82.9055	1413.0	0.20527	173.3623	0.00629	170.28	214.02	0.00083	1.27240	1.1162
31	82.3812	1417.1	0.20272	168.7583	0.00640	170.22	204.06	0.00082	1.27054	1.0876
32	81.8507	1420.7	0.20023	164.2410	0.00652	169.97	195.14	0.00081	1.26866	1.0633
33	81.3142	1423.7	0.19786	159.8192	0.00663	169.56	187.11	0.00079	1.26675	1.0422
34	80.7719	1426.2	0.19555	155.5019	0.00675	169.07	179.85	0.00078	1.26483	1.0238
35	80.2107	1430.0	0.19358	151.6293	0.00685	168.41	173.15	0.00077	1.26285	1.0077
36	79.6580	1433.1	0.19121	147.6268	0.00695	167.70	167.14	0.00076	1.26089	0.9930
37	79.1022	1435.3	0.18889	143.6535	0.00705	166.91	161.65	0.00075	1.25893	0.9804
38	78.5436	1436.8	0.18670	139.7629	0.00715	166.06	156.61	0.00074	1.25696	0.9693
39	77.9779	1437.9	0.18462	136.0262	0.00725	165.13	151.94	0.00073	1.25496	0.9588
40	77.4132	1438.1	0.18262	132.3252	0.00734	164.18	147.64	0.00072	1.25297	0.9498
42	76.2690	1434.7	0.17862	124.6851	0.00757	162.09	139.91	0.00070	1.24895	0.9369
44	75.1118	1437.4	0.17451	118.2239	0.00773	159.90	133.16	0.00069	1.24489	0.9256
46	73.9473	1445.0	0.16957	112.1823	0.00789	157.67	127.21	0.00067	1.24081	0.9195
48	72.7792	1450.3	0.16503	106.4422	0.00804	155.44	121.92	0.00066	1.23673	0.9140
50	71.6093	1455.1	0.16068	101.0649	0.00817	153.25	117.19	0.00065	1.23265	0.9096
52	70.4365	1459.3	0.15648	95.9713	0.00831	151.09	112.92	0.00064	1.22857	0.9060
54	69.2688	1465.4	0.15244	91.4121	0.00841	149.02	109.05	0.00063	1.22451	0.9024
56	68.1060	1471.4	0.14857	87.1538	0.00851	147.02	105.53	0.00062	1.22049	0.8990
58	66.9501	1476.9	0.14492	83.1667	0.00860	145.12	102.32	0.00061	1.21649	0.8955
60	65.8029	1483.6	0.14126	79.4700	0.00868	143.51	99.37	0.00061	1.21253	0.8912
65	62.9868	1507.4	0.13200	71.4067	0.00880	140.54	93.00	0.00061	1.20286	0.8780
70	60.2661	1541.0	0.12273	64.7324	0.00886	138.06	87.84	0.00060	1.19355	0.8684
75	57.6618	1589.0	0.11371	59.4679	0.00882	136.11	83.67	0.00061	1.18470	0.8612
80	55.1834	1646.5	0.10514	55.0509	0.00874	134.78	80.31	0.00061	1.17631	0.8576
85	52.8431	1717.6	0.09713	51.5670	0.00859	136.15	77.63	0.00063	1.16842	0.8417
90	50.6437	1799.2	0.08980	48.7231	0.00841	137.74	75.53	0.00065	1.16105	0.8294
95	48.5853	1890.2	0.08320	46.3870	0.00819	139.57	73.92	0.00067	1.15417	0.8197
100	46.6621	1988.3	0.07737	44.4301	0.00796	139.74	71.16	0.00068	1.14777	0.8057
120	40.1885	2441.5	0.06030	39.3070	0.00698	156.80	74.85	0.00082	1.12641	0.8136
140	35.2629	2885.5	0.05166	36.4196	0.00613	167.47	76.15	0.00097	1.11035	0.8043
160	31.4218	3278.5	0.04747	34.6155	0.00543	173.71	76.92	0.00112	1.09793	0.7889
180	28.3535	3617.8	0.04558	33.4409	0.00485	177.16	77.83	0.00128	1.08808	0.7713
200	25.8571	3913.0	0.04487	32.6018	0.00437	179.21	79.02	0.00146	1.08011	0.7547
220	23.7883	4181.4	0.04471	31.9687	0.00398	180.84	80.49	0.00165	1.07354	0.7402
240	22.0442	4436.4	0.04475	31.4449	0.00365	182.65	82.20	0.00184	1.06802	0.7282
260	20.5527	4691.8	0.04479	31.0273	0.00337	184.95	84.09	0.00205	1.06332	0.7183
280	19.2624	4949.6	0.04477	30.6617	0.00313	187.81	86.14	0.00227	1.05926	0.7102
300	18.0791	5182.7	0.04556	30.4077	0.00295	191.21	88.30	0.00249	1.05555	0.7071
350	15.7624	5862.0	0.04529	29.7942	0.00255	201.67	94.07	0.00308	1.04831	0.6977
400	13.9841	6570.2	0.04479	29.3312	0.00225	213.86	100.16	0.00372	1.04278	0.6924
450	12.5726	7297.3	0.04424	28.9676	0.00201	227.02	106.41	0.00442	1.03840	0.6892
500	11.4235	8027.8	0.04376	28.6740	0.00183	240.50	112.75	0.00517	1.03485	0.6871
550	10.4688	8764.1	0.04332	28.4319	0.00167	254.21	119.10	0.00597	1.03190	0.6857
600	9.6626	9504.9	0.04292	28.2290	0.00154	268.04	125.45	0.00683	1.02942	0.6847
700	8.3747	11006.5	0.04218	27.9082	0.00133	295.95	138.03	0.00868	1.02546	0.6837
800	7.3910	12547.5	0.04145	27.6665	0.00117	324.30	150.41	0.01072	1.02245	0.6833
900	6.6145	14139.5	0.04068	27.4781	0.00105	353.20	162.54	0.01295	1.02007	0.6833
1000	5.9860	15790.2	0.03986	27.3273	0.00095	440.56	174.41	0.01766	1.01815	0.5939
1200	5.0303	19268.5	0.03819	27.1013	0.00080	511.13	197.43	0.02379	1.01524	0.5940
1400	4.3380	22974.7	0.03655	26.9404	0.00069	583.32	219.56	0.03062	1.01313	0.5951
1600	3.8132	26823.0	0.03514	26.8201	0.00060	655.40	240.89	0.03814	1.01154	0.5963
1800	3.4017	30782.2	0.03394	26.7266	0.00054	727.31	261.52	0.04634	1.01029	0.5972
2000	3.0702	34935.3	0.03280	26.6512	0.00049	802.12	281.55	0.05528	1.00928	0.5972
2500	2.4672	47213.7	0.02941	26.4983	0.00039	1042.89	329.42	0.08223	1.00745	0.5845
3000	2.0545	66383.1	0.02430	26.2996	0.00033	1518.35	375.39	0.12176	1.00620	0.5402

* TWO-PHASE BOUNDARY

28.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 21.205	0.01136	2.5840	1.146	-280.5	37.7	5.499	5.56	6.95	1797
22	0.01141	2.5495	1.146	-276.2	43.3	5.758	5.66	7.14	1793
23	0.01147	2.5061	1.145	-270.6	50.5	6.080	5.78	7.36	1787
24	0.01153	2.4625	1.142	-264.8	58.0	6.398	5.88	7.57	1780
25	0.01159	2.4189	1.139	-258.9	65.7	6.712	5.98	7.78	1774
26	0.01166	2.3753	1.134	-252.8	73.6	7.021	6.08	7.99	1767
27	0.01172	2.3318	1.129	-246.5	81.6	7.326	6.17	8.19	1760
28	0.01179	2.2884	1.122	-240.1	89.9	7.628	6.25	8.39	1753
29	0.01186	2.2454	1.115	-233.6	98.4	7.926	6.33	8.59	1745
30	0.01193	2.2027	1.107	-226.9	107.1	8.220	6.40	8.77	1738
31	0.01200	2.1604	1.098	-220.0	116.0	8.511	6.47	8.96	1730
32	0.01207	2.1188	1.089	-213.1	125.0	8.798	6.53	9.14	1722
33	0.01215	2.0777	1.079	-205.9	134.3	9.082	6.59	9.32	1714
34	0.01223	2.0374	1.069	-198.7	143.7	9.363	6.65	9.50	1706
35	0.01231	1.9979	1.058	-191.3	153.3	9.641	6.70	9.67	1698
36	0.01239	1.9594	1.047	-183.9	163.0	9.916	6.74	9.84	1690
37	0.01247	1.9290	1.036	-176.2	173.0	10.190	6.79	9.99	1685
38	0.01256	1.8935	1.023	-168.5	183.1	10.459	6.83	10.14	1677
39	0.01264	1.8580	1.010	-160.7	193.3	10.724	6.86	10.28	1669
40	0.01273	1.8243	0.9969	-152.8	203.6	10.986	6.89	10.42	1661
42	0.01291	1.7570	0.9693	-136.8	224.7	11.500	6.94	10.68	1645
44	0.01310	1.6857	0.9413	-120.4	246.4	12.003	6.99	10.96	1626
46	0.01329	1.6273	0.9127	-104.2	268.0	12.484	7.08	11.24	1608
48	0.01350	1.5737	0.8841	-87.1	290.8	12.968	7.14	11.49	1591
50	0.01370	1.5221	0.8556	-69.7	314.0	13.442	7.20	11.72	1574
52	0.01392	1.4731	0.8273	-52.1	337.6	13.906	7.26	11.94	1556
54	0.01414	1.4282	0.7996	-34.2	361.7	14.360	7.31	12.15	1540
56	0.01437	1.3862	0.7726	-15.8	386.5	14.811	7.36	12.34	1524
58	0.01460	1.3465	0.7463	2.6	411.4	15.247	7.40	12.52	1509
60	0.01484	1.3108	0.7209	21.1	436.6	15.674	7.45	12.69	1494
65	0.01546	1.2344	0.6606	68.1	501.0	16.706	7.59	13.09	1458
70	0.01612	1.1720	0.6050	116.1	567.4	17.690	7.79	13.47	1424
75	0.01680	1.1230	0.5553	165.2	635.7	18.632	8.03	13.85	1391
80	0.01751	1.0848	0.5112	215.6	705.9	19.538	8.33	14.24	1362
85	0.01824	1.0576	0.4721	267.2	778.0	20.413	8.67	14.63	1336
90	0.01900	1.0395	0.4374	320.3	852.2	21.260	9.04	15.02	1314
95	0.01976	1.0284	0.4065	374.9	928.2	22.082	9.43	15.39	1295
100	0.02054	1.0229	0.3790	431.0	1006.1	22.881	9.83	15.75	1280
120	0.02371	1.0378	0.2955	672.3	1336.3	25.888	11.36	17.03	1248
140	0.02692	1.0866	0.2407	930.4	1684.1	28.567	12.28	17.69	1251
160	0.03012	1.1497	0.2029	1196.3	2039.8	30.942	12.64	17.83	1274
180	0.03331	1.2234	0.1751	1461.5	2394.3	33.030	12.58	17.59	1308
200	0.03647	1.3033	0.1539	1720.4	2741.6	34.859	12.32	17.15	1347
220	0.03960	1.3851	0.1372	1970.9	3079.6	36.471	11.98	16.67	1388
240	0.04269	1.4673	0.1237	2213.0	3408.2	37.901	11.66	16.22	1429
260	0.04574	1.5489	0.1127	2447.6	3728.4	39.182	11.38	15.84	1468
280	0.04877	1.6308	0.1034	2676.0	4041.6	40.343	11.15	15.52	1506
300	0.05193	1.7203	0.0968	2896.9	4351.1	41.399	10.92	15.33	1554
350	0.05949	1.9276	0.0819	3442.1	5107.7	43.731	10.66	14.97	1645
400	0.06698	2.1341	0.0711	3976.0	5851.5	45.719	10.55	14.80	1730
450	0.07444	2.3401	0.0629	4504.3	6588.6	47.457	10.50	14.71	1811
500	0.08187	2.5457	0.0564	5030.8	7323.1	49.003	10.48	14.66	1887
550	0.08928	2.7511	0.0511	5555.5	8055.4	50.399	10.48	14.64	1961
600	0.09668	2.9563	0.0468	6080.3	8787.4	51.672	10.48	14.63	2032
700	0.11146	3.3666	0.0400	7130.8	10251.6	53.930	10.53	14.66	2165
800	0.12622	3.7769	0.0350	8187.1	11721.2	55.891	10.61	14.73	2290
900	0.14096	4.1873	0.0311	9253.2	13200.2	57.631	10.73	14.85	2407
1000	0.15570	4.5980	0.0279	10332.5	14692.2	59.206	10.88	15.00	2518
1200	0.18517	5.4197	0.0233	12545.6	17730.3	61.962	11.26	15.38	2720
1400	0.21463	6.2420	0.0200	14839.9	20849.6	64.370	11.69	15.81	2905
1600	0.24409	7.0648	0.0175	17219.4	24053.9	66.487	12.11	16.22	3077
1800	0.27354	7.8879	0.0155	19683.9	27343.1	68.386	12.49	16.61	3238
2000	0.30301	8.7112	0.0140	22234.4	30718.7	70.230	12.89	17.01	3391
2500	0.37692	10.7705	0.0112	29022.8	39576.7	76.525	14.29	18.48	3732
3000	0.45245	12.8306	0.0093	36871.4	49540.0	83.522	17.23	21.72	4021

* TWO-PHASE BOUNDARY

28.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 21.205	88.0083	1379.8	0.23412	227.4110	0.00504	150.73	426.76	0.00089	1.29063	1.9688
22	87.6531	1391.6	0.23094	223.4755	0.00513	154.79	394.45	0.00089	1.28936	1.8186
23	87.1999	1404.8	0.22725	218.5311	0.00524	159.16	360.09	0.00089	1.28773	1.6649
24	86.7396	1416.4	0.22379	213.5974	0.00535	162.81	331.27	0.00089	1.28608	1.5413
25	86.2722	1426.6	0.22058	208.6821	0.00546	165.85	306.83	0.00089	1.28441	1.4402
26	85.7981	1435.7	0.21752	203.7934	0.00556	168.28	285.92	0.00088	1.28272	1.3574
27	85.3174	1444.0	0.21454	198.9393	0.00567	170.25	267.85	0.00088	1.28100	1.2887
28	84.8302	1451.7	0.21164	194.1280	0.00578	171.82	252.13	0.00087	1.27926	1.2313
29	84.3368	1458.3	0.20889	189.3677	0.00589	173.05	238.34	0.00086	1.27750	1.1825
30	83.8372	1463.6	0.20634	184.6668	0.00599	173.97	226.17	0.00085	1.27572	1.1406
31	83.3317	1468.7	0.20381	180.0335	0.00610	173.98	215.36	0.00084	1.27392	1.1091
32	82.8205	1473.2	0.20134	175.4760	0.00621	173.79	205.70	0.00083	1.27210	1.0823
33	82.3037	1476.9	0.19899	171.0027	0.00631	173.44	197.03	0.00081	1.27027	1.0591
34	81.7815	1480.2	0.19671	166.6217	0.00642	172.99	189.21	0.00080	1.26841	1.0388
35	81.2543	1483.2	0.19449	162.3412	0.00652	172.43	182.11	0.00079	1.26654	1.0212
36	80.7222	1485.8	0.19232	158.1692	0.00662	171.77	175.65	0.00078	1.26466	1.0059
37	80.1708	1491.4	0.19040	154.6531	0.00670	170.95	169.63	0.00077	1.26270	0.9916
38	79.6309	1494.2	0.18825	150.7823	0.00679	170.13	164.23	0.00076	1.26080	0.9790
39	79.0888	1495.7	0.18626	146.9473	0.00687	169.24	159.27	0.00075	1.25888	0.9676
40	78.5454	1497.4	0.18434	143.2904	0.00696	168.32	154.69	0.00074	1.25696	0.9574
42	77.4471	1499.6	0.18039	136.0715	0.00712	166.28	146.49	0.00072	1.25309	0.9411
44	76.3388	1498.3	0.17637	128.6814	0.00731	164.15	139.37	0.00071	1.24919	0.9306
46	75.2198	1507.2	0.17147	122.4022	0.00746	161.95	133.10	0.00069	1.24527	0.9236
48	74.0969	1514.9	0.16702	116.6041	0.00758	159.75	127.55	0.00068	1.24133	0.9171
50	72.9730	1521.6	0.16273	111.0704	0.00770	157.57	122.59	0.00066	1.23740	0.9119
52	71.8491	1527.7	0.15859	105.8386	0.00782	155.44	118.14	0.00065	1.23348	0.9076
54	70.7270	1534.5	0.15457	101.0133	0.00792	153.37	114.11	0.00064	1.22958	0.9037
56	69.6092	1541.2	0.15074	96.4948	0.00801	151.38	110.44	0.00063	1.22569	0.9003
58	68.4956	1547.0	0.14715	92.2294	0.00809	149.47	107.09	0.00063	1.22183	0.8969
60	67.3919	1554.9	0.14357	88.3401	0.00816	147.86	104.02	0.00062	1.21802	0.8926
65	64.6769	1581.7	0.13449	79.8351	0.00827	144.87	97.38	0.00062	1.20866	0.8797
70	62.0472	1618.6	0.12520	72.7208	0.00832	142.35	91.97	0.00061	1.19964	0.8701
75	59.5203	1666.8	0.11613	66.8417	0.00831	140.34	87.56	0.00061	1.19101	0.8640
80	57.1053	1725.9	0.10743	61.9491	0.00825	138.92	83.96	0.00061	1.18281	0.8607
85	54.8122	1796.9	0.09932	57.9683	0.00814	140.26	81.05	0.00063	1.17506	0.8457
90	52.6444	1879.1	0.09188	54.7214	0.00799	141.79	78.73	0.00065	1.16776	0.8340
95	50.6046	1970.7	0.08516	52.0429	0.00781	143.55	76.89	0.00066	1.16092	0.8246
100	48.6892	2070.0	0.07920	49.8064	0.00761	143.80	73.44	0.00067	1.15452	0.8044
120	42.1725	2522.8	0.06170	43.7660	0.00675	160.69	77.00	0.00081	1.13293	0.8163
140	37.1500	2967.2	0.05275	40.3688	0.00596	170.94	78.06	0.00094	1.11648	0.8079
160	33.1965	3355.3	0.04836	38.1655	0.00532	176.69	78.56	0.00107	1.10365	0.7930
180	30.0178	3689.0	0.04636	36.7232	0.00477	179.71	79.22	0.00123	1.09341	0.7755
200	27.4181	3983.0	0.04556	35.7338	0.00431	181.42	80.21	0.00139	1.08509	0.7584
220	25.2544	4250.6	0.04533	34.9799	0.00392	182.78	81.52	0.00156	1.07819	0.7434
240	23.4260	4506.1	0.04531	34.3718	0.00360	184.39	83.10	0.00175	1.07239	0.7310
260	21.8607	4759.9	0.04529	33.8600	0.00333	186.54	84.91	0.00194	1.06744	0.7208
280	20.5035	5018.8	0.04521	33.4365	0.00309	189.30	86.88	0.00214	1.06316	0.7124
300	19.2549	5285.1	0.04604	33.1238	0.00292	192.62	89.00	0.00235	1.05924	0.7085
350	16.8102	5923.3	0.04570	32.4031	0.00253	202.98	94.69	0.00290	1.05158	0.6986
400	14.9294	6631.2	0.04515	31.8614	0.00223	215.16	100.76	0.00351	1.04572	0.6929
450	13.4340	7358.2	0.04455	31.4371	0.00200	228.37	107.03	0.00416	1.04107	0.6896
500	12.2147	8088.6	0.04404	31.0949	0.00181	241.93	113.40	0.00486	1.03729	0.6873
550	11.2005	8824.9	0.04357	30.8132	0.00166	255.75	119.81	0.00561	1.03416	0.6858
600	10.3431	9565.6	0.04315	30.5772	0.00153	269.71	126.21	0.00641	1.03152	0.6848
700	8.9719	11067.2	0.04237	30.2045	0.00132	297.91	138.93	0.00815	1.02730	0.6837
800	7.9229	12608.2	0.04161	29.9238	0.00117	326.58	151.45	0.01007	1.02408	0.6833
900	7.0941	14200.4	0.04082	29.7053	0.00105	355.82	163.72	0.01216	1.02154	0.6833
1000	6.4225	15851.5	0.03998	29.5305	0.00095	440.56	175.75	0.01646	1.01949	0.5985
1200	5.4005	19330.9	0.03828	29.2688	0.00080	511.13	199.08	0.02216	1.01637	0.5990
1400	4.6592	23038.3	0.03663	29.0827	0.00069	583.32	221.51	0.02851	1.01411	0.6004
1600	4.0969	26887.6	0.03521	28.9436	0.00060	655.39	243.14	0.03550	1.01240	0.6019
1800	3.6557	30846.8	0.03400	28.8357	0.00054	727.26	264.06	0.04312	1.01106	0.6030
2000	3.3002	34996.8	0.03285	28.7488	0.00049	801.90	284.37	0.05142	1.00998	0.6032
2500	2.6531	47214.6	0.02950	28.5748	0.00039	1040.24	332.90	0.07640	1.00802	0.5913
3000	2.2102	66096.2	0.02448	28.3582	0.00033	1504.66	379.48	0.11282	1.00668	0.5479

* TWO-PHASE BOUNDARY

30.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 21.645	0.01129	2.6677	1.159	-277.7	61.0	5.529	5.60	6.99	1824
22	0.01131	2.6527	1.159	-275.8	63.5	5.644	5.65	7.07	1823
23	0.01137	2.6102	1.158	-270.3	70.7	5.963	5.76	7.29	1817
24	0.01142	2.5675	1.156	-264.7	78.0	6.278	5.87	7.50	1811
25	0.01148	2.5247	1.153	-258.9	85.7	6.588	5.97	7.71	1805
26	0.01154	2.4819	1.149	-252.9	93.5	6.895	6.07	7.91	1799
27	0.01161	2.4391	1.144	-246.7	101.5	7.197	6.16	8.11	1792
28	0.01167	2.3964	1.138	-240.4	109.7	7.495	6.24	8.30	1785
29	0.01174	2.3539	1.131	-234.0	118.1	7.790	6.32	8.49	1778
30	0.01180	2.3117	1.123	-227.4	126.7	8.081	6.39	8.68	1771
31	0.01187	2.2699	1.115	-220.7	135.4	8.368	6.46	8.86	1764
32	0.01194	2.2285	1.107	-213.9	144.4	8.652	6.53	9.04	1756
33	0.01201	2.1876	1.097	-206.9	153.5	8.933	6.59	9.21	1749
34	0.01209	2.1473	1.088	-199.8	162.8	9.211	6.65	9.38	1741
35	0.01216	2.1078	1.077	-192.6	172.3	9.485	6.70	9.55	1733
36	0.01224	2.0691	1.067	-185.2	181.9	9.757	6.75	9.71	1726
37	0.01232	2.0313	1.056	-177.8	191.7	10.025	6.79	9.87	1718
38	0.01240	1.9944	1.044	-170.2	201.6	10.290	6.83	10.03	1710
39	0.01248	1.9684	1.033	-162.5	211.8	10.555	6.87	10.16	1706
40	0.01256	1.9328	1.020	-154.8	222.1	10.814	6.90	10.29	1699
42	0.01273	1.8695	0.9938	-139.0	242.9	11.322	6.95	10.55	1684
44	0.01291	1.8048	0.9667	-122.9	264.2	11.819	7.01	10.80	1668
46	0.01309	1.7369	0.9392	-107.0	285.6	12.293	7.09	11.10	1648
48	0.01328	1.6806	0.9112	-90.2	308.0	12.770	7.16	11.34	1631
50	0.01347	1.6300	0.8834	-73.1	331.0	13.238	7.23	11.57	1615
52	0.01367	1.5811	0.8557	-55.8	354.3	13.696	7.29	11.79	1599
54	0.01387	1.5340	0.8284	-38.1	378.1	14.145	7.34	11.99	1583
56	0.01408	1.4913	0.8017	-20.0	402.5	14.589	7.39	12.18	1567
58	0.01430	1.4507	0.7756	-2.0	427.1	15.020	7.43	12.35	1553
60	0.01452	1.4139	0.7504	16.3	451.9	15.441	7.48	12.52	1538
65	0.01510	1.3324	0.6905	62.7	515.6	16.460	7.63	12.93	1503
70	0.01570	1.2694	0.6352	110.1	581.2	17.433	7.82	13.31	1470
75	0.01633	1.2140	0.5848	158.8	648.7	18.364	8.07	13.71	1436
80	0.01698	1.1744	0.5399	208.7	718.2	19.261	8.37	14.10	1406
85	0.01766	1.1411	0.4998	260.0	789.7	20.128	8.71	14.51	1379
90	0.01835	1.1182	0.4642	312.8	863.3	20.969	9.08	14.92	1355
95	0.01905	1.1033	0.4323	367.2	938.8	21.786	9.47	15.31	1336
100	0.01977	1.0945	0.4038	423.2	1016.4	22.581	9.86	15.68	1319
120	0.02270	1.0997	0.3162	664.6	1345.7	25.580	11.39	17.01	1282
140	0.02568	1.1425	0.2580	923.0	1693.4	28.258	12.31	17.69	1281
160	0.02865	1.2008	0.2176	1189.5	2049.2	30.633	12.66	17.84	1301
180	0.03162	1.2699	0.1879	1455.3	2403.9	32.723	12.61	17.62	1332
200	0.03457	1.3471	0.1652	1714.9	2752.0	34.556	12.35	17.19	1369
220	0.03749	1.4270	0.1472	1966.1	3090.7	36.171	12.01	16.71	1409
240	0.04037	1.5078	0.1327	2208.9	3420.0	37.604	11.69	16.26	1448
260	0.04322	1.5886	0.1208	2444.2	3740.9	38.888	11.41	15.87	1487
280	0.04605	1.6701	0.1109	2673.3	4054.8	40.052	11.19	15.56	1524
300	0.04901	1.7590	0.1038	2893.7	4363.9	41.106	10.94	15.36	1571
350	0.05606	1.9653	0.0878	3439.7	5121.5	43.441	10.67	14.99	1661
400	0.06306	2.1710	0.0762	3974.2	5865.9	45.430	10.56	14.81	1745
450	0.07002	2.3764	0.0673	4503.0	6603.5	47.169	10.51	14.72	1824
500	0.07695	2.5814	0.0604	5029.8	7338.4	48.716	10.49	14.67	1900
550	0.08387	2.7863	0.0548	5554.9	8071.0	50.113	10.48	14.65	1973
600	0.09078	2.9911	0.0501	6079.9	8803.3	51.386	10.49	14.64	2043
700	0.10457	3.4007	0.0429	7130.7	10267.9	53.645	10.53	14.66	2176
800	0.11834	3.8104	0.0375	8187.3	11737.6	55.606	10.61	14.74	2300
900	0.13210	4.2204	0.0333	9253.6	13216.8	57.347	10.73	14.85	2417
1000	0.14586	4.6306	0.0299	10333.1	14708.8	58.921	10.89	15.00	2526
1200	0.17336	5.4516	0.0249	12546.3	17747.1	61.678	11.26	15.38	2728
1400	0.20085	6.2734	0.0214	14840.8	20866.4	64.086	11.70	15.81	2912
1600	0.22834	7.0957	0.0187	17220.4	24070.7	66.202	12.11	16.22	3083
1800	0.25583	7.9185	0.0166	19684.9	27359.9	68.101	12.49	16.61	3245
2000	0.28334	8.7415	0.0150	22235.1	30735.2	69.946	12.89	17.01	3396
2500	0.35231	10.8003	0.0120	29018.4	39587.7	76.238	14.27	18.45	3737
3000	0.42274	12.8600	0.0100	36837.9	49520.2	83.224	17.13	21.61	4027

* TWO-PHASE BOUNDARY

30.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial V)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 21.645	88.5767	1425.6	0.23351	236.2981	0.00490	155.60	439.19	0.00090	1.29267	1.9730
22	88.4220	1431.2	0.23210	234.5564	0.00494	157.41	423.85	0.00091	1.29212	1.9038
23	87.9818	1445.7	0.22837	229.6496	0.00504	161.95	385.75	0.00091	1.29054	1.7363
24	87.5348	1458.6	0.22489	224.7472	0.00514	165.75	353.91	0.00091	1.28893	1.6018
25	87.0814	1470.0	0.22165	219.8570	0.00524	168.92	326.99	0.00091	1.28731	1.4920
26	86.6217	1480.3	0.21857	214.9865	0.00534	171.48	304.01	0.00090	1.28566	1.4022
27	86.1559	1489.8	0.21557	210.1434	0.00544	173.55	284.22	0.00089	1.28399	1.3276
28	85.6841	1498.6	0.21266	205.3357	0.00554	175.23	267.04	0.00089	1.28231	1.2653
29	85.2066	1506.3	0.20990	200.5710	0.00564	176.54	252.01	0.00088	1.28060	1.2123
30	84.7234	1512.6	0.20736	195.8572	0.00574	177.55	238.78	0.00087	1.27888	1.1668
31	84.2347	1518.7	0.20482	191.2021	0.00583	177.62	227.05	0.00086	1.27714	1.1324
32	83.7407	1524.1	0.20236	186.6133	0.00593	177.49	216.60	0.00084	1.27538	1.1030
33	83.2416	1528.7	0.20003	182.0987	0.00603	177.19	207.24	0.00083	1.27360	1.0775
34	82.7375	1532.8	0.19777	177.6659	0.00612	176.80	198.81	0.00082	1.27181	1.0551
35	82.2286	1536.4	0.19557	173.3223	0.00622	176.28	191.18	0.00081	1.27000	1.0358
36	81.7153	1539.7	0.19342	169.0756	0.00631	175.65	184.24	0.00080	1.26818	1.0189
37	81.1976	1542.6	0.19134	164.9329	0.00640	174.93	177.92	0.00079	1.26634	1.0042
38	80.6760	1545.0	0.18937	160.9016	0.00649	174.13	172.12	0.00077	1.26449	0.9911
39	80.1347	1551.3	0.18770	157.7348	0.00655	173.21	166.68	0.00077	1.26258	0.9775
40	79.6102	1552.7	0.18581	153.8691	0.00663	172.31	161.81	0.00076	1.26072	0.9666
42	78.5503	1558.5	0.18203	146.8531	0.00677	170.32	153.10	0.00074	1.25698	0.9481
44	77.4833	1562.5	0.17806	139.8430	0.00691	168.22	145.57	0.00072	1.25322	0.9346
46	76.4083	1567.9	0.17326	132.7170	0.00708	166.06	138.97	0.00071	1.24944	0.9286
48	75.3261	1576.0	0.16884	126.5935	0.00720	163.88	133.13	0.00069	1.24564	0.9216
50	74.2419	1585.1	0.16462	121.0169	0.00730	161.71	127.93	0.00068	1.24184	0.9154
52	73.1587	1593.2	0.16052	115.6721	0.00740	159.59	123.28	0.00067	1.23805	0.9104
54	72.0777	1600.5	0.15655	110.5687	0.00749	157.52	119.07	0.00066	1.23428	0.9064
56	70.9997	1608.6	0.15275	105.8852	0.00757	155.53	115.25	0.00065	1.23053	0.9025
58	69.9274	1615.7	0.14919	101.4425	0.00765	153.62	111.77	0.00064	1.22680	0.8988
60	68.8615	1624.7	0.14564	97.3636	0.00771	152.00	108.57	0.00063	1.22310	0.8944
65	66.2364	1652.6	0.13667	88.2558	0.00782	149.00	101.67	0.00063	1.21403	0.8822
70	63.6849	1693.8	0.12750	80.8416	0.00786	146.43	96.01	0.00062	1.20525	0.8726
75	61.2321	1742.2	0.11834	74.3388	0.00787	144.37	91.38	0.00062	1.19685	0.8675
80	58.8765	1805.3	0.10957	69.1426	0.00781	142.87	87.56	0.00062	1.18882	0.8639
85	56.6333	1876.1	0.10135	64.6270	0.00773	144.19	84.44	0.00063	1.18121	0.8497
90	54.5005	1958.5	0.09381	60.9434	0.00762	145.67	81.91	0.00065	1.17400	0.8387
95	52.4837	2050.6	0.08700	57.9045	0.00747	147.37	79.87	0.00066	1.16722	0.8297
100	50.5805	2150.6	0.08094	55.3620	0.00729	147.75	75.66	0.00067	1.16084	0.8032
120	44.0441	2605.9	0.06304	48.4344	0.00653	164.50	79.13	0.00079	1.13910	0.8183
140	38.9443	3050.7	0.05381	44.4929	0.00580	174.37	79.96	0.00091	1.12234	0.8112
160	34.8991	3436.6	0.04923	41.9073	0.00519	179.66	80.21	0.00104	1.10917	0.7965
180	31.6242	3764.4	0.04712	40.1595	0.00468	182.28	80.63	0.00118	1.09858	0.7792
200	28.9273	4054.6	0.04625	38.9666	0.00424	183.66	81.42	0.00133	1.08992	0.7620
220	26.6772	4319.7	0.04595	38.0675	0.00387	184.75	82.57	0.00149	1.08272	0.7467
240	24.7712	4574.1	0.04586	37.3495	0.00355	186.17	84.03	0.00166	1.07666	0.7338
260	23.1356	4828.2	0.04578	36.7534	0.00329	188.17	85.74	0.00184	1.07147	0.7232
280	21.7153	5088.1	0.04565	36.2665	0.00306	190.81	87.65	0.00203	1.06698	0.7145
300	20.4046	5307.8	0.04652	35.8926	0.00289	194.05	89.70	0.00223	1.06285	0.7098
350	17.8377	5984.9	0.04611	35.0560	0.00250	204.30	95.33	0.00275	1.05479	0.6994
400	15.8585	6692.4	0.04551	34.4295	0.00221	216.46	101.38	0.00332	1.04861	0.6935
450	14.2821	7419.2	0.04486	33.9397	0.00198	229.71	107.66	0.00393	1.04370	0.6899
500	12.9948	8149.5	0.04431	33.5454	0.00180	243.35	114.06	0.00460	1.03971	0.6876
550	11.9229	8885.7	0.04381	33.2209	0.00165	257.29	120.51	0.00530	1.03639	0.6860
600	11.0157	9626.4	0.04337	32.9494	0.00152	271.36	126.97	0.00606	1.03359	0.6849
700	9.5629	11127.9	0.04256	32.5208	0.00132	299.86	139.82	0.00770	1.02911	0.6837
800	8.4501	12669.0	0.04177	32.1984	0.00116	328.85	152.48	0.00951	1.02569	0.6833
900	7.5698	14261.3	0.04095	31.9475	0.00104	358.44	164.91	0.01148	1.02300	0.6833
1000	6.8559	15912.7	0.04010	31.7470	0.00094	440.56	177.09	0.01542	1.02081	0.6031
1200	5.7684	19393.0	0.03838	31.4470	0.00079	511.13	200.74	0.02074	1.01749	0.6040
1400	4.9788	23101.6	0.03671	31.2338	0.00068	583.31	223.48	0.02668	1.01508	0.6057
1600	4.3794	26952.0	0.03527	31.0748	0.00060	655.38	245.41	0.03321	1.01326	0.6075
1800	3.9088	30911.2	0.03406	30.9514	0.00054	727.21	266.63	0.04033	1.01183	0.6089
2000	3.5294	35058.6	0.03290	30.8523	0.00049	801.71	287.22	0.04808	1.01067	0.6094
2500	2.8384	47222.1	0.02958	30.6557	0.00039	1037.86	336.44	0.07134	1.00858	0.5981
3000	2.3655	65845.4	0.02464	30.4206	0.00033	1492.37	383.64	0.10510	1.00715	0.5555

* TWO-PHASE BOUNDARY

35.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 22.715	0.01112	2.8721	1.190	-270.6	118.6	5.603	5.70	7.08	1889
23	0.01113	2.8606	1.190	-269.1	120.6	5.691	5.73	7.14	1888
24	0.01119	2.8201	1.189	-263.6	127.9	6.000	5.84	7.35	1883
25	0.01124	2.7794	1.186	-258.1	135.3	6.304	5.94	7.54	1878
26	0.01129	2.7385	1.183	-252.3	143.0	6.603	6.04	7.74	1873
27	0.01135	2.6975	1.179	-246.5	150.8	6.899	6.14	7.93	1867
28	0.01141	2.6564	1.174	-240.4	158.8	7.191	6.22	8.11	1861
29	0.01147	2.6154	1.168	-234.3	167.0	7.478	6.31	8.30	1855
30	0.01152	2.5745	1.161	-227.9	175.4	7.763	6.38	8.47	1848
31	0.01159	2.5338	1.154	-221.5	184.0	8.043	6.46	8.64	1842
32	0.01165	2.4933	1.147	-214.9	192.7	8.320	6.52	8.81	1835
33	0.01171	2.4531	1.138	-208.2	201.6	8.594	6.59	8.98	1828
34	0.01177	2.4133	1.130	-201.4	210.7	8.865	6.65	9.14	1822
35	0.01184	2.3740	1.121	-194.5	219.9	9.132	6.70	9.30	1815
36	0.01191	2.3352	1.111	-187.5	229.3	9.396	6.76	9.45	1808
37	0.01197	2.2970	1.101	-180.3	238.8	9.657	6.81	9.61	1801
38	0.01204	2.2595	1.091	-173.1	248.5	9.915	6.85	9.75	1794
39	0.01211	2.2228	1.080	-165.7	258.3	10.170	6.88	9.89	1787
40	0.01219	2.1869	1.069	-158.3	268.2	10.423	6.92	10.02	1780
42	0.01233	2.1179	1.047	-143.2	288.6	10.918	6.98	10.28	1767
44	0.01249	2.0695	1.023	-127.7	309.5	11.405	7.04	10.51	1758
46	0.01265	2.0085	0.9981	-112.4	330.2	11.866	7.13	10.78	1742
48	0.01281	1.9548	0.9725	-96.2	352.0	12.330	7.21	11.02	1729
50	0.01297	1.8968	0.9466	-79.7	374.3	12.784	7.28	11.25	1713
52	0.01314	1.8424	0.9204	-63.0	397.0	13.229	7.34	11.47	1697
54	0.01332	1.7924	0.8941	-46.0	420.2	13.666	7.40	11.67	1681
56	0.01350	1.7490	0.8682	-28.4	444.0	14.099	7.46	11.85	1667
58	0.01368	1.7066	0.8428	-11.0	467.8	14.518	7.50	12.02	1654
60	0.01387	1.6653	0.8179	6.7	492.0	14.928	7.55	12.19	1639
65	0.01435	1.5755	0.7585	51.7	554.0	15.919	7.70	12.59	1605
70	0.01486	1.5009	0.7037	98.0	618.0	16.868	7.90	13.00	1571
75	0.01538	1.4414	0.6533	145.5	684.0	17.779	8.15	13.41	1540
80	0.01593	1.3958	0.6068	194.5	752.0	18.657	8.45	13.81	1510
85	0.01649	1.3528	0.5648	245.1	822.1	19.507	8.79	14.24	1480
90	0.01706	1.3226	0.5269	297.2	894.4	20.333	9.16	14.66	1455
95	0.01765	1.2957	0.4930	351.1	968.8	21.137	9.55	15.10	1431
100	0.01825	1.2775	0.4624	406.7	1045.4	21.922	9.94	15.52	1412
120	0.02071	1.2580	0.3662	647.7	1372.5	24.901	11.46	16.95	1364
140	0.02322	1.2843	0.3004	906.9	1719.5	27.574	12.38	17.68	1354
160	0.02574	1.3330	0.2538	1174.4	2075.3	29.949	12.73	17.85	1367
180	0.02826	1.3923	0.2195	1441.3	2430.4	32.041	12.67	17.65	1392
200	0.03077	1.4599	0.1932	1702.3	2779.4	33.879	12.41	17.25	1425
220	0.03327	1.5347	0.1722	1955.0	3119.5	35.501	12.08	16.78	1460
240	0.03574	1.6127	0.1553	2199.4	3450.4	36.940	11.75	16.34	1497
260	0.03819	1.6921	0.1413	2436.3	3773.0	38.231	11.48	15.95	1533
280	0.04061	1.7709	0.1296	2667.0	4088.5	39.401	11.26	15.64	1568
300	0.04316	1.8575	0.1213	2886.3	4396.8	40.450	10.98	15.40	1614
350	0.04921	2.0607	0.1025	3434.2	5156.5	42.791	10.71	15.03	1701
400	0.05521	2.2642	0.0889	3970.2	5902.5	44.785	10.58	14.83	1782
450	0.06117	2.4677	0.0785	4500.1	6641.2	46.527	10.53	14.74	1858
500	0.06712	2.6712	0.0704	5027.9	7377.1	48.076	10.51	14.69	1932
550	0.07305	2.8748	0.0638	5553.7	8110.4	49.474	10.50	14.66	2003
600	0.07897	3.0784	0.0584	6079.2	8843.1	50.747	10.50	14.65	2072
700	0.09078	3.4860	0.0499	7131.0	10308.5	53.006	10.54	14.67	2202
800	0.10258	3.8940	0.0436	8188.3	11778.7	54.970	10.62	14.74	2325
900	0.11438	4.3025	0.0388	9255.0	13258.2	56.711	10.74	14.85	2439
1000	0.12616	4.7115	0.0349	10334.8	14750.5	58.285	10.90	15.01	2547
1200	0.14972	5.5305	0.0291	12548.6	17789.0	61.042	11.27	15.38	2747
1400	0.17328	6.3507	0.0249	14843.5	20908.4	63.450	11.70	15.81	2929
1600	0.19684	7.1718	0.0218	17223.3	24112.7	65.567	12.11	16.22	3099
1800	0.22040	7.9936	0.0194	19687.8	27401.8	67.466	12.49	16.61	3259
2000	0.24397	8.8159	0.0174	22237.6	30776.4	69.309	12.89	17.00	3410
2500	0.30306	10.8731	0.0140	29010.1	39617.4	75.597	14.22	18.40	3750
3000	0.36333	12.9317	0.0116	36768.0	49484.4	82.559	16.92	21.37	4041

* TWO-PHASE BOUNDARY

35.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 22.715	89.9284	1537.2	0.23225	258.2851	0.00461	167.31	470.59	0.00095	1.29753	1.9915
23	89.8102	1541.8	0.23123	256.9143	0.00463	168.63	457.54	0.00095	1.29711	1.9371
24	89.3915	1558.0	0.22764	252.0961	0.00471	172.79	416.80	0.00095	1.29560	1.7717
25	88.9674	1572.5	0.22430	247.2759	0.00480	176.29	382.62	0.00095	1.29407	1.6373
26	88.5380	1585.7	0.22114	242.4608	0.00488	179.13	353.65	0.00094	1.29253	1.5275
27	88.1035	1598.2	0.21807	237.6579	0.00496	181.46	328.86	0.00094	1.29097	1.4366
28	87.6641	1609.9	0.21510	232.8743	0.00504	183.37	307.48	0.00093	1.28940	1.3606
29	87.2198	1620.3	0.21229	228.1169	0.00512	184.90	288.89	0.00092	1.28780	1.2962
30	86.7710	1629.2	0.20972	223.3927	0.00520	186.10	272.62	0.00091	1.28620	1.2408
31	86.3176	1637.7	0.20716	218.7086	0.00528	186.31	258.27	0.00090	1.28457	1.1982
32	85.8598	1645.5	0.20468	214.0714	0.00536	186.31	245.56	0.00089	1.28294	1.1617
33	85.3978	1652.2	0.20235	209.4879	0.00543	186.12	234.22	0.00087	1.28129	1.1300
34	84.9317	1658.3	0.20010	204.9647	0.00551	185.84	224.06	0.00086	1.27962	1.1021
35	84.4616	1663.9	0.19791	200.5084	0.00559	185.41	214.92	0.00085	1.27794	1.0779
36	83.9876	1668.9	0.19580	196.1255	0.00567	184.88	206.64	0.00084	1.27626	1.0568
37	83.5100	1673.4	0.19376	191.8221	0.00574	184.23	199.13	0.00083	1.27455	1.0383
38	83.0289	1677.1	0.19183	187.6046	0.00581	183.51	192.28	0.00082	1.27284	1.0218
39	82.5445	1679.7	0.19009	183.4789	0.00589	182.71	186.01	0.00081	1.27112	1.0068
40	82.0570	1682.1	0.18839	179.4508	0.00596	181.84	180.25	0.00080	1.26939	0.9935
42	81.0737	1687.1	0.18499	171.7099	0.00610	179.91	170.04	0.00078	1.26590	0.9719
44	80.0660	1702.1	0.18157	165.6944	0.00618	177.79	161.17	0.00076	1.26233	0.9529
46	79.0744	1715.5	0.17698	158.8177	0.00628	175.68	153.61	0.00074	1.25883	0.9427
48	78.0791	1729.1	0.17280	152.6322	0.00637	173.54	146.99	0.00073	1.25532	0.9331
50	77.0835	1738.0	0.16875	146.2088	0.00647	171.40	141.14	0.00071	1.25181	0.9265
52	76.0855	1747.0	0.16479	140.1801	0.00657	169.29	135.92	0.00070	1.24830	0.9210
54	75.0875	1757.0	0.16090	134.5895	0.00664	167.21	131.23	0.00069	1.24480	0.9160
56	74.0914	1768.9	0.15718	129.5832	0.00670	165.20	126.99	0.00068	1.24131	0.9110
58	73.1007	1779.2	0.15368	124.7533	0.00676	163.26	123.14	0.00067	1.23785	0.9065
60	72.1159	1789.5	0.15016	120.0965	0.00681	161.63	119.63	0.00066	1.23441	0.9019
65	69.6848	1822.7	0.14128	109.7904	0.00691	158.59	112.04	0.00065	1.22596	0.8897
70	67.3054	1866.5	0.13228	101.0215	0.00697	155.92	105.81	0.00064	1.21772	0.8824
75	65.0001	1923.2	0.12326	93.6896	0.00697	153.70	100.64	0.00063	1.20977	0.8781
80	62.7793	1993.9	0.11435	87.6305	0.00692	152.05	96.33	0.00063	1.20214	0.8748
85	60.6511	2068.8	0.10591	82.0505	0.00688	153.33	92.74	0.00064	1.19487	0.8614
90	58.6090	2156.9	0.09813	77.5149	0.00680	154.73	89.75	0.00065	1.18791	0.8505
95	56.6637	2248.7	0.09111	73.4173	0.00672	156.32	87.27	0.00066	1.18131	0.8430
100	54.8072	2349.4	0.08484	70.0140	0.00660	157.18	81.02	0.00067	1.17504	0.7998
120	48.2939	2811.9	0.06614	60.7526	0.00603	173.69	84.29	0.00076	1.15320	0.8226
140	43.0694	3256.5	0.05633	55.3153	0.00543	182.77	84.65	0.00086	1.13589	0.8190
160	38.8496	3642.1	0.05133	51.7872	0.00490	187.09	84.33	0.00097	1.12203	0.8045
180	35.3863	3960.6	0.04896	49.2697	0.00446	188.77	84.21	0.00109	1.11075	0.7872
200	32.4953	4236.2	0.04791	47.4392	0.00407	189.34	84.52	0.00122	1.10139	0.7700
220	30.0560	4494.6	0.04746	46.1257	0.00373	189.80	85.28	0.00135	1.09354	0.7542
240	27.9774	4747.6	0.04722	45.1204	0.00344	190.71	86.43	0.00150	1.08688	0.7405
260	26.1847	5003.3	0.04699	44.3060	0.00319	192.33	87.90	0.00166	1.08115	0.7290
280	24.6224	5262.5	0.04674	43.6041	0.00297	194.68	89.62	0.00182	1.07619	0.7198
300	23.1706	5466.0	0.04768	43.0404	0.00282	197.69	91.53	0.00199	1.07158	0.7131
350	20.3223	6139.9	0.04710	41.8772	0.00245	207.63	96.94	0.00245	1.06259	0.7015
400	18.1136	6846.0	0.04636	41.0123	0.00217	219.72	102.92	0.00294	1.05566	0.6949
450	16.3468	7572.4	0.04561	40.3390	0.00195	233.05	109.22	0.00348	1.05013	0.6909
500	14.8989	8302.3	0.04497	39.7984	0.00177	246.88	115.69	0.00406	1.04562	0.6882
550	13.6895	9038.2	0.04441	39.3544	0.00162	261.08	122.25	0.00468	1.04186	0.6864
600	12.6634	9778.7	0.04390	38.9832	0.00150	275.46	128.85	0.00535	1.03868	0.6852
700	11.0151	11279.8	0.04300	38.3982	0.00130	304.68	142.02	0.00679	1.03359	0.6838
800	9.7480	12820.8	0.04215	37.9589	0.00115	334.48	155.05	0.00838	1.02968	0.6833
900	8.7431	14413.5	0.04128	37.6175	0.00103	364.94	167.87	0.01012	1.02659	0.6833
1000	7.9264	16065.5	0.04039	37.3450	0.00093	440.56	180.45	0.01333	1.02409	0.6146
1200	6.6790	19547.9	0.03860	36.9381	0.00079	511.13	204.90	0.01791	1.02027	0.6166
1400	5.7709	23259.3	0.03689	36.6497	0.00068	583.31	228.44	0.02302	1.01750	0.6192
1600	5.0803	27111.9	0.03543	36.4349	0.00060	655.37	251.16	0.02863	1.01539	0.6217
1800	4.5372	31071.5	0.03419	36.2687	0.00053	727.11	273.15	0.03474	1.01374	0.6238
2000	4.0989	35213.4	0.03303	36.1356	0.00048	801.30	294.50	0.04139	1.01240	0.6249
2500	3.2996	47263.1	0.02976	35.8771	0.00039	1032.83	345.52	0.06125	1.00998	0.6154
3000	2.7523	65341.6	0.02500	35.5924	0.00033	1466.36	394.37	0.08974	1.00832	0.5748

* TWO-PHASE BOUNDARY

40.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 23.746	0.01097	3.0705	1.220	-263.2	175.4	5.672	5.78	7.16	1951
24	0.01098	3.0607	1.220	-261.9	177.3	5.748	5.81	7.22	1950
25	0.01103	3.0220	1.218	-256.5	184.6	6.047	5.92	7.41	1945
26	0.01108	2.9829	1.215	-251.0	192.1	6.341	6.02	7.60	1941
27	0.01113	2.9437	1.212	-245.3	199.8	6.631	6.11	7.78	1936
28	0.01118	2.9043	1.208	-239.5	207.6	6.917	6.21	7.96	1930
29	0.01123	2.8648	1.202	-233.5	215.7	7.200	6.29	8.14	1925
30	0.01128	2.8253	1.197	-227.4	223.9	7.479	6.37	8.31	1919
31	0.01134	2.7858	1.190	-221.2	232.3	7.754	6.45	8.47	1913
32	0.01139	2.7464	1.183	-214.9	240.8	8.025	6.52	8.63	1907
33	0.01145	2.7071	1.176	-208.4	249.6	8.293	6.58	8.79	1901
34	0.01151	2.6681	1.168	-201.9	258.4	8.558	6.65	8.95	1895
35	0.01157	2.6293	1.159	-195.2	267.5	8.820	6.71	9.10	1889
36	0.01163	2.5909	1.151	-188.4	276.6	9.078	6.76	9.25	1882
37	0.01169	2.5529	1.142	-181.5	285.9	9.334	6.81	9.39	1876
38	0.01175	2.5154	1.132	-174.5	295.4	9.586	6.86	9.53	1870
39	0.01181	2.4784	1.122	-167.4	305.0	9.835	6.90	9.66	1863
40	0.01187	2.4420	1.112	-160.2	314.7	10.081	6.93	9.79	1857
42	0.01200	2.3712	1.091	-145.6	334.6	10.565	7.00	10.04	1844
44	0.01214	2.3036	1.070	-130.7	354.9	11.038	7.07	10.29	1831
46	0.01228	2.2396	1.047	-115.9	375.2	11.489	7.16	10.56	1817
48	0.01242	2.2010	1.025	-100.2	396.7	11.947	7.24	10.78	1810
50	0.01257	2.1414	1.001	-84.3	418.5	12.391	7.32	11.01	1795
52	0.01272	2.0954	0.9765	-68.0	440.7	12.827	7.39	11.21	1784
54	0.01287	2.0472	0.9519	-51.5	463.3	13.254	7.45	11.41	1771
56	0.01303	1.9978	0.9274	-34.5	486.6	13.677	7.51	11.60	1757
58	0.01319	1.9532	0.9026	-17.5	510.0	14.087	7.56	11.77	1744
60	0.01335	1.9092	0.8783	-0.3	533.7	14.489	7.61	11.93	1730
65	0.01377	1.8163	0.8195	43.6	594.3	15.460	7.77	12.33	1697
70	0.01420	1.7308	0.7646	88.9	657.0	16.388	7.98	12.75	1663
75	0.01466	1.6626	0.7139	135.5	721.8	17.282	8.23	13.17	1631
80	0.01513	1.6074	0.6672	183.7	788.7	18.146	8.53	13.60	1601
85	0.01561	1.5682	0.6242	233.5	857.8	18.983	8.87	14.01	1574
90	0.01610	1.5299	0.5848	285.1	929.0	19.797	9.24	14.45	1547
95	0.01660	1.4914	0.5491	338.5	1002.4	20.591	9.63	14.92	1520
100	0.01711	1.4676	0.5167	393.7	1078.0	21.366	10.02	15.34	1499
120	0.01922	1.4216	0.4137	633.9	1402.7	24.322	11.54	16.87	1442
140	0.02139	1.4312	0.3413	893.3	1748.8	26.988	12.45	17.66	1425
160	0.02357	1.4693	0.2892	1161.6	2104.5	29.363	12.79	17.85	1432
180	0.02576	1.5206	0.2505	1429.3	2459.7	31.455	12.73	17.66	1452
200	0.02794	1.5804	0.2207	1691.3	2809.0	33.295	12.47	17.28	1480
220	0.03012	1.6472	0.1971	1945.2	3150.0	34.920	12.13	16.84	1512
240	0.03228	1.7212	0.1778	2190.9	3482.2	36.365	11.82	16.41	1546
260	0.03442	1.7982	0.1617	2429.2	3806.1	37.662	11.54	16.02	1580
280	0.03654	1.8760	0.1482	2661.4	4123.2	38.837	11.33	15.71	1613
300	0.03877	1.9580	0.1386	2879.8	4430.6	39.881	11.02	15.44	1657
350	0.04407	2.1575	0.1171	3429.4	5192.1	42.228	10.74	15.06	1739
400	0.04932	2.3584	0.1015	3966.8	5939.5	44.226	10.61	14.86	1817
450	0.05454	2.5599	0.0897	4497.8	6679.3	45.970	10.56	14.76	1892
500	0.05974	2.7616	0.0804	5026.4	7416.0	47.521	10.53	14.70	1964
550	0.06492	2.9637	0.0729	5552.9	8149.9	48.920	10.52	14.67	2033
600	0.07010	3.1659	0.0667	6079.1	8883.2	50.195	10.52	14.66	2100
700	0.08044	3.5711	0.0570	7131.8	10349.2	52.456	10.56	14.68	2228
800	0.09076	3.9772	0.0498	8189.6	11819.9	54.418	10.63	14.74	2348
900	0.10107	4.3840	0.0442	9256.9	13299.6	56.160	10.75	14.86	2461
1000	0.11137	4.7915	0.0398	10337.1	14792.1	57.735	10.90	15.01	2568
1200	0.13198	5.6082	0.0332	12551.4	17830.7	60.492	11.28	15.38	2765
1400	0.15259	6.4267	0.0284	14846.6	20950.2	62.900	11.71	15.81	2946
1600	0.17320	7.2463	0.0249	17226.7	24154.5	65.016	12.12	16.22	3114
1800	0.19380	8.0669	0.0221	19691.2	27443.4	66.915	12.50	16.60	3274
2000	0.21442	8.8881	0.0199	22240.7	30817.5	68.759	12.89	17.00	3424
2500	0.26611	10.9435	0.0159	29004.7	39649.1	75.043	14.19	18.35	3763
3000	0.31676	13.0008	0.0133	36712.9	49463.4	81.986	16.75	21.18	4053

* TWO-PHASE BOUNDARY

40.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 23.746	91.1935	1644.6	0.23141	280.0107	0.00436	178.41	502.49	0.00098	1.30209	2.0180
24	91.0924	1649.4	0.23046	278.8086	0.00437	179.48	490.21	0.00098	1.30173	1.9708
25	90.6916	1667.0	0.22700	274.0675	0.00444	183.27	446.98	0.00098	1.30028	1.8070
26	90.2863	1683.3	0.22373	269.3192	0.00451	186.38	410.60	0.00098	1.29882	1.6736
27	89.8767	1698.7	0.22056	264.5703	0.00458	188.96	379.68	0.00097	1.29735	1.5635
28	89.4630	1713.2	0.21750	259.8275	0.00465	191.07	353.17	0.00097	1.29586	1.4716
29	89.0452	1726.4	0.21462	255.0973	0.00471	192.80	330.25	0.00096	1.29435	1.3939
30	88.6236	1737.9	0.21198	250.3862	0.00478	194.17	310.30	0.00095	1.29284	1.3272
31	88.1982	1748.9	0.20936	245.7003	0.00484	194.51	292.80	0.00094	1.29131	1.2753
32	87.7692	1759.2	0.20684	241.0461	0.00491	194.62	277.37	0.00092	1.28977	1.2306
33	87.3366	1768.2	0.20447	236.4296	0.00497	194.53	263.68	0.00091	1.28822	1.1918
34	86.9007	1776.5	0.20219	231.8569	0.00504	194.33	251.47	0.00090	1.28666	1.1578
35	86.4613	1784.1	0.19999	227.3338	0.00510	193.99	240.52	0.00089	1.28509	1.1281
36	86.0188	1791.0	0.19787	222.8662	0.00516	193.53	230.66	0.00088	1.28350	1.1021
37	85.5732	1797.3	0.19582	218.4597	0.00523	192.95	221.75	0.00086	1.28191	1.0793
38	85.1246	1802.6	0.19390	214.1198	0.00529	192.28	213.65	0.00085	1.28031	1.0590
39	84.6731	1806.6	0.19217	209.8520	0.00535	191.53	206.27	0.00084	1.27870	1.0405
40	84.2189	1810.2	0.19049	205.6614	0.00541	190.71	199.52	0.00083	1.27708	1.0242
42	83.3031	1817.2	0.18715	197.5321	0.00552	188.85	187.62	0.00081	1.27382	0.9974
44	82.3785	1825.1	0.18372	189.7700	0.00564	186.84	177.47	0.00079	1.27053	0.9771
46	81.4466	1839.6	0.17941	182.4096	0.00574	184.72	168.71	0.00077	1.26722	0.9643
48	80.4895	1863.4	0.17577	177.1544	0.00579	182.48	160.96	0.00076	1.26383	0.9589
50	79.5574	1874.7	0.17189	170.3629	0.00587	180.33	154.32	0.00074	1.26054	0.9423
52	78.6261	1891.9	0.16816	164.7520	0.00593	178.21	148.44	0.00073	1.25725	0.9340
54	77.6931	1906.3	0.16446	159.0507	0.00598	176.11	143.19	0.00072	1.25396	0.9276
56	76.7649	1918.1	0.16091	153.3596	0.00605	174.08	138.48	0.00070	1.25069	0.9228
58	75.8377	1930.8	0.15746	148.1271	0.00609	172.10	134.22	0.00069	1.24743	0.9175
60	74.9161	1943.2	0.15400	143.0324	0.00614	170.44	130.34	0.00069	1.24420	0.9125
65	72.6362	1984.5	0.14518	131.9255	0.00621	167.34	122.02	0.00067	1.23623	0.8989
70	70.4040	2031.5	0.13615	121.8556	0.00627	164.59	115.23	0.00066	1.22845	0.8924
75	68.2267	2092.6	0.12713	113.4349	0.00629	162.24	109.56	0.00065	1.22090	0.8894
80	66.1148	2166.3	0.11828	106.2738	0.00628	160.42	104.80	0.00064	1.21361	0.8885
85	64.0771	2256.1	0.10980	100.4830	0.00621	161.66	100.78	0.00065	1.20660	0.8737
90	62.1255	2349.0	0.10187	95.0470	0.00615	163.02	97.40	0.00065	1.19991	0.8635
95	60.2513	2441.3	0.09466	89.8598	0.00611	164.54	94.54	0.00066	1.19350	0.8572
100	58.4545	2547.7	0.08821	85.7859	0.00602	166.04	86.10	0.00067	1.18739	0.7957
120	52.0300	3017.0	0.06891	73.9680	0.00559	182.40	89.25	0.00075	1.16569	0.8256
140	46.7548	3462.8	0.05864	66.9139	0.00510	190.84	89.21	0.00083	1.14808	0.8257
160	42.4196	3847.2	0.05330	62.3257	0.00464	194.35	88.40	0.00092	1.13374	0.8119
180	38.8206	4161.3	0.05069	59.0296	0.00424	195.22	87.79	0.00103	1.12194	0.7941
200	35.7865	4427.5	0.04948	56.5563	0.00390	195.07	87.67	0.00114	1.11205	0.7766
220	33.2007	4673.3	0.04891	54.6870	0.00360	194.93	88.07	0.00126	1.10367	0.7608
240	30.9777	4921.5	0.04856	53.3182	0.00333	195.36	88.91	0.00138	1.09650	0.7468
260	29.0508	5176.9	0.04821	52.2382	0.00310	196.58	90.13	0.00152	1.09031	0.7347
280	27.3648	5439.8	0.04782	51.3371	0.00289	198.63	91.66	0.00166	1.08492	0.7247
300	25.7922	5625.3	0.04880	50.5022	0.00275	201.42	93.43	0.00182	1.07990	0.7163
350	22.6935	6295.7	0.04806	48.9622	0.00239	211.01	98.61	0.00222	1.07007	0.7037
400	20.2773	7000.3	0.04719	47.8225	0.00212	222.99	104.50	0.00266	1.06245	0.6963
450	18.3361	7726.0	0.04633	46.9380	0.00191	236.38	110.79	0.00314	1.05635	0.6918
500	16.7397	8455.5	0.04561	46.2291	0.00174	250.37	117.32	0.00366	1.05136	0.6889
550	15.4024	9191.1	0.04498	45.6475	0.00160	264.81	123.99	0.00422	1.04719	0.6869
600	14.2650	9931.3	0.04442	45.1617	0.00148	279.49	130.72	0.00481	1.04365	0.6855
700	12.4322	11431.9	0.04343	44.3967	0.00128	309.42	144.21	0.00611	1.03797	0.6839
800	11.0185	12972.7	0.04251	43.8227	0.00114	340.05	157.60	0.00754	1.03360	0.6833
900	9.8944	14565.5	0.04159	43.3771	0.00102	371.40	170.82	0.00910	1.03013	0.6833
1000	8.9787	16218.0	0.04066	43.0218	0.00093	440.56	183.81	0.01177	1.02732	0.6261
1200	7.5767	19702.1	0.03882	42.4922	0.00078	511.13	209.10	0.01579	1.02302	0.6292
1400	6.5536	23415.8	0.03706	42.1174	0.00068	583.31	233.48	0.02027	1.01989	0.6329
1600	5.7738	27270.6	0.03557	41.8388	0.00059	655.35	257.04	0.02519	1.01751	0.6363
1800	5.1599	31230.6	0.03431	41.6238	0.00053	727.02	279.85	0.03055	1.01563	0.6391
2000	4.6637	35368.3	0.03315	41.4520	0.00048	800.96	301.99	0.03637	1.01412	0.6409
2500	3.7578	47326.9	0.02992	41.1238	0.00039	1028.77	354.94	0.05370	1.01137	0.6332
3000	3.1371	64967.4	0.02530	40.7851	0.00033	1445.38	405.57	0.07832	1.00948	0.5943

* TWO-PHASE BOUNDARY

45.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 24.742	0.01082	3.2640	1.249	-255.6	231.5	5.737	5.86	7.25	2009
25	0.01084	3.2545	1.249	-254.3	233.3	5.812	5.89	7.30	2008
26	0.01088	3.2173	1.247	-248.9	240.7	6.102	5.99	7.48	2004
27	0.01093	3.1798	1.244	-243.4	248.3	6.387	6.09	7.66	2000
28	0.01097	3.1420	1.240	-237.8	256.1	6.669	6.19	7.84	1995
29	0.01102	3.1041	1.235	-232.1	264.0	6.947	6.28	8.01	1990
30	0.01107	3.0660	1.230	-226.2	272.1	7.221	6.36	8.17	1985
31	0.01112	3.0278	1.224	-220.1	280.3	7.492	6.43	8.33	1980
32	0.01117	2.9896	1.217	-214.0	288.7	7.759	6.51	8.49	1975
33	0.01122	2.9514	1.210	-207.7	297.3	8.022	6.58	8.64	1969
34	0.01127	2.9133	1.203	-201.4	306.0	8.283	6.64	8.79	1963
35	0.01133	2.8753	1.195	-194.9	314.9	8.540	6.70	8.93	1958
36	0.01138	2.8375	1.187	-188.3	323.9	8.793	6.76	9.08	1952
37	0.01144	2.8000	1.178	-181.6	333.0	9.044	6.82	9.22	1946
38	0.01149	2.7628	1.170	-174.8	342.3	9.291	6.86	9.35	1940
39	0.01155	2.7260	1.160	-167.9	351.7	9.536	6.91	9.48	1934
40	0.01161	2.6896	1.151	-161.0	361.2	9.777	6.94	9.60	1928
42	0.01172	2.6182	1.131	-146.8	380.7	10.251	7.02	9.84	1916
44	0.01184	2.5492	1.111	-132.3	400.6	10.715	7.09	10.08	1904
46	0.01197	2.4829	1.090	-118.0	420.5	11.156	7.19	10.34	1890
48	0.01209	2.4198	1.068	-102.8	441.4	11.602	7.28	10.59	1876
50	0.01222	2.3601	1.046	-87.3	462.8	12.039	7.35	10.82	1863
52	0.01236	2.3042	1.023	-71.5	484.7	12.467	7.43	11.03	1850
54	0.01250	2.2794	1.002	-55.3	507.1	12.890	7.49	11.21	1846
56	0.01264	2.2290	0.9786	-38.7	530.0	13.306	7.55	11.40	1834
58	0.01278	2.1913	0.9554	-22.1	552.9	13.709	7.61	11.55	1824
60	0.01292	2.1432	0.9323	-5.3	576.2	14.104	7.67	11.73	1811
65	0.01329	2.0456	0.8749	37.7	635.9	15.058	7.83	12.13	1780
70	0.01368	1.9626	0.8202	82.0	697.5	15.972	8.04	12.53	1749
75	0.01407	1.8870	0.7692	127.8	761.2	16.851	8.30	12.96	1716
80	0.01448	1.8198	0.7219	175.3	827.1	17.701	8.60	13.41	1684
85	0.01491	1.7672	0.6782	224.5	895.3	18.528	8.95	13.86	1655
90	0.01534	1.7229	0.6379	275.6	965.8	19.333	9.32	14.32	1627
95	0.01578	1.6938	0.6010	328.5	1038.4	20.119	9.70	14.74	1604
100	0.01622	1.6639	0.5671	383.3	1113.3	20.887	10.09	15.18	1582
120	0.01806	1.5871	0.4586	622.5	1435.4	23.819	11.61	16.80	1515
140	0.01997	1.5823	0.3806	881.9	1780.5	26.477	12.52	17.63	1493
160	0.02190	1.6082	0.3236	1150.6	2135.9	28.850	12.85	17.85	1494
180	0.02382	1.6518	0.2807	1419.1	2491.2	30.942	12.79	17.66	1510
200	0.02575	1.7050	0.2477	1681.8	2840.6	32.783	12.52	17.29	1535
220	0.02768	1.7654	0.2215	1936.6	3182.0	34.410	12.19	16.87	1563
240	0.02959	1.8336	0.2000	2183.3	3515.0	35.859	11.87	16.46	1594
260	0.03150	1.9071	0.1821	2422.8	3840.2	37.161	11.60	16.09	1626
280	0.03338	1.9838	0.1669	2656.3	4158.5	38.340	11.39	15.77	1657
300	0.03536	2.0602	0.1559	2874.0	4465.2	39.380	11.05	15.48	1698
350	0.04006	2.2557	0.1316	3425.3	5228.2	41.732	10.77	15.09	1778
400	0.04473	2.4537	0.1141	3964.0	5976.9	43.733	10.64	14.88	1853
450	0.04937	2.6528	0.1008	4496.0	6717.7	45.479	10.58	14.78	1925
500	0.05399	2.8526	0.0903	5025.5	7455.1	47.032	10.55	14.71	1995
550	0.05860	3.0529	0.0818	5552.6	8189.7	48.432	10.54	14.68	2062
600	0.06320	3.2536	0.0749	6079.4	8923.4	49.707	10.54	14.67	2128
700	0.07238	3.6562	0.0640	7132.9	10390.1	51.970	10.57	14.68	2253
800	0.08155	4.0600	0.0559	8191.5	11861.1	53.933	10.65	14.75	2371
900	0.09071	4.4649	0.0497	9259.2	13341.1	55.674	10.76	14.86	2483
1000	0.09986	4.8708	0.0447	10339.8	14833.6	57.249	10.91	15.01	2588
1200	0.11817	5.6849	0.0373	12554.7	17872.4	60.006	11.29	15.38	2783
1400	0.13648	6.5012	0.0320	14850.3	20991.9	62.415	11.72	15.81	2962
1600	0.15479	7.3191	0.0280	17230.5	24196.1	64.531	12.13	16.22	3129
1800	0.17310	8.1383	0.0249	19695.2	27484.8	66.430	12.50	16.60	3287
2000	0.19142	8.9584	0.0224	22244.5	30858.5	68.273	12.89	16.99	3437
2500	0.23735	11.0116	0.0179	29001.4	39682.2	74.554	14.16	18.32	3775
3000	0.28410	13.0674	0.0149	36668.5	49452.7	81.481	16.61	21.02	4065

* TWO-PHASE BOUNDARY

45.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.742	92.3840	1749.4	0.23071	301.5396	0.00414	188.97	534.95	0.00102	1.30639	2.0519
25	92.2852	1754.5	0.22980	300.3381	0.00416	189.95	521.85	0.00102	1.30603	2.0045
26	91.8995	1773.8	0.22639	295.6654	0.00422	193.31	476.31	0.00101	1.30464	1.8431
27	91.5102	1792.2	0.22310	290.9811	0.00427	196.11	437.86	0.00101	1.30323	1.7103
28	91.1173	1809.6	0.21993	286.2917	0.00433	198.43	405.09	0.00100	1.30182	1.5998
29	90.7211	1825.6	0.21695	281.6032	0.00439	200.33	376.93	0.00099	1.30039	1.5065
30	90.3216	1839.6	0.21423	276.9220	0.00444	201.86	352.54	0.00098	1.29895	1.4267
31	89.9189	1853.2	0.21154	272.2539	0.00450	202.31	331.26	0.00097	1.29750	1.3640
32	89.5132	1866.0	0.20895	267.6047	0.00455	202.52	312.59	0.00096	1.29604	1.3102
33	89.1045	1877.4	0.20652	262.9803	0.00460	202.52	296.09	0.00095	1.29457	1.2633
34	88.6930	1887.9	0.20419	258.3862	0.00466	202.40	281.45	0.00093	1.29309	1.2222
35	88.2787	1897.6	0.20195	253.8280	0.00471	202.13	268.38	0.00092	1.29160	1.1863
36	87.8617	1906.6	0.19979	249.3110	0.00476	201.72	256.65	0.00091	1.29010	1.1549
37	87.4422	1914.8	0.19771	244.8403	0.00481	201.20	246.09	0.00090	1.28860	1.1272
38	87.0201	1921.9	0.19578	240.4212	0.00486	200.58	236.54	0.00089	1.28709	1.1026
39	86.5955	1927.6	0.19403	236.0586	0.00492	199.87	227.86	0.00088	1.28557	1.0803
40	86.1687	1932.6	0.19235	231.7573	0.00497	199.09	219.96	0.00087	1.28404	1.0604
42	85.3086	1942.3	0.18901	223.3571	0.00507	197.28	206.09	0.00085	1.28097	1.0278
44	84.4405	1952.4	0.18560	215.2561	0.00516	195.30	194.34	0.00083	1.27787	1.0027
46	83.5657	1969.2	0.18132	207.4866	0.00525	193.20	184.27	0.00080	1.27475	0.9865
48	82.6853	1983.3	0.17749	200.0778	0.00534	191.04	175.55	0.00079	1.27162	0.9728
50	81.8007	1997.0	0.17381	193.0548	0.00542	188.86	167.94	0.00077	1.26848	0.9619
52	80.9135	2010.7	0.17026	186.4382	0.00549	186.67	161.22	0.00075	1.26533	0.9529
54	80.0086	2040.1	0.16712	182.3746	0.00549	184.44	155.17	0.00074	1.26213	0.9429
56	79.1301	2054.2	0.16370	176.3816	0.00555	182.36	149.90	0.00073	1.25903	0.9369
58	78.2527	2073.7	0.16046	171.4717	0.00557	180.33	145.15	0.00072	1.25593	0.9300
60	77.3824	2086.5	0.15717	165.8425	0.00562	178.63	140.87	0.00071	1.25286	0.9250
65	75.2269	2133.5	0.14849	153.8824	0.00569	175.46	131.74	0.00069	1.24529	0.9108
70	73.1119	2192.1	0.13950	143.4871	0.00572	172.60	124.33	0.00068	1.23789	0.9027
75	71.0481	2258.8	0.13042	134.0696	0.00574	170.14	118.20	0.00067	1.23069	0.9002
80	69.0373	2334.1	0.12151	125.6357	0.00575	168.20	113.03	0.00065	1.22371	0.9012
85	67.0851	2423.4	0.11299	118.5543	0.00572	169.41	108.62	0.00066	1.21696	0.8888
90	65.1997	2521.2	0.10501	112.3300	0.00568	170.71	104.86	0.00066	1.21046	0.8795
95	63.3895	2634.2	0.09770	107.3672	0.00560	172.17	101.66	0.00066	1.20424	0.8707
100	61.6472	2745.7	0.09113	102.5731	0.00553	174.40	90.94	0.00067	1.19827	0.7917
120	55.3571	3217.9	0.07137	87.8588	0.00522	190.68	94.01	0.00074	1.17690	0.8281
140	50.0760	3669.5	0.06073	79.2331	0.00480	198.59	93.63	0.00081	1.15915	0.8312
160	45.6714	4050.6	0.05513	73.4478	0.00441	201.41	92.40	0.00089	1.14449	0.8187
180	41.9732	4361.9	0.05231	69.3320	0.00405	201.57	91.35	0.00098	1.13228	0.8005
200	38.8312	4622.3	0.05095	66.2089	0.00374	200.78	90.84	0.00108	1.12197	0.7824
220	36.1318	4859.2	0.05029	63.7886	0.00347	200.08	90.88	0.00118	1.11317	0.7663
240	33.7920	5098.1	0.04986	61.9605	0.00323	200.05	91.44	0.00129	1.10558	0.7523
260	31.7500	5349.7	0.04943	60.5518	0.00301	200.90	92.42	0.00142	1.09899	0.7401
280	29.9569	5615.0	0.04892	59.4287	0.00281	202.65	93.76	0.00154	1.09322	0.7297
300	28.2816	5785.2	0.04986	58.2664	0.00268	205.20	95.37	0.00169	1.08785	0.7193
350	24.9599	6451.9	0.04898	56.3024	0.00234	214.42	100.31	0.00205	1.07726	0.7057
400	22.3557	7155.0	0.04798	54.8534	0.00208	226.27	106.09	0.00245	1.06900	0.6978
450	20.2547	7880.0	0.04703	53.7312	0.00188	239.68	112.37	0.00288	1.06238	0.6928
500	18.5211	8609.0	0.04622	52.8327	0.00171	253.82	118.95	0.00335	1.05693	0.6896
550	17.0646	9344.3	0.04552	52.0962	0.00157	268.48	125.71	0.00386	1.05237	0.6873
600	15.8228	10084.1	0.04491	51.4811	0.00145	283.46	132.56	0.00440	1.04850	0.6858
700	13.8159	11584.2	0.04383	50.5130	0.00127	314.10	146.37	0.00558	1.04225	0.6841
800	12.2628	13124.6	0.04285	49.7869	0.00112	345.56	160.13	0.00688	1.03744	0.6834
900	11.0245	14717.4	0.04188	49.2236	0.00101	377.81	173.75	0.00830	1.03362	0.6833
1000	10.0136	16370.2	0.04092	48.7748	0.00092	410.56	187.17	0.01055	1.03050	0.6376
1200	8.4622	19855.7	0.03901	48.1065	0.00077	511.13	213.33	0.01414	1.02573	0.6420
1400	7.3271	23571.5	0.03722	47.6344	0.00067	583.31	238.60	0.01813	1.02225	0.6467
1600	6.4604	27428.1	0.03570	47.2842	0.00059	655.34	263.04	0.02251	1.01960	0.6511
1800	5.7769	31388.6	0.03443	47.0144	0.00053	726.96	286.72	0.02728	1.01751	0.6549
2000	5.2241	35522.9	0.03325	46.7994	0.00048	800.69	309.72	0.03247	1.01583	0.6574
2500	4.2132	47406.5	0.03005	46.3936	0.00039	1025.41	364.72	0.04784	1.01275	0.6515
3000	3.5199	64685.0	0.02556	45.9966	0.00032	1427.99	417.28	0.06949	1.01065	0.6142

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

50.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 25.708	0.01069	3.4533	1.278	-247.9	286.8	5.798	5.94	7.33	2064
26	0.01071	3.4430	1.278	-246.4	289.0	5.881	5.97	7.38	2063
27	0.01075	3.4072	1.275	-241.0	296.4	6.163	6.07	7.56	2060
28	0.01079	3.3711	1.271	-235.6	304.1	6.441	6.17	7.73	2056
29	0.01084	3.3346	1.267	-230.0	311.9	6.715	6.26	7.90	2051
30	0.01088	3.2980	1.262	-224.2	319.9	6.986	6.34	8.06	2047
31	0.01093	3.2612	1.256	-218.4	328.0	7.252	6.42	8.21	2042
32	0.01097	3.2242	1.250	-212.4	336.3	7.515	6.50	8.37	2037
33	0.01102	3.1872	1.243	-206.3	344.7	7.775	6.57	8.51	2032
34	0.01107	3.1501	1.236	-200.1	353.3	8.032	6.64	8.66	2027
35	0.01112	3.1131	1.229	-193.8	362.0	8.285	6.70	8.80	2022
36	0.01117	3.0761	1.221	-187.4	370.9	8.534	6.76	8.94	2016
37	0.01122	3.0393	1.213	-180.9	379.9	8.781	6.82	9.07	2011
38	0.01127	3.0027	1.205	-174.3	389.1	9.025	6.87	9.20	2005
39	0.01132	2.9663	1.196	-167.6	398.3	9.265	6.91	9.32	2000
40	0.01137	2.9302	1.187	-160.8	407.7	9.503	6.95	9.44	1994
42	0.01148	2.8590	1.168	-147.0	426.8	9.969	7.03	9.67	1983
44	0.01159	2.7895	1.149	-132.9	446.4	10.424	7.11	9.90	1971
46	0.01170	2.7220	1.129	-119.0	465.9	10.858	7.22	10.16	1958
48	0.01181	2.6570	1.108	-104.2	486.5	11.295	7.31	10.40	1945
50	0.01193	2.5948	1.087	-89.0	507.5	11.725	7.39	10.63	1932
52	0.01205	2.5356	1.065	-73.6	529.0	12.146	7.46	10.84	1919
54	0.01217	2.4797	1.043	-57.9	550.9	12.559	7.53	11.05	1907
56	0.01230	2.4274	1.021	-41.6	573.4	12.969	7.60	11.24	1895
58	0.01243	2.4097	1.002	-25.3	596.3	13.371	7.65	11.39	1893
60	0.01256	2.3577	0.9796	-8.9	619.3	13.760	7.71	11.57	1880
65	0.01290	2.2638	0.9248	33.3	678.1	14.701	7.89	11.97	1854
70	0.01324	2.1798	0.8710	76.9	738.9	15.602	8.10	12.37	1824
75	0.01360	2.1048	0.8199	122.0	801.8	16.470	8.36	12.79	1794
80	0.01396	2.0360	0.7723	168.8	866.9	17.310	8.67	13.24	1763
85	0.01433	1.9734	0.7280	217.5	934.2	18.126	9.02	13.71	1732
90	0.01472	1.9221	0.6869	268.0	1003.9	18.923	9.39	14.18	1703
95	0.01511	1.8810	0.6489	320.6	1076.0	19.702	9.78	14.63	1678
100	0.01550	1.8546	0.6139	375.0	1150.2	20.464	10.17	15.05	1657
120	0.01714	1.7591	0.5009	613.2	1470.1	23.376	11.68	16.70	1586
140	0.01883	1.7337	0.4184	872.3	1814.0	26.024	12.58	17.60	1557
160	0.02055	1.7491	0.3569	1141.3	2169.0	28.394	12.91	17.84	1554
180	0.02228	1.7838	0.3103	1410.3	2524.2	30.487	12.85	17.67	1566
200	0.02400	1.8323	0.2740	1673.6	2873.8	32.328	12.58	17.30	1588
220	0.02573	1.8865	0.2453	1929.1	3215.4	33.956	12.24	16.89	1613
240	0.02744	1.9485	0.2218	2176.6	3548.8	35.406	11.92	16.49	1641
260	0.02916	2.0170	0.2022	2417.1	3874.8	36.712	11.66	16.14	1671
280	0.03085	2.0909	0.1856	2651.7	4194.4	37.896	11.45	15.83	1701
300	0.03263	2.1638	0.1730	2869.1	4500.4	38.932	11.09	15.51	1739
350	0.03686	2.3550	0.1461	3421.8	5264.8	41.288	10.80	15.11	1815
400	0.04106	2.5498	0.1266	3961.6	6014.6	43.292	10.66	14.90	1888
450	0.04523	2.7463	0.1118	4494.7	6756.4	45.040	10.60	14.79	1957
500	0.04939	2.9440	0.1002	5024.9	7494.5	46.594	10.57	14.73	2025
550	0.05354	3.1424	0.0908	5552.7	8229.6	47.996	10.56	14.69	2091
600	0.05767	3.3414	0.0830	6080.1	8963.7	49.272	10.55	14.67	2155
700	0.06593	3.7411	0.0710	7134.5	10431.0	51.535	10.58	14.68	2278
800	0.07417	4.1425	0.0620	8193.7	11902.4	53.498	10.66	14.75	2394
900	0.08241	4.5453	0.0551	9262.0	13382.5	55.240	10.77	14.86	2504
1000	0.09065	4.9494	0.0496	10342.9	14875.2	56.815	10.92	15.01	2608
1200	0.10711	5.7604	0.0413	12558.4	17914.0	59.572	11.30	15.38	2801
1400	0.12358	6.5743	0.0354	14854.4	21033.4	61.981	11.72	15.81	2978
1600	0.14005	7.3904	0.0310	17234.9	24237.5	64.097	12.13	16.22	3143
1800	0.15653	8.2080	0.0276	19699.7	27526.1	65.996	12.51	16.60	3301
2000	0.17301	9.0268	0.0248	22248.8	30899.3	67.839	12.89	16.99	3449
2500	0.21433	11.0775	0.0199	28999.8	39716.2	74.116	14.13	18.29	3786
3000	0.25635	13.1315	0.0166	36632.2	49449.7	81.030	16.50	20.88	4076

* TWO-PHASE BOUNDARY

50.11 ATM 1000AR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DV)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.711	72.5095	1851.7	0.23018	322.9196	0.00396	198.99	567.99	0.00105	1.31046	2.0921
26	72.4812	1858.0	0.22917	321.5761	0.00397	199.98	552.43	0.00104	1.31007	2.0392
27	72.1286	1879.3	0.22574	316.9646	0.00402	202.99	504.76	0.00104	1.30872	1.8795
28	72.6530	1899.6	0.22244	312.3381	0.00407	205.49	464.37	0.00103	1.30736	1.7471
29	72.2745	1918.3	0.21935	307.7025	0.00412	207.56	429.87	0.00103	1.30600	1.6357
30	71.8933	1935.1	0.21652	303.0638	0.00416	209.24	400.14	0.00102	1.30462	1.5407
31	71.5094	1951.3	0.21374	298.4278	0.00421	209.79	374.34	0.00100	1.30323	1.4655
32	71.1229	1966.5	0.21107	293.8000	0.00425	210.09	351.80	0.00099	1.30184	1.4010
33	71.7340	1980.3	0.20857	289.1859	0.00430	210.16	331.98	0.00098	1.30043	1.3450
34	71.3427	1993.2	0.20617	284.5909	0.00434	210.11	314.46	0.00097	1.29902	1.2959
35	70.9491	2005.2	0.20387	280.0202	0.00439	209.90	298.88	0.00095	1.29761	1.2530
36	70.5533	2016.2	0.20166	275.4789	0.00443	209.55	284.97	0.00094	1.29618	1.2154
37	70.1553	2026.5	0.19954	270.9719	0.00448	209.07	272.48	0.00093	1.29475	1.1822
38	69.7551	2035.5	0.19757	266.5040	0.00452	208.49	261.23	0.00092	1.29331	1.1527
39	69.3530	2042.9	0.19579	262.0800	0.00456	207.81	251.05	0.00091	1.29187	1.1260
41	67.9489	2049.5	0.19409	257.7042	0.00461	207.06	241.80	0.00090	1.29042	1.1023
42	67.1352	2062.2	0.19072	249.1153	0.00469	205.29	225.65	0.00088	1.28750	1.0630
44	66.3146	2075.1	0.18728	240.7706	0.00477	203.33	212.06	0.00086	1.28456	1.0326
46	65.4880	2094.8	0.18300	232.7010	0.00485	201.25	200.49	0.00083	1.28161	1.0123
48	64.6562	2111.2	0.17917	224.9347	0.00493	199.09	190.53	0.00081	1.27864	0.9953
50	63.8203	2126.7	0.17552	217.4966	0.00500	196.89	181.87	0.00080	1.27566	0.9816
52	62.9812	2141.7	0.17200	210.4081	0.00506	194.68	174.28	0.00078	1.27267	0.9707
54	62.1403	2156.9	0.16857	203.6869	0.00512	192.48	167.58	0.00076	1.26969	0.9618
56	61.2989	2172.1	0.16527	197.3461	0.00517	190.32	161.62	0.00075	1.26670	0.9543
58	60.4310	2203.2	0.16274	193.8173	0.00517	188.12	156.13	0.00074	1.26363	0.9452
60	59.6003	2216.3	0.15952	187.6705	0.00522	186.36	151.37	0.00073	1.26069	0.9396
65	57.5440	2272.4	0.15120	175.5411	0.00527	183.08	141.30	0.00071	1.25343	0.9239
70	55.5271	2338.7	0.14234	164.6374	0.00529	180.12	133.23	0.00069	1.24634	0.9152
75	53.5548	2415.4	0.13327	154.8164	0.00530	177.53	126.58	0.00068	1.23944	0.9121
80	51.6309	2500.3	0.12432	145.8433	0.00530	175.47	121.00	0.00067	1.23272	0.9129
85	49.7620	2592.3	0.11572	137.6651	0.00529	176.68	116.25	0.00067	1.22622	0.9020
90	47.9453	2695.2	0.10766	130.5979	0.00526	177.93	112.16	0.00067	1.21993	0.8936
95	46.1884	2807.4	0.10027	124.5019	0.00521	179.32	108.64	0.00067	1.21386	0.8865
100	44.4956	2933.1	0.09360	119.6114	0.00513	182.33	95.57	0.00068	1.20803	0.7891
120	38.3458	3422.5	0.07353	102.6367	0.00488	198.60	98.60	0.00073	1.18702	0.8293
140	33.0937	3871.4	0.06263	92.0502	0.00455	206.05	97.93	0.00079	1.16927	0.8363
160	28.6518	4252.8	0.05681	85.0971	0.00419	208.25	96.31	0.00086	1.15439	0.8249
180	24.8845	4559.2	0.05381	80.0658	0.00388	207.78	94.87	0.00094	1.14188	0.8067
200	21.6582	4818.3	0.05231	76.3289	0.00359	206.42	93.99	0.00103	1.13124	0.7877
220	18.8704	5047.7	0.05155	73.3272	0.00335	205.21	93.71	0.00113	1.12210	0.7711
240	16.4373	5277.2	0.05106	70.9973	0.00312	204.74	93.99	0.00123	1.11416	0.7570
260	14.2992	5520.7	0.05058	69.1826	0.00292	205.23	94.75	0.00133	1.10722	0.7450
280	12.4108	5783.2	0.05002	67.7689	0.00274	206.69	95.89	0.00145	1.10112	0.7346
300	10.6495	5945.2	0.05089	66.3210	0.00261	209.00	97.35	0.00158	1.09544	0.7223
350	7.1292	6608.2	0.04986	63.8894	0.00229	217.84	102.04	0.00191	1.08417	0.7078
400	4.3547	7309.7	0.04875	62.0985	0.00204	229.54	107.70	0.00228	1.07534	0.6992
450	2.1071	8034.1	0.04769	60.7131	0.00184	242.96	113.95	0.00267	1.06822	0.6939
500	0.2464	8762.7	0.04681	59.6048	0.00168	257.23	120.57	0.00311	1.06235	0.6903
550	8.6789	9497.6	0.04605	58.6964	0.00155	272.10	127.41	0.00357	1.05743	0.6878
600	7.3392	10237.1	0.04538	57.9379	0.00143	287.36	134.38	0.00407	1.05323	0.6862
700	5.1678	11736.6	0.04422	56.7441	0.00125	318.70	148.50	0.00515	1.04646	0.6842
800	3.4620	13276.7	0.04317	55.8489	0.00111	351.00	162.64	0.00635	1.04122	0.6834
900	2.1343	14869.3	0.04216	55.1545	0.00100	384.19	176.67	0.00767	1.03704	0.6833
1000	1.0320	16522.3	0.04115	54.6014	0.00091	440.56	190.52	0.00958	1.03364	0.6491
1200	9.3359	20008.9	0.03920	53.7787	0.00077	511.13	217.60	0.01281	1.02842	0.6548
1400	8.0919	23726.5	0.03737	53.1985	0.00067	583.31	243.81	0.01641	1.02460	0.6608
1600	7.1402	27584.6	0.03582	52.7687	0.00059	655.33	269.18	0.02037	1.02168	0.6663
1800	6.3887	31545.5	0.03453	52.4382	0.00053	726.90	293.79	0.02467	1.01938	0.6710
2000	5.7801	35676.9	0.03335	52.1754	0.00048	800.46	317.70	0.02934	1.01752	0.6744
2500	4.6657	47497.4	0.03017	51.6845	0.00038	1022.57	374.91	0.04315	1.01413	0.6704
3000	3.9009	64470.2	0.02578	51.2248	0.00032	1413.28	429.54	0.06246	1.01180	0.6347

* TWO-PHASE BOUNDARY

55.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 26.645	0.01057	3.6392	1.307	-240.0	341.5	5.856	6.01	7.41	2118
27	0.01059	3.6271	1.305	-238.2	344.1	5.954	6.05	7.47	2117
28	0.01063	3.5926	1.302	-232.9	351.7	6.229	6.15	7.64	2113
29	0.01067	3.5577	1.298	-227.4	359.4	6.500	6.24	7.81	2109
30	0.01071	3.5225	1.293	-221.8	367.3	6.767	6.33	7.96	2105
31	0.01075	3.4871	1.288	-216.1	375.3	7.031	6.41	8.11	2101
32	0.01080	3.4514	1.282	-210.3	383.5	7.291	6.49	8.26	2097
33	0.01084	3.4156	1.275	-204.4	391.9	7.547	6.56	8.41	2092
34	0.01088	3.3796	1.268	-198.3	400.3	7.800	6.63	8.55	2087
35	0.01093	3.3436	1.261	-192.2	409.0	8.050	6.70	8.69	2082
36	0.01097	3.3076	1.254	-185.9	417.7	8.297	6.76	8.82	2077
37	0.01102	3.2716	1.246	-179.5	426.6	8.540	6.82	8.95	2072
38	0.01107	3.2357	1.238	-173.1	435.6	8.781	6.87	9.07	2067
39	0.01111	3.1999	1.229	-166.5	444.7	9.018	6.92	9.19	2062
40	0.01116	3.1643	1.221	-159.9	454.0	9.252	6.96	9.31	2057
42	0.01126	3.0937	1.203	-146.4	472.8	9.712	7.04	9.53	2046
44	0.01136	3.0244	1.184	-132.6	492.1	10.160	7.12	9.75	2035
46	0.01146	2.9566	1.165	-119.0	511.3	10.587	7.23	10.01	2022
48	0.01157	2.8906	1.145	-104.6	531.6	11.018	7.33	10.24	2010
50	0.01167	2.8269	1.125	-89.7	552.3	11.440	7.41	10.46	1997
52	0.01178	2.7656	1.104	-74.6	573.4	11.855	7.50	10.68	1985
54	0.01189	2.7071	1.083	-59.2	595.0	12.262	7.57	10.88	1972
56	0.01201	2.6515	1.061	-43.3	617.2	12.666	7.64	11.07	1960
58	0.01213	2.5990	1.040	-27.4	639.5	13.058	7.70	11.25	1948
60	0.01224	2.5499	1.018	-11.3	662.2	13.442	7.76	11.42	1937
65	0.01255	2.4754	0.9691	30.2	720.6	14.377	7.94	11.83	1920
70	0.01287	2.3895	0.9170	73.1	780.8	15.269	8.16	12.24	1893
75	0.01319	2.3173	0.8665	117.6	843.1	16.129	8.43	12.65	1865
80	0.01352	2.2438	0.8187	163.9	907.5	16.959	8.74	13.10	1835
85	0.01386	2.1803	0.7743	212.0	974.1	17.767	9.08	13.57	1805
90	0.01420	2.1219	0.7327	262.1	1043.2	18.556	9.46	14.05	1775
95	0.01455	2.0737	0.6939	314.3	1114.6	19.329	9.85	14.52	1748
100	0.01491	2.0336	0.6579	368.4	1188.4	20.085	10.24	14.97	1724
120	0.01638	1.9310	0.5405	605.6	1506.4	22.980	11.74	16.61	1653
140	0.01790	1.8884	0.4545	864.3	1849.0	25.618	12.65	17.55	1619
160	0.01945	1.8907	0.3891	1133.4	2203.4	27.984	12.98	17.82	1612
180	0.02102	1.9181	0.3390	1402.8	2558.6	30.077	12.90	17.67	1620
200	0.02257	1.9596	0.2998	1666.6	2908.2	31.918	12.63	17.30	1638
220	0.02413	2.0095	0.2685	1922.6	3250.0	33.547	12.29	16.89	1662
240	0.02569	2.0648	0.2431	2170.8	3583.6	34.998	11.97	16.51	1687
260	0.02724	2.1280	0.2220	2412.0	3910.1	36.305	11.71	16.17	1715
280	0.02878	2.1975	0.2039	2647.4	4230.4	37.493	11.50	15.89	1743
300	0.03039	2.2687	0.1899	2864.7	4536.1	38.526	11.13	15.53	1760
350	0.03424	2.4553	0.1605	3418.7	5301.8	40.886	10.83	15.13	1852
400	0.03805	2.6466	0.1390	3959.7	6052.6	42.893	10.69	14.92	1922
450	0.04185	2.8404	0.1228	4493.7	6795.2	44.643	10.63	14.81	1989
500	0.04562	3.0358	0.1100	5024.8	7534.0	46.199	10.59	14.74	2055
550	0.04939	3.2322	0.0997	5553.2	8269.6	47.601	10.58	14.70	2120
600	0.05315	3.4294	0.0912	6081.1	9004.1	48.878	10.57	14.68	2182
700	0.06065	3.8259	0.0779	7136.4	10471.9	51.142	10.60	14.69	2302
800	0.06813	4.2247	0.0681	8196.3	11943.6	53.106	10.67	14.75	2416
900	0.07562	4.6252	0.0605	9265.1	13423.9	54.848	10.79	14.86	2524
1000	0.08310	5.0272	0.0545	10346.4	14916.7	56.423	10.94	15.01	2627
1200	0.09805	5.8349	0.0454	12562.5	17955.5	59.180	11.31	15.38	2817
1400	0.11302	6.6462	0.0389	14858.9	21074.8	61.588	11.73	15.81	2993
1600	0.12798	7.4601	0.0341	17239.8	24278.8	63.705	12.14	16.22	3157
1800	0.14295	8.2760	0.0303	19704.7	27567.1	65.603	12.51	16.60	3313
2000	0.15793	9.0933	0.0273	22253.7	30939.9	67.446	12.90	16.99	3461
2500	0.19548	11.1412	0.0219	28999.7	39751.0	73.721	14.11	18.26	3796
3000	0.23364	13.1933	0.0182	36602.2	49452.5	80.624	16.40	20.77	4087

* TWO-PHASE BOUNDARY

55.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.646	94.5778	1952.1	0.22975	344.1862	0.00380	208.55	601.68	0.00107	1.31434	2.1378
27	94.4505	1960.6	0.22849	342.5778	0.00381	209.63	581.97	0.00107	1.31388	2.0742
28	94.0893	1983.8	0.22505	338.0217	0.00385	212.31	532.32	0.00106	1.31257	1.9159
29	93.7257	2005.4	0.22183	333.4476	0.00389	214.53	490.14	0.00106	1.31125	1.7832
30	93.3597	2024.8	0.21889	328.8612	0.00393	216.35	454.00	0.00105	1.30992	1.6705
31	92.9915	2043.6	0.21600	324.2682	0.00397	217.00	422.79	0.00104	1.30859	1.5810
32	92.6212	2061.4	0.21324	319.6741	0.00401	217.38	395.65	0.00102	1.30725	1.5042
33	92.2489	2077.6	0.21065	315.0841	0.00405	217.52	371.90	0.00101	1.30590	1.4376
34	91.8746	2092.8	0.20818	310.5035	0.00409	217.54	350.98	0.00100	1.30455	1.3794
35	91.4983	2107.1	0.20581	305.9372	0.00412	217.38	332.47	0.00098	1.30319	1.3285
36	91.1202	2120.3	0.20354	301.3902	0.00416	217.07	315.99	0.00097	1.30183	1.2839
37	90.7403	2132.7	0.20137	296.8672	0.00420	216.63	301.26	0.00096	1.30046	1.2447
38	90.3586	2143.7	0.19934	292.3729	0.00423	216.07	288.03	0.00095	1.29908	1.2097
39	89.9752	2152.8	0.19752	287.9117	0.00427	215.42	276.09	0.00094	1.29770	1.1781
40	89.5903	2161.2	0.19578	283.4879	0.00431	214.69	265.29	0.00093	1.29631	1.1499
42	88.8157	2177.1	0.19235	274.7696	0.00438	212.95	246.52	0.00091	1.29353	1.1033
44	88.0353	2193.1	0.18887	266.2499	0.00445	211.01	230.82	0.00088	1.29073	1.0669
46	87.2498	2216.1	0.18455	257.9587	0.00452	208.92	217.52	0.00086	1.28791	1.0419
48	86.4597	2235.2	0.18071	249.9233	0.00458	206.76	206.14	0.00084	1.28508	1.0210
50	85.6657	2253.1	0.17705	242.1683	0.00464	204.54	196.31	0.00082	1.28224	1.0042
52	84.8687	2270.1	0.17353	234.7155	0.00470	202.30	187.73	0.00080	1.27940	0.9907
54	84.0695	2286.8	0.17011	227.5835	0.00476	200.08	180.19	0.00079	1.27655	0.9798
56	83.2691	2303.1	0.16683	220.7875	0.00481	197.88	173.51	0.00077	1.27370	0.9708
58	82.4687	2318.6	0.16374	214.3387	0.00485	195.73	167.55	0.00076	1.27085	0.9629
60	81.6692	2335.7	0.16060	208.2446	0.00489	193.90	162.21	0.00075	1.26801	0.9553
65	79.6560	2406.1	0.15324	197.1767	0.00491	190.35	150.86	0.00073	1.26088	0.9372
70	77.7140	2476.4	0.14461	185.6980	0.00494	187.23	142.00	0.00071	1.25403	0.9281
75	75.8132	2565.5	0.13565	175.6818	0.00493	184.50	134.76	0.00069	1.24735	0.9242
80	73.9677	2656.4	0.12670	165.9722	0.00493	182.32	128.76	0.00068	1.24088	0.9254
85	72.1689	2758.0	0.11810	157.3462	0.00492	183.52	123.66	0.00067	1.23460	0.9145
90	70.4197	2865.4	0.11000	149.4223	0.00490	184.76	119.28	0.00067	1.22851	0.9072
95	68.7183	2982.1	0.10252	142.5027	0.00487	186.10	115.48	0.00067	1.22261	0.9010
100	67.0733	3104.5	0.09576	136.4020	0.00482	189.87	99.99	0.00068	1.21691	0.7885
120	61.0551	3624.0	0.07538	117.8980	0.00458	206.19	103.03	0.00073	1.19625	0.8302
140	55.8554	4074.1	0.06434	105.4773	0.00431	213.23	102.11	0.00078	1.17858	0.8406
160	51.4027	4452.2	0.05833	97.1866	0.00400	214.89	100.14	0.00084	1.16359	0.8306
180	47.5849	4757.1	0.05520	91.2726	0.00371	213.86	98.34	0.00092	1.15084	0.8123
200	44.2982	5011.1	0.05357	86.8068	0.00345	211.96	97.12	0.00100	1.13994	0.7929
220	41.4370	5238.2	0.05271	83.2688	0.00322	210.29	96.54	0.00108	1.13051	0.7754
240	38.9298	5457.9	0.05215	80.3804	0.00302	209.42	96.56	0.00117	1.12229	0.7611
260	36.7130	5692.8	0.05164	78.1244	0.00284	209.57	97.09	0.00127	1.11506	0.7493
280	34.7442	5947.8	0.05105	76.3489	0.00267	210.74	98.05	0.00137	1.10866	0.7392
300	32.9061	6104.8	0.05188	74.6540	0.00254	212.82	99.36	0.00150	1.10272	0.7252
350	29.2084	6764.3	0.05071	71.7146	0.00224	221.27	103.79	0.00180	1.09082	0.7099
400	26.2794	7464.3	0.04949	69.5512	0.00200	232.80	109.32	0.00214	1.08146	0.7007
450	23.8972	8188.1	0.04834	67.8786	0.00181	246.21	115.54	0.00250	1.07388	0.6949
500	21.9189	8916.3	0.04738	66.5409	0.00165	260.59	122.19	0.00290	1.06762	0.6910
550	20.2477	9651.0	0.04655	65.4444	0.00152	275.67	129.11	0.00333	1.06236	0.6884
600	18.8162	10390.2	0.04583	64.5288	0.00141	291.20	136.19	0.00380	1.05786	0.6865
700	16.4894	11889.1	0.04459	63.0873	0.00124	323.24	150.61	0.00480	1.05058	0.6844
800	14.6771	13428.8	0.04346	62.0060	0.00110	356.38	165.13	0.00593	1.04493	0.6835
900	13.2248	15021.2	0.04242	61.1673	0.00099	390.53	179.58	0.00715	1.04042	0.6834
1000	12.0343	16674.3	0.04138	60.4995	0.00090	440.56	193.88	0.00878	1.03674	0.6605
1200	10.1984	20161.8	0.03937	59.5066	0.00076	511.13	221.91	0.01173	1.03107	0.6677
1400	8.8483	23880.8	0.03751	58.8073	0.00066	583.31	249.10	0.01501	1.02692	0.6751
1600	7.8136	27740.2	0.03593	58.2902	0.00058	655.32	275.46	0.01861	1.02374	0.6818
1800	6.9953	31701.4	0.03463	57.8931	0.00052	726.85	301.05	0.02253	1.02124	0.6876
2000	6.3319	35830.4	0.03343	57.5781	0.00047	800.26	325.94	0.02678	1.01921	0.6919
2500	5.1157	47596.5	0.03028	56.9945	0.00038	1020.12	385.52	0.03932	1.01550	0.6900
3000	4.2801	64306.6	0.02598	56.4680	0.00032	1400.61	442.39	0.05673	1.01296	0.6559

* TWO-PHASE BOUNDARY

60.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 27.559	0.01046	3.8220	1.334	-232.1	395.6	5.911	6.09	7.49	2169
28	0.01048	3.8074	1.333	-229.8	398.9	6.031	6.13	7.56	2167
29	0.01052	3.7741	1.329	-224.4	406.5	6.299	6.23	7.73	2164
30	0.01056	3.7404	1.324	-219.0	414.3	6.564	6.31	7.88	2161
31	0.01060	3.7063	1.319	-213.4	422.3	6.824	6.40	8.03	2157
32	0.01064	3.6720	1.313	-207.7	430.4	7.082	6.48	8.18	2153
33	0.01068	3.6374	1.306	-201.9	438.6	7.336	6.55	8.32	2149
34	0.01072	3.6026	1.300	-196.0	447.0	7.586	6.63	8.46	2144
35	0.01076	3.5677	1.293	-190.0	455.6	7.833	6.69	8.59	2140
36	0.01080	3.5327	1.285	-183.9	464.2	8.077	6.76	8.72	2135
37	0.01084	3.4976	1.278	-177.6	473.0	8.318	6.82	8.85	2131
38	0.01089	3.4625	1.270	-171.3	481.9	8.555	6.87	8.97	2126
39	0.01093	3.4274	1.261	-164.9	490.9	8.790	6.92	9.08	2121
40	0.01098	3.3924	1.253	-158.4	500.1	9.021	6.96	9.19	2116
42	0.01107	3.3228	1.236	-145.2	518.7	9.475	7.05	9.41	2106
44	0.01116	3.2541	1.217	-131.7	537.7	9.918	7.13	9.63	2096
46	0.01125	3.1864	1.199	-118.4	556.7	10.339	7.25	9.88	2083
48	0.01135	3.1202	1.180	-104.2	576.7	10.764	7.35	10.10	2071
50	0.01145	3.0557	1.160	-89.7	597.1	11.181	7.44	10.32	2059
52	0.01155	2.9932	1.140	-74.8	618.0	11.590	7.52	10.53	2047
54	0.01165	2.9329	1.119	-59.7	639.2	11.991	7.60	10.73	2035
56	0.01175	2.8751	1.099	-44.1	661.1	12.390	7.68	10.92	2023
58	0.01186	2.8199	1.078	-28.4	683.2	12.776	7.74	11.10	2011
60	0.01197	2.7676	1.057	-12.6	705.5	13.156	7.81	11.27	1999
65	0.01225	2.6498	1.004	28.1	763.0	14.075	7.99	11.70	1970
70	0.01254	2.5870	0.9585	70.4	823.0	14.964	8.21	12.12	1954
75	0.01284	2.5083	0.9089	114.4	884.8	15.816	8.48	12.56	1927
80	0.01314	2.4474	0.8616	160.2	948.7	16.641	8.80	12.99	1901
85	0.01345	2.3784	0.8168	207.9	1014.7	17.442	9.15	13.46	1871
90	0.01376	2.3204	0.7751	257.6	1083.3	18.225	9.52	13.94	1843
95	0.01408	2.2690	0.7361	309.3	1154.1	18.991	9.92	14.41	1816
100	0.01440	2.2209	0.6994	363.1	1227.3	19.743	10.31	14.88	1790
120	0.01574	2.1021	0.5771	599.4	1543.8	22.623	11.81	16.52	1715
140	0.01712	2.0411	0.4886	857.6	1885.0	25.250	12.71	17.51	1677
160	0.01854	2.0338	0.4201	1126.7	2238.9	27.613	13.04	17.81	1667
180	0.01996	2.0523	0.3668	1396.4	2593.8	29.704	12.96	17.66	1672
200	0.02138	2.0865	0.3249	1660.7	2943.5	31.545	12.69	17.31	1687
220	0.02280	2.1322	0.2912	1917.2	3285.4	33.175	12.35	16.90	1708
240	0.02422	2.1830	0.2638	2165.9	3619.2	34.627	12.03	16.52	1731
260	0.02564	2.2398	0.2411	2407.7	3946.0	35.936	11.76	16.19	1756
280	0.02705	2.3043	0.2218	2643.8	4266.9	37.125	11.55	15.92	1783
300	0.02852	2.3746	0.2067	2861.0	4572.3	38.156	11.16	15.55	1819
350	0.03205	2.5564	0.1747	3416.2	5339.0	40.519	10.86	15.16	1888
400	0.03554	2.7441	0.1514	3958.3	6090.9	42.529	10.72	14.94	1956
450	0.03902	2.9351	0.1337	4493.1	6834.2	44.281	10.65	14.82	2021
500	0.04248	3.1280	0.1197	5025.0	7573.7	45.838	10.61	14.75	2085
550	0.04593	3.3222	0.1085	5554.1	8309.7	47.241	10.60	14.71	2147
600	0.04937	3.5175	0.0992	6082.5	9044.6	48.519	10.59	14.69	2208
700	0.05624	3.9107	0.0848	7138.7	10512.9	50.784	10.62	14.69	2326
800	0.06309	4.3066	0.0741	8199.3	11984.9	52.748	10.69	14.75	2438
900	0.06995	4.7046	0.0659	9268.6	13465.4	54.490	10.80	14.86	2544
1000	0.07680	5.1045	0.0593	10350.4	14958.2	56.065	10.95	15.01	2645
1200	0.09050	5.9085	0.0494	12567.1	17997.0	58.822	11.32	15.38	2834
1400	0.10420	6.7169	0.0424	14863.9	21116.1	61.230	11.74	15.81	3007
1600	0.11791	7.5284	0.0371	17245.1	24319.9	63.346	12.15	16.22	3171
1800	0.13163	8.3423	0.0330	19710.2	27608.0	65.245	12.52	16.60	3325
2000	0.14535	9.1580	0.0297	22259.2	30980.3	67.087	12.90	16.98	3472
2500	0.17976	11.2028	0.0238	29000.8	39786.2	73.360	14.10	18.23	3807
3000	0.21471	13.2526	0.0199	36577.3	49459.7	80.253	16.31	20.66	4096

* TWO-PHASE BOUNDARY

60.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.559	95.5951	2051.5	0.22930	365.3665	0.00365	217.73	636.02	0.00109	1.31803	2.1885
28	95.4408	2062.7	0.22776	363.3861	0.00367	218.92	610.44	0.00109	1.31747	2.1094
29	95.0898	2087.0	0.22441	358.8802	0.00370	221.30	558.99	0.00108	1.31620	1.9517
30	94.7368	2109.1	0.22134	354.3538	0.00374	223.25	515.14	0.00108	1.31492	1.8182
31	94.3819	2130.6	0.21834	349.8125	0.00377	223.98	477.48	0.00106	1.31363	1.7119
32	94.0253	2150.9	0.21547	345.2615	0.00380	224.43	444.87	0.00105	1.31233	1.6210
33	93.6670	2169.6	0.21279	340.7062	0.00383	224.64	416.47	0.00104	1.31104	1.5423
34	93.3070	2187.2	0.21023	336.1516	0.00387	224.71	391.56	0.00103	1.30973	1.4736
35	92.9455	2203.8	0.20779	331.6027	0.00390	224.60	369.60	0.00101	1.30842	1.4137
36	92.5824	2219.3	0.20545	327.0642	0.00393	224.33	350.12	0.00100	1.30711	1.3612
37	92.2179	2233.8	0.20321	322.5406	0.00396	223.92	332.77	0.00099	1.30579	1.3149
38	91.8519	2246.8	0.20113	318.0367	0.00399	223.39	317.25	0.00098	1.30447	1.2738
39	91.4845	2257.8	0.19926	313.5566	0.00402	222.76	303.29	0.00097	1.30314	1.2367
40	91.1158	2268.0	0.19747	309.1046	0.00405	222.04	290.69	0.00095	1.30181	1.2036
42	90.3746	2287.4	0.19396	300.3011	0.00411	220.32	268.91	0.00093	1.29914	1.1487
44	89.6286	2306.6	0.19042	291.6575	0.00417	218.38	250.78	0.00091	1.29645	1.1057
46	88.8782	2333.1	0.18605	283.2026	0.00423	216.29	235.52	0.00089	1.29375	1.0754
48	88.1239	2355.3	0.18217	274.9634	0.00429	214.10	222.53	0.00087	1.29105	1.0501
50	87.3663	2375.9	0.17848	266.9642	0.00434	211.86	211.35	0.00085	1.28833	1.0297
52	86.6059	2395.3	0.17494	259.2269	0.00440	209.60	201.66	0.00083	1.28560	1.0132
54	85.8434	2414.1	0.17152	251.7707	0.00445	207.34	193.17	0.00081	1.28288	1.0000
56	85.0795	2432.1	0.16824	244.6121	0.00449	205.10	185.69	0.00079	1.28015	0.9890
58	84.3151	2448.9	0.16515	237.7642	0.00453	202.91	179.04	0.00078	1.27742	0.9796
60	83.5509	2467.1	0.16202	231.2368	0.00457	201.04	173.11	0.00077	1.27470	0.9708
65	81.6480	2521.4	0.15386	216.3540	0.00464	197.50	160.71	0.00074	1.26794	0.9520
70	79.7274	2609.0	0.14637	206.2574	0.00465	194.06	150.75	0.00072	1.26114	0.9418
75	77.8890	2699.0	0.13753	195.3693	0.00465	191.18	142.87	0.00070	1.25465	0.9383
80	76.0998	2807.6	0.12868	186.2454	0.00463	188.85	136.37	0.00069	1.24835	0.9379
85	74.3631	2914.4	0.12007	176.8644	0.00462	190.03	130.91	0.00068	1.24226	0.9272
90	72.6669	3032.0	0.11199	168.6176	0.00460	191.23	126.21	0.00068	1.23634	0.9199
95	71.0221	3155.6	0.10451	161.1474	0.00457	192.55	122.16	0.00068	1.23060	0.9144
100	69.4259	3280.8	0.09769	154.1877	0.00454	197.07	104.23	0.00069	1.22506	0.7872
120	63.5332	3824.0	0.07689	133.5510	0.00432	213.48	107.32	0.00073	1.20473	0.8307
140	58.4025	4272.0	0.06583	119.2041	0.00410	220.17	106.17	0.00078	1.18721	0.8444
160	53.9490	4650.9	0.05973	109.7236	0.00383	221.33	103.88	0.00083	1.17215	0.8358
180	50.1062	4952.2	0.05647	102.8327	0.00357	219.79	101.75	0.00089	1.15925	0.8177
200	46.7707	5200.3	0.05475	97.5868	0.00333	217.41	100.21	0.00097	1.14813	0.7980
220	43.8538	5425.4	0.05378	93.5038	0.00311	215.30	99.35	0.00105	1.13847	0.7798
240	41.2843	5641.9	0.05314	90.1241	0.00293	214.06	99.12	0.00113	1.13001	0.7648
260	39.0033	5867.3	0.05258	87.3592	0.00276	213.88	99.44	0.00122	1.12253	0.7529
280	36.9667	6114.0	0.05197	85.1829	0.00260	214.78	100.22	0.00131	1.11589	0.7430
300	35.0602	6263.9	0.05283	83.2541	0.00248	216.63	101.38	0.00143	1.10969	0.7280
350	31.2041	6920.1	0.05153	79.7700	0.00219	224.70	105.55	0.00171	1.09723	0.7119
400	28.1346	7618.7	0.05020	77.2052	0.00196	236.05	110.95	0.00202	1.08738	0.7022
450	25.6289	8342.0	0.04896	75.2225	0.00178	249.44	117.13	0.00236	1.07938	0.6960
500	23.5414	9069.9	0.04793	73.6366	0.00163	263.92	123.80	0.00274	1.07276	0.6918
550	21.7735	9804.4	0.04703	72.3365	0.00150	279.19	130.78	0.00314	1.06717	0.6889
600	20.2558	10543.3	0.04626	71.2505	0.00139	294.98	137.98	0.00357	1.06238	0.6869
700	17.7820	12041.8	0.04494	69.5398	0.00122	327.72	152.70	0.00452	1.05462	0.6846
800	15.8493	13581.0	0.04377	68.2560	0.00109	361.71	167.59	0.00557	1.04858	0.6836
900	14.2966	15173.2	0.04267	67.2599	0.00098	396.82	182.47	0.00672	1.04375	0.6834
1000	13.0213	16826.3	0.04159	66.4668	0.00089	440.56	197.24	0.00812	1.03979	0.6720
1200	11.0499	20314.4	0.03953	65.2883	0.00076	511.13	226.26	0.01083	1.03369	0.6808
1400	9.5966	24034.7	0.03763	64.4590	0.00066	583.31	254.47	0.01384	1.02922	0.6897
1600	8.4807	27895.1	0.03604	63.8466	0.00058	655.31	281.88	0.01715	1.02579	0.6977
1800	7.5971	31856.4	0.03472	63.3771	0.00052	726.81	308.52	0.02075	1.02308	0.7046
2000	6.8798	35983.1	0.03351	63.0054	0.00047	800.08	334.45	0.02465	1.02088	0.7100
2500	5.5631	47701.8	0.03038	62.3218	0.00038	1017.99	396.58	0.03613	1.01686	0.7104
3000	4.6575	64183.0	0.02615	61.7244	0.00032	1389.57	455.88	0.05198	1.01410	0.6780

* TWO-PHASE BOUNDARY

65.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 28.449	0.01036	4.0022	1.362	-224.0	449.1	5.964	6.16	7.57	2218
29	0.01038	3.9846	1.359	-221.1	453.3	6.110	6.21	7.66	2217
30	0.01041	3.9524	1.355	-215.8	461.0	6.372	6.30	7.81	2213
31	0.01045	3.9197	1.349	-210.4	468.9	6.631	6.39	7.96	2210
32	0.01049	3.8867	1.343	-204.8	476.9	6.886	6.47	8.10	2206
33	0.01053	3.8534	1.337	-199.1	485.1	7.137	6.55	8.24	2203
34	0.01056	3.8198	1.330	-193.3	493.4	7.385	6.62	8.38	2199
35	0.01060	3.7860	1.323	-187.4	501.9	7.630	6.69	8.51	2195
36	0.01064	3.7520	1.316	-181.4	510.4	7.872	6.75	8.64	2190
37	0.01068	3.7179	1.309	-175.3	519.1	8.110	6.82	8.76	2186
38	0.01072	3.6836	1.301	-169.1	528.0	8.345	6.87	8.88	2182
39	0.01076	3.6494	1.293	-162.8	536.9	8.577	6.92	8.99	2177
40	0.01081	3.6151	1.284	-156.4	545.9	8.806	6.97	9.10	2173
42	0.01089	3.5468	1.267	-143.5	564.3	9.255	7.06	9.31	2163
44	0.01098	3.4788	1.249	-130.2	583.2	9.693	7.14	9.52	2153
46	0.01106	3.4117	1.231	-117.2	601.9	10.110	7.26	9.76	2142
48	0.01115	3.3456	1.212	-103.2	621.7	10.530	7.36	9.99	2130
50	0.01124	3.2809	1.193	-88.9	641.9	10.942	7.46	10.20	2118
52	0.01134	3.2177	1.174	-74.4	662.5	11.346	7.55	10.41	2106
54	0.01143	3.1564	1.154	-59.5	683.5	11.743	7.63	10.61	2095
56	0.01153	3.0971	1.134	-44.1	705.2	12.137	7.71	10.79	2083
58	0.01162	3.0401	1.113	-28.7	726.9	12.519	7.78	10.97	2071
60	0.01172	2.9855	1.093	-13.1	749.0	12.894	7.85	11.15	2059
65	0.01198	2.8605	1.041	27.1	805.8	13.803	8.04	11.58	2029
70	0.01225	2.7527	0.9896	68.8	864.8	14.676	8.27	12.00	1999
75	0.01253	2.6984	0.9479	112.2	926.7	15.530	8.54	12.46	1984
80	0.01281	2.6250	0.9006	157.5	990.1	16.348	8.86	12.91	1956
85	0.01309	2.5726	0.8561	204.8	1055.8	17.145	9.21	13.36	1932
90	0.01338	2.5105	0.8141	254.1	1123.8	17.923	9.59	13.84	1904
95	0.01367	2.4550	0.7749	305.5	1194.2	18.684	9.98	14.33	1877
100	0.01397	2.4087	0.7382	359.0	1267.1	19.431	10.38	14.79	1853
120	0.01519	2.2696	0.6121	594.6	1582.1	22.298	11.89	16.46	1773
140	0.01646	2.1952	0.5204	852.2	1921.9	24.915	12.78	17.45	1732
160	0.01775	2.1754	0.4500	1121.1	2275.1	27.273	13.10	17.79	1719
180	0.01906	2.1875	0.3937	1391.0	2630.1	29.364	13.02	17.66	1722
200	0.02037	2.2138	0.3493	1655.7	2979.6	31.204	12.75	17.32	1734
220	0.02168	2.2546	0.3134	1912.7	3321.6	32.834	12.40	16.91	1753
240	0.02298	2.3018	0.2841	2161.8	3655.6	34.288	12.08	16.52	1774
260	0.02428	2.3531	0.2597	2404.1	3982.5	35.596	11.81	16.20	1797
280	0.02558	2.4115	0.2392	2640.8	4303.7	36.787	11.60	15.94	1821
300	0.02694	2.4814	0.2234	2857.8	4608.9	37.816	11.20	15.57	1858
350	0.03019	2.6583	0.1888	3414.1	5376.6	40.182	10.89	15.17	1924
400	0.03342	2.8423	0.1636	3957.2	6129.3	42.194	10.75	14.95	1989
450	0.03662	3.0302	0.1445	4492.9	6873.4	43.948	10.68	14.84	2052
500	0.03981	3.2205	0.1294	5025.5	7613.4	45.506	10.64	14.76	2114
550	0.04300	3.4125	0.1173	5555.3	8350.0	46.911	10.62	14.72	2175
600	0.04617	3.6058	0.1073	6084.2	9085.2	48.189	10.61	14.69	2234
700	0.05250	3.9954	0.0917	7141.4	10554.0	50.454	10.63	14.70	2350
800	0.05883	4.3882	0.0801	8202.6	12026.2	52.419	10.70	14.76	2460
900	0.06514	4.7836	0.0712	9272.4	13506.8	54.161	10.81	14.86	2564
1000	0.07146	5.1811	0.0641	10354.7	14999.6	55.737	10.96	15.01	2664
1200	0.08410	5.9812	0.0534	12572.0	18038.3	58.493	11.33	15.38	2850
1400	0.09674	6.7864	0.0458	14869.3	21157.3	60.901	11.75	15.81	3022
1600	0.10939	7.5953	0.0402	17250.8	24360.9	63.017	12.16	16.22	3183
1800	0.12204	8.4071	0.0357	19716.2	27648.8	64.916	12.53	16.60	3337
2000	0.13470	9.2210	0.0322	22265.1	31020.6	66.758	12.91	16.98	3483
2500	0.16644	11.2623	0.0258	29003.0	39821.8	73.029	14.09	18.21	3816
3000	0.19867	13.3096	0.0215	36556.7	49470.5	79.913	16.24	20.57	4106

* TWO-PHASE BOUNDARY

65.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 28.449	96.5666	2149.1	0.22897	386.4808	0.00352	226.54	671.06	0.00112	1.32157	2.2429
29	96.3788	2163.7	0.22708	384.0341	0.00354	227.87	637.85	0.00111	1.32089	2.1438
30	96.0369	2188.5	0.22388	379.5738	0.00357	229.95	584.76	0.00110	1.31964	1.9860
31	95.6934	2212.6	0.22076	375.0909	0.00360	230.77	539.38	0.00109	1.31839	1.8602
32	95.3485	2235.6	0.21778	370.5907	0.00362	231.29	500.29	0.00108	1.31714	1.7529
33	95.0022	2256.7	0.21500	366.0785	0.00365	231.55	466.38	0.00106	1.31588	1.6602
34	94.6545	2276.7	0.21235	361.5592	0.00368	231.67	436.78	0.00105	1.31462	1.5795
35	94.3056	2295.6	0.20982	357.0376	0.00371	231.60	410.78	0.00104	1.31335	1.5092
36	93.9554	2313.4	0.20740	352.5185	0.00373	231.36	387.81	0.00103	1.31208	1.4477
37	93.6040	2330.0	0.20509	348.0064	0.00376	230.98	367.42	0.00101	1.31081	1.3936
38	93.2515	2345.1	0.20294	343.5058	0.00379	230.47	349.23	0.00100	1.30953	1.3455
39	92.8979	2358.1	0.20101	339.0208	0.00381	229.85	332.94	0.00099	1.30825	1.3023
40	92.5432	2370.1	0.19918	334.5557	0.00384	229.15	318.27	0.00098	1.30697	1.2637
42	91.8306	2393.1	0.19557	325.7010	0.00389	227.43	293.03	0.00096	1.30439	1.1995
44	91.1142	2415.6	0.19196	316.9722	0.00394	225.49	272.14	0.00094	1.30180	1.1491
46	90.3942	2445.9	0.18751	308.3978	0.00399	223.39	254.64	0.00091	1.29921	1.1130
48	89.6710	2471.3	0.18358	300.0041	0.00404	221.18	239.82	0.00089	1.29660	1.0828
50	88.9450	2494.9	0.17985	291.8155	0.00409	218.91	227.13	0.00087	1.29399	1.0583
52	88.2165	2517.0	0.17629	283.8540	0.00413	216.62	216.17	0.00085	1.29138	1.0385
54	87.4862	2538.2	0.17285	276.1393	0.00418	214.32	206.62	0.00083	1.28876	1.0224
56	86.7546	2558.4	0.16955	268.6887	0.00422	212.04	198.24	0.00082	1.28614	1.0092
58	86.0223	2577.0	0.16646	261.5165	0.00426	209.80	190.83	0.00080	1.28352	0.9979
60	85.2899	2596.8	0.16333	254.6345	0.00429	207.89	184.23	0.00079	1.28090	0.9877
65	83.4637	2654.4	0.15517	238.7487	0.00436	204.26	170.54	0.00076	1.27439	0.9665
70	81.6539	2726.7	0.14655	224.7719	0.00440	200.86	159.83	0.00074	1.26796	0.9552
75	79.8094	2831.2	0.13906	215.3549	0.00440	197.60	150.94	0.00072	1.26143	0.9519
80	78.0755	2938.8	0.13021	204.9503	0.00439	195.13	143.92	0.00070	1.25531	0.9525
85	76.3829	3067.0	0.12167	196.5034	0.00436	196.26	138.02	0.00069	1.24935	0.9397
90	74.7374	3190.4	0.11359	187.6264	0.00434	197.42	133.01	0.00069	1.24358	0.9326
95	73.1402	3319.5	0.10614	179.5626	0.00432	198.71	128.69	0.00068	1.23799	0.9278
100	71.5815	3455.3	0.09936	172.4154	0.00428	203.94	108.30	0.00069	1.23255	0.7856
120	65.8245	4017.1	0.07823	149.3972	0.00410	220.50	111.47	0.00073	1.21261	0.8321
140	60.7642	4473.6	0.06704	133.3902	0.00390	226.89	110.13	0.00077	1.19525	0.8472
160	56.3265	4845.1	0.06099	122.5338	0.00367	227.60	107.55	0.00082	1.18017	0.8407
180	52.4598	5146.9	0.05763	114.7553	0.00343	225.58	105.10	0.00088	1.16714	0.8227
200	49.0968	5388.9	0.05582	108.6924	0.00321	222.76	103.27	0.00094	1.15588	0.8028
220	46.1349	5610.8	0.05477	104.0147	0.00301	220.25	102.14	0.00102	1.14602	0.7840
240	43.5148	5825.6	0.05405	100.1616	0.00284	218.64	101.67	0.00109	1.13736	0.7683
260	41.1807	6045.4	0.05341	96.9032	0.00268	218.16	101.79	0.00118	1.12967	0.7560
280	39.0881	6282.9	0.05277	94.2613	0.00254	218.79	102.40	0.00126	1.12281	0.7462
300	37.1199	6422.2	0.05375	92.1109	0.00243	220.43	103.42	0.00137	1.11639	0.7307
350	33.1220	7075.3	0.05233	88.0478	0.00214	228.12	107.33	0.00163	1.10341	0.7139
400	29.9249	7772.7	0.05089	85.0545	0.00192	239.28	112.59	0.00192	1.09312	0.7037
450	27.3054	8495.7	0.04956	82.7398	0.00175	252.64	118.71	0.00225	1.08473	0.6971
500	25.1167	9223.4	0.04845	80.8880	0.00160	267.21	125.40	0.00259	1.07776	0.6926
550	23.2585	9957.7	0.04750	79.3692	0.00148	282.66	132.45	0.00297	1.07186	0.6895
600	21.6597	10696.6	0.04668	78.1000	0.00137	298.71	139.75	0.00338	1.06681	0.6874
700	19.0469	12194.6	0.04528	76.0993	0.00121	332.12	154.77	0.00427	1.05858	0.6848
800	16.9995	13733.4	0.04405	74.5967	0.00107	366.98	170.04	0.00527	1.05217	0.6837
900	15.3506	15325.3	0.04290	73.4304	0.00097	403.08	185.35	0.00636	1.04703	0.6834
1000	13.9936	16978.4	0.04179	72.5016	0.00088	440.56	200.60	0.00755	1.04281	0.6834
1200	11.8910	20466.9	0.03968	71.1217	0.00075	511.13	230.64	0.01006	1.03629	0.6940
1400	10.3371	24188.1	0.03775	70.1517	0.00065	583.31	259.95	0.01285	1.03150	0.7045
1600	9.1420	28049.4	0.03613	69.4362	0.00058	655.31	288.47	0.01591	1.02782	0.7140
1800	8.1941	32010.6	0.03479	68.8884	0.00052	726.77	316.23	0.01924	1.02491	0.7222
2000	7.4239	36135.2	0.03358	68.4555	0.00047	799.93	343.27	0.02284	1.02255	0.7287
2500	6.0081	47811.9	0.03046	67.6646	0.00038	1016.11	408.13	0.03343	1.01822	0.7316
3000	5.0333	64091.2	0.02631	66.9921	0.00032	1379.81	470.07	0.04797	1.01525	0.7009

* TWO-PHASE BOUNDARY

70.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 29.318	0.01026	4.1801	1.389	-215.9	502.1	6.014	6.22	7.65	2266
30	0.01028	4.1590	1.385	-212.3	507.3	6.191	6.29	7.75	2264
31	0.01032	4.1278	1.380	-207.0	515.1	6.448	6.38	7.90	2261
32	0.01035	4.0961	1.374	-201.5	523.1	6.701	6.46	8.04	2258
33	0.01039	4.0640	1.368	-195.9	531.2	6.950	6.54	8.18	2254
34	0.01042	4.0316	1.361	-190.2	539.5	7.197	6.61	8.31	2251
35	0.01046	3.9989	1.354	-184.5	547.8	7.439	6.68	8.44	2247
36	0.01050	3.9660	1.346	-178.6	556.3	7.679	6.75	8.56	2243
37	0.01054	3.9329	1.339	-172.6	565.0	7.915	6.81	8.69	2239
38	0.01057	3.8996	1.331	-166.5	573.7	8.148	6.87	8.80	2235
39	0.01061	3.8663	1.323	-160.3	582.6	8.378	6.92	8.91	2231
40	0.01065	3.8328	1.315	-154.0	591.5	8.605	6.97	9.02	2227
42	0.01073	3.7658	1.298	-141.3	609.8	9.050	7.06	9.22	2218
44	0.01081	3.6990	1.280	-128.3	628.4	9.484	7.15	9.43	2208
46	0.01089	3.6326	1.262	-115.4	647.0	9.896	7.27	9.67	2197
48	0.01097	3.5669	1.244	-101.7	666.5	10.312	7.38	9.89	2186
50	0.01106	3.5023	1.225	-87.6	686.5	10.720	7.48	10.10	2175
52	0.01115	3.4389	1.206	-73.3	706.9	11.120	7.57	10.30	2163
54	0.01123	3.3770	1.186	-58.6	727.7	11.513	7.65	10.49	2152
56	0.01132	3.3169	1.167	-43.5	749.2	11.903	7.73	10.68	2140
58	0.01141	3.2586	1.147	-28.3	770.7	12.281	7.81	10.86	2129
60	0.01151	3.2024	1.127	-12.9	792.6	12.651	7.88	11.03	2117
65	0.01174	3.0721	1.076	26.7	848.8	13.552	8.08	11.46	2087
70	0.01199	2.9572	1.026	68.0	907.2	14.417	8.32	11.90	2056
75	0.01224	2.8583	0.9754	110.9	967.8	15.253	8.60	12.34	2025
80	0.01251	2.8104	0.9375	155.8	1031.7	16.077	8.92	12.83	2011
85	0.01278	2.7389	0.8922	202.7	1097.0	16.869	9.27	13.31	1982
90	0.01304	2.6879	0.8500	251.6	1164.7	17.643	9.65	13.77	1958
95	0.01331	2.6388	0.8108	302.7	1234.7	18.400	10.05	14.24	1934
100	0.01359	2.5856	0.7738	355.9	1307.2	19.143	10.44	14.72	1909
120	0.01472	2.4419	0.6464	590.8	1621.0	21.999	11.96	16.41	1830
140	0.01588	2.3428	0.5496	847.9	1959.5	24.606	12.84	17.40	1761
160	0.01708	2.3086	0.4780	1116.6	2312.0	26.959	13.16	17.78	1766
180	0.01829	2.3219	0.4199	1386.6	2666.8	29.049	13.08	17.65	1770
200	0.01950	2.3430	0.3730	1651.6	3016.3	30.890	12.80	17.32	1780
220	0.02071	2.3767	0.3350	1909.0	3358.4	32.520	12.46	16.91	1796
240	0.02191	2.4198	0.3039	2158.6	3692.5	33.974	12.13	16.53	1816
260	0.02312	2.4681	0.2779	2401.3	4019.6	35.284	11.86	16.21	1837
280	0.02432	2.5196	0.2561	2638.4	4340.9	36.474	11.65	15.96	1858
300	0.02558	2.5891	0.2399	2855.1	4645.7	37.502	11.23	15.59	1896
350	0.02860	2.7609	0.2029	3412.5	5414.3	39.871	10.93	15.19	1959
400	0.03159	2.9409	0.1758	3956.4	6167.8	41.885	10.77	14.97	2021
450	0.03457	3.1257	0.1552	4493.0	6912.7	43.640	10.70	14.85	2082
500	0.03753	3.3133	0.1391	5026.3	7653.2	45.200	10.66	14.77	2143
550	0.04048	3.5030	0.1260	5556.7	8390.2	46.605	10.64	14.72	2202
600	0.04342	3.6941	0.1153	6086.3	9125.8	47.883	10.63	14.70	2260
700	0.04930	4.0800	0.0985	7144.3	10595.1	50.150	10.65	14.70	2373
800	0.05516	4.4695	0.0861	8206.2	12067.6	52.114	10.72	14.76	2481
900	0.06102	4.8621	0.0765	9276.6	13548.2	53.857	10.83	14.86	2583
1000	0.06688	5.2571	0.0689	10359.3	15041.1	55.432	10.97	15.01	2681
1200	0.07860	6.0529	0.0574	12577.3	18079.7	58.189	11.34	15.38	2865
1400	0.09033	6.8547	0.0493	14875.1	21198.4	60.597	11.76	15.81	3035
1600	0.10207	7.6609	0.0432	17257.0	24401.8	62.713	12.16	16.22	3196
1800	0.11381	8.4703	0.0384	19722.6	27689.3	64.611	12.54	16.60	3349
2000	0.12556	9.2822	0.0346	22271.6	31060.8	66.453	12.91	16.98	3494
2500	0.15502	11.3197	0.0277	29006.2	39857.6	72.722	14.08	18.19	3825
3000	0.18492	13.3644	0.0231	36539.5	49484.2	79.598	16.17	20.49	4114

* TWO-PHASE BOUNDARY

70.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 29.318	97.4967	2244.6	0.22878	407.5451	0.00341	235.03	706.81	0.00113	1.32496	2.2999
30	97.2698	2263.3	0.22652	404.5479	0.00342	236.48	664.21	0.00113	1.32413	2.1766
31	96.9362	2290.1	0.22326	400.1290	0.00345	237.38	609.63	0.00112	1.32292	2.0281
32	96.6013	2315.6	0.22016	395.6857	0.00347	237.96	562.84	0.00110	1.32170	1.9017
33	96.2654	2339.2	0.21728	391.2231	0.00350	238.28	522.44	0.00109	1.32047	1.7928
34	95.9283	2361.7	0.21452	386.7464	0.00352	238.44	487.31	0.00108	1.31925	1.6983
35	95.5903	2382.9	0.21190	382.2602	0.00354	238.41	456.58	0.00106	1.31802	1.6162
36	95.2513	2402.9	0.20940	377.7693	0.00356	238.20	429.54	0.00105	1.31678	1.5445
37	94.9113	2421.8	0.20701	373.2781	0.00359	237.84	405.62	0.00104	1.31555	1.4814
38	94.5704	2439.0	0.20480	368.7910	0.00361	237.35	384.35	0.00103	1.31431	1.4255
39	94.2287	2454.0	0.20280	364.3122	0.00363	236.74	365.36	0.00101	1.31307	1.3753
40	93.8860	2467.9	0.20091	359.8459	0.00365	236.04	348.32	0.00100	1.31183	1.3306
42	93.1984	2494.5	0.19720	350.9664	0.00370	234.33	319.11	0.00098	1.30934	1.2561
44	92.5077	2520.5	0.19350	342.1825	0.00374	232.37	295.08	0.00096	1.30684	1.1974
46	91.8141	2554.6	0.18898	333.5225	0.00378	230.25	275.04	0.00093	1.30433	1.1548
48	91.1180	2583.4	0.18498	325.0125	0.00383	228.02	258.15	0.00091	1.30182	1.1192
50	90.4196	2610.1	0.18120	316.6769	0.00387	225.72	243.76	0.00089	1.29930	1.0902
52	89.7192	2635.1	0.17760	308.5377	0.00391	223.38	231.37	0.00087	1.29678	1.0666
54	89.0173	2659.1	0.17413	300.6150	0.00395	221.04	220.63	0.00085	1.29425	1.0474
56	88.3142	2681.6	0.17081	292.9268	0.00398	218.72	211.24	0.00083	1.29173	1.0315
58	87.6105	2702.3	0.16771	285.4884	0.00402	216.43	202.97	0.00082	1.28920	1.0180
60	86.9066	2724.0	0.16456	278.3130	0.00405	214.49	195.64	0.00081	1.28668	1.0060
65	85.1501	2786.0	0.15639	261.5869	0.00411	210.78	180.52	0.00078	1.28040	0.9818
70	83.4061	2862.2	0.14776	246.6504	0.00416	207.27	168.78	0.00075	1.27418	0.9692
75	81.6851	2954.4	0.13883	233.4795	0.00418	204.10	159.41	0.00073	1.26807	0.9640
80	79.9139	3074.7	0.13156	224.5879	0.00417	201.19	151.41	0.00071	1.26180	0.9659
85	78.2693	3197.1	0.12292	214.3757	0.00416	202.29	145.08	0.00070	1.25599	0.9544
90	76.6635	3338.2	0.11486	206.0676	0.00413	203.40	139.71	0.00069	1.25033	0.9458
95	75.1048	3481.5	0.10745	198.1874	0.00409	204.63	135.10	0.00069	1.24486	0.9403
100	73.5871	3619.7	0.10068	190.2657	0.00407	210.52	112.22	0.00070	1.23955	0.7847
120	67.9484	4211.3	0.07954	165.9205	0.00390	227.28	115.50	0.00073	1.21994	0.8337
140	62.9718	4669.6	0.06796	147.5332	0.00373	233.41	114.00	0.00077	1.20280	0.8497
160	58.5562	5027.6	0.06203	135.1813	0.00354	233.70	111.15	0.00081	1.18773	0.8456
180	54.6784	5338.3	0.05869	126.9584	0.00331	231.24	108.41	0.00086	1.17460	0.8276
200	51.2917	5579.8	0.05679	120.1748	0.00310	228.00	106.29	0.00092	1.16322	0.8072
220	48.2948	5794.6	0.05568	114.7806	0.00292	225.11	104.90	0.00099	1.15320	0.7882
240	45.6339	6007.1	0.05488	110.4232	0.00275	223.18	104.21	0.00107	1.14436	0.7719
260	43.2550	6226.3	0.05418	106.7565	0.00260	222.40	104.13	0.00114	1.13650	0.7589
280	41.1164	6455.3	0.05348	103.5957	0.00247	222.79	104.58	0.00122	1.12946	0.7490
300	39.0924	6579.6	0.05464	101.2148	0.00237	224.21	105.45	0.00132	1.12283	0.7334
350	34.9676	7230.0	0.05310	96.5405	0.00210	231.53	109.11	0.00157	1.10939	0.7159
400	31.6542	7926.3	0.05155	93.0932	0.00189	242.50	114.23	0.00184	1.09868	0.7052
450	28.9300	8649.0	0.05014	90.4261	0.00172	255.82	120.30	0.00214	1.08993	0.6983
500	26.6473	9376.7	0.04896	88.2911	0.00158	270.46	126.99	0.00247	1.08263	0.6935
550	24.7046	10111.0	0.04795	86.5392	0.00146	286.08	134.10	0.00283	1.07645	0.6902
600	23.0296	10849.8	0.04708	85.0743	0.00135	302.38	141.50	0.00322	1.07114	0.6878
700	20.2852	12347.5	0.04560	82.7633	0.00119	336.47	156.81	0.00406	1.06247	0.6850
800	18.1285	13886.0	0.04431	81.0261	0.00106	372.19	172.46	0.00501	1.05570	0.6838
900	16.3874	15477.6	0.04312	79.6768	0.00096	409.31	188.22	0.00605	1.05026	0.6835
1000	14.9516	17130.6	0.04197	78.6020	0.00088	440.56	203.95	0.00707	1.04578	0.6948
1200	12.7219	20619.3	0.03982	77.0053	0.00075	511.13	235.07	0.00941	1.03886	0.7073
1400	11.0702	24341.3	0.03785	75.8835	0.00065	583.31	265.52	0.01200	1.03376	0.7195
1600	9.7974	28203.1	0.03621	75.0570	0.00058	655.30	295.22	0.01485	1.02983	0.7306
1800	8.7866	32164.1	0.03486	74.4252	0.00052	726.74	324.17	0.01794	1.02673	0.7403
2000	7.9643	36286.7	0.03364	73.9267	0.00047	799.79	352.41	0.02129	1.02420	0.7481
2500	6.4508	47925.6	0.03053	73.0211	0.00038	1014.43	420.22	0.03111	1.01957	0.7537
3000	5.4076	64025.0	0.02645	72.2696	0.00032	1371.13	485.01	0.04454	1.01639	0.7249

* TWO-PHASE BOUNDARY

80.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 30.999	0.01008	4.5298	1.441	-199.5	606.6	6.109	6.35	7.80	2358
31	0.01008	4.5298	1.441	-199.5	606.6	6.109	6.35	7.80	2358
32	0.01011	4.5007	1.435	-194.2	614.4	6.359	6.44	7.94	2355
33	0.01014	4.4712	1.428	-188.8	622.5	6.605	6.52	8.07	2352
34	0.01017	4.4412	1.421	-183.3	630.6	6.848	6.60	8.20	2349
35	0.01021	4.4109	1.414	-177.7	638.9	7.088	6.67	8.33	2346
36	0.01024	4.3802	1.406	-172.0	647.2	7.324	6.74	8.45	2343
37	0.01027	4.3491	1.399	-166.2	655.8	7.557	6.81	8.57	2339
38	0.01031	4.3178	1.391	-160.3	664.4	7.787	6.87	8.68	2335
39	0.01034	4.2863	1.382	-154.3	673.1	8.014	6.92	8.78	2332
40	0.01038	4.2545	1.374	-148.3	681.9	8.238	6.97	8.89	2328
42	0.01045	4.1906	1.357	-135.9	699.9	8.676	7.07	9.08	2320
44	0.01052	4.1263	1.339	-123.2	718.3	9.103	7.17	9.28	2312
46	0.01059	4.0620	1.322	-110.8	736.5	9.509	7.29	9.51	2302
48	0.01067	3.9979	1.303	-97.4	755.8	9.918	7.40	9.72	2291
50	0.01074	3.9342	1.285	-83.8	775.4	10.319	7.51	9.93	2281
52	0.01082	3.8712	1.266	-69.8	795.5	10.712	7.60	10.12	2270
54	0.01089	3.8092	1.247	-55.5	815.9	11.098	7.69	10.31	2259
56	0.01097	3.7484	1.228	-40.7	837.0	11.481	7.78	10.49	2248
58	0.01105	3.6888	1.209	-25.9	858.1	11.852	7.86	10.66	2238
60	0.01113	3.6308	1.190	-10.9	879.6	12.217	7.94	10.84	2226
65	0.01134	3.4936	1.141	27.9	934.9	13.101	8.16	11.27	2197
70	0.01155	3.3690	1.092	68.3	992.4	13.953	8.41	11.72	2167
75	0.01177	3.2580	1.043	110.5	1052.1	14.777	8.71	12.18	2135
80	0.01199	3.1609	0.9949	154.6	1114.2	15.578	9.04	12.64	2103
85	0.01222	3.0766	0.9473	200.7	1178.6	16.359	9.40	13.11	2071
90	0.01247	3.0327	0.9169	249.0	1246.9	17.140	9.78	13.66	2058
95	0.01271	2.9769	0.8751	299.6	1316.3	17.890	10.18	14.13	2033
100	0.01295	2.9212	0.8370	352.3	1388.2	18.628	10.58	14.60	2008
120	0.01393	2.7645	0.7095	585.7	1699.9	21.465	12.10	16.33	1932
140	0.01493	2.6714	0.6055	842.3	2036.9	24.060	12.99	17.27	1885
160	0.01596	2.5674	0.5274	1110.3	2387.0	26.397	13.29	17.71	1849
180	0.01701	2.5527	0.4682	1380.1	2741.1	28.483	13.20	17.68	1849
200	0.01807	2.5993	0.4183	1645.6	3091.1	30.326	12.92	17.32	1866
220	0.01912	2.6204	0.3764	1903.7	3433.3	31.957	12.57	16.92	1878
240	0.02017	2.6518	0.3419	2154.1	3767.6	33.412	12.24	16.55	1893
260	0.02122	2.6955	0.3131	2397.7	4095.1	34.723	11.97	16.22	1912
280	0.02226	2.7419	0.2886	2635.8	4416.7	35.915	11.75	15.97	1930
300	0.02336	2.8067	0.2723	2851.0	4720.1	36.935	11.30	15.62	1970
350	0.02500	2.9678	0.2305	3410.2	5490.3	39.309	10.99	15.22	2028
400	0.02862	3.1398	0.1999	3956.0	6245.3	41.327	10.83	15.00	2085
450	0.03122	3.3179	0.1765	4494.1	6991.4	43.086	10.75	14.87	2142
500	0.03380	3.4998	0.1581	5028.9	7733.0	44.648	10.71	14.79	2199
550	0.03638	3.6845	0.1433	5560.5	8470.9	46.054	10.68	14.74	2255
600	0.03895	3.8711	0.1310	6091.1	9207.2	47.334	10.67	14.71	2310
700	0.04408	4.2490	0.1120	7151.0	10677.3	49.602	10.69	14.71	2418
800	0.04920	4.6316	0.0979	8214.4	12153.2	51.567	10.75	14.76	2521
900	0.05431	5.0180	0.0870	9286.0	13631.0	53.310	10.86	14.86	2621
1000	0.05943	5.4076	0.0783	10369.6	15123.9	54.885	11.00	15.01	2716
1200	0.06966	6.1941	0.0653	12589.1	18162.1	57.642	11.36	15.38	2895
1400	0.07990	6.9883	0.0561	14888.0	21280.4	60.049	11.78	15.80	3062
1600	0.09016	7.7882	0.0491	17270.7	24483.1	62.164	12.18	16.21	3219
1800	0.10041	8.5924	0.0437	19736.8	27770.0	64.062	12.55	16.59	3370
2000	0.11068	9.3998	0.0394	22286.0	31140.6	65.904	12.92	16.97	3513
2500	0.13643	11.4287	0.0316	29015.2	39929.7	72.169	14.06	18.16	3842
3000	0.16255	13.4672	0.0264	36513.9	49518.2	79.032	16.06	20.36	4130

* TWO-PHASE BOUNDARY

80.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 30.999	99.2474	2432.3	0.22852	449.5687	0.00321	250.16	780.58	0.00116	1.33135	2.4329
31	99.2472	2432.4	0.22852	449.5664	0.00321	250.16	780.54	0.00116	1.33135	2.4328
32	98.9287	2463.0	0.22516	445.2508	0.00322	250.86	713.79	0.00115	1.33019	2.2585
33	98.6096	2491.7	0.22204	440.9031	0.00324	251.28	656.67	0.00114	1.32902	2.1094
34	98.2898	2518.9	0.21907	436.5283	0.00326	251.52	607.43	0.00112	1.32785	1.9807
35	97.9695	2544.9	0.21625	432.1310	0.00327	251.55	564.71	0.00111	1.32668	1.8694
36	97.6487	2569.5	0.21356	427.7161	0.00329	251.39	527.40	0.00110	1.32551	1.7726
37	97.3273	2592.9	0.21101	423.2880	0.00330	251.06	494.63	0.00108	1.32434	1.6879
38	97.0055	2614.3	0.20863	418.8511	0.00332	250.59	465.69	0.00107	1.32317	1.6131
39	96.6832	2633.3	0.20650	414.4095	0.00334	250.00	440.01	0.00106	1.32199	1.5462
40	96.3604	2651.1	0.20447	409.9674	0.00335	249.31	417.12	0.00105	1.32082	1.4868
42	95.7136	2685.2	0.20053	401.0970	0.00338	247.57	378.19	0.00102	1.31846	1.3878
44	95.0651	2718.5	0.19662	392.2698	0.00341	245.58	346.50	0.00100	1.31611	1.3098
46	94.4152	2760.4	0.19192	383.5138	0.00345	243.40	320.34	0.00098	1.31375	1.2519
48	93.7638	2796.3	0.18777	374.8552	0.00348	241.09	298.49	0.00095	1.31139	1.2037
50	93.1112	2829.6	0.18387	366.3183	0.00351	238.71	280.02	0.00093	1.30902	1.1643
52	92.4575	2860.9	0.18017	357.9256	0.00354	236.29	264.26	0.00091	1.30666	1.1319
54	91.8029	2890.6	0.17661	349.6978	0.00357	233.86	250.70	0.00089	1.30429	1.1053
56	91.1477	2918.5	0.17323	341.6538	0.00360	231.44	238.92	0.00087	1.30193	1.0832
58	90.4922	2944.0	0.17007	333.8105	0.00362	229.05	228.63	0.00085	1.29956	1.0645
60	89.8367	2970.3	0.16689	326.1830	0.00365	227.02	219.57	0.00084	1.29720	1.0480
65	88.2001	3043.0	0.15866	308.1377	0.00370	223.14	201.10	0.00081	1.29132	1.0158
70	86.5721	3129.1	0.15001	291.6594	0.00375	219.43	186.99	0.00078	1.28548	0.9987
75	84.9602	3231.1	0.14104	276.8026	0.00377	216.05	175.89	0.00075	1.27972	0.9916
80	83.3722	3349.3	0.13200	263.5304	0.00378	213.19	166.95	0.00073	1.27406	0.9902
85	81.8151	3482.3	0.12316	251.7159	0.00376	214.22	159.60	0.00072	1.26853	0.9764
90	80.1666	3622.4	0.11696	243.1203	0.00377	214.82	152.93	0.00071	1.26269	0.9725
95	78.6848	3781.3	0.10926	234.2384	0.00374	215.98	147.72	0.00070	1.25745	0.9663
100	77.2243	3935.0	0.10246	225.5857	0.00371	222.91	119.62	0.00071	1.25231	0.7835
120	71.7961	4569.5	0.08170	198.4820	0.00357	240.19	123.22	0.00074	1.23330	0.8380
140	66.9708	5104.0	0.06960	178.9029	0.00338	245.91	121.47	0.00077	1.21656	0.8532
160	62.6633	5401.5	0.06332	160.8803	0.00328	245.46	118.14	0.00080	1.20175	0.8523
180	58.7805	5665.4	0.06032	150.0471	0.00312	242.20	114.85	0.00084	1.18850	0.8383
200	55.3429	5954.7	0.05851	143.8526	0.00291	238.20	112.22	0.00089	1.17685	0.8158
220	52.3020	6161.1	0.05724	137.0497	0.00275	234.62	110.35	0.00095	1.16661	0.7960
240	49.5830	6363.3	0.05632	131.4833	0.00260	232.07	109.24	0.00102	1.15750	0.7790
260	47.1312	6583.5	0.05550	127.0411	0.00246	230.75	108.79	0.00109	1.14933	0.7649
280	44.9199	6813.4	0.05468	123.1659	0.00234	230.67	108.91	0.00116	1.14200	0.7538
300	42.8013	6891.6	0.05633	120.1304	0.00227	231.69	109.52	0.00125	1.13500	0.7385
350	38.4605	7537.1	0.05457	114.1447	0.00202	238.28	112.68	0.00147	1.12076	0.7199
400	34.9447	8231.9	0.05283	109.7182	0.00182	248.86	117.51	0.00171	1.10932	0.7082
450	32.0350	8954.7	0.05124	106.2877	0.00166	262.08	123.45	0.00198	1.09991	0.7006
500	29.5836	9682.6	0.04993	103.5380	0.00153	276.84	130.14	0.00228	1.09202	0.6952
550	27.4879	10417.3	0.04880	101.2786	0.00141	292.78	137.36	0.00260	1.08531	0.6915
600	25.6738	11156.2	0.04783	99.3867	0.00132	309.55	144.94	0.00295	1.07953	0.6888
700	22.6868	12653.8	0.04620	96.3963	0.00116	344.98	160.82	0.00372	1.07005	0.6855
800	20.3262	14191.8	0.04480	94.1434	0.00104	382.45	177.25	0.00459	1.06260	0.6841
900	18.4117	15783.0	0.04352	92.3908	0.00094	421.65	193.92	0.00555	1.05659	0.6836
1000	16.8270	17435.7	0.04231	90.9932	0.00086	440.56	210.68	0.00628	1.05163	0.7177
1200	14.3550	20924.5	0.04006	88.9164	0.00073	511.13	244.07	0.00834	1.04393	0.7342
1400	12.5150	24647.4	0.03803	87.4585	0.00064	583.31	276.98	0.01062	1.03822	0.7504
1600	11.0919	28509.6	0.03636	86.3863	0.00057	655.29	309.25	0.01312	1.03382	0.7652
1800	9.9587	32469.6	0.03498	85.5686	0.00051	726.68	340.83	0.01583	1.03033	0.7782
2000	9.0348	36587.9	0.03374	84.9255	0.00046	799.56	371.72	0.01877	1.02749	0.7891
2500	7.3297	48161.0	0.03065	83.7689	0.00038	1011.56	446.17	0.02736	1.02226	0.8011
3000	6.1518	63952.0	0.02668	82.8475	0.00032	1356.25	517.44	0.03899	1.01866	0.7766

* TWO-PHASE BOUNDARY

90.00 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 32.614	0.00991	4.8726	1.492	-182.9	709.3	6.197	6.48	7.94	2444
33	0.00993	4.8621	1.489	-180.9	712.4	6.291	6.51	7.99	2443
34	0.00996	4.8345	1.482	-175.6	720.4	6.531	6.59	8.12	2441
35	0.00999	4.8065	1.474	-170.1	728.6	6.769	6.67	8.24	2438
36	0.01002	4.7780	1.466	-164.6	736.9	7.003	6.74	8.36	2435
37	0.01005	4.7491	1.458	-158.9	745.3	7.233	6.81	8.48	2432
38	0.01008	4.7198	1.450	-153.2	753.9	7.461	6.87	8.59	2429
39	0.01011	4.6902	1.441	-147.4	762.5	7.685	6.93	8.69	2426
40	0.01014	4.6602	1.432	-141.5	771.3	7.907	6.98	8.79	2423
42	0.01021	4.5996	1.415	-129.4	789.0	8.340	7.08	8.98	2416
44	0.01027	4.5382	1.397	-117.1	807.2	8.762	7.18	9.17	2408
46	0.01033	4.4764	1.379	-104.9	825.2	9.163	7.31	9.40	2399
48	0.01040	4.4143	1.360	-91.9	844.2	9.567	7.42	9.60	2389
50	0.01047	4.3522	1.342	-78.5	863.6	9.963	7.53	9.80	2379
52	0.01054	4.2904	1.323	-64.9	883.4	10.351	7.63	9.99	2370
54	0.01061	4.2290	1.304	-50.9	903.6	10.731	7.73	10.17	2359
56	0.01068	4.1684	1.286	-36.4	924.3	11.109	7.82	10.35	2349
58	0.01075	4.1087	1.267	-21.9	945.2	11.475	7.90	10.51	2339
60	0.01082	4.0500	1.248	-7.2	966.4	11.835	7.98	10.68	2328
65	0.01100	3.9093	1.201	30.8	1020.9	12.707	8.21	11.11	2300
70	0.01119	3.7786	1.153	70.6	1077.6	13.547	8.48	11.57	2270
75	0.01138	3.6597	1.105	112.2	1136.6	14.361	8.79	12.04	2238
80	0.01158	3.5532	1.058	155.8	1198.0	15.153	9.14	12.52	2206
85	0.01178	3.4592	1.011	201.5	1261.8	15.927	9.52	13.00	2174
90	0.01199	3.3767	0.9648	249.3	1328.0	16.684	9.91	13.48	2143
95	0.01219	3.3041	0.9199	299.3	1396.6	17.425	10.32	13.93	2112
100	0.01243	3.2490	0.8965	351.4	1469.9	18.176	10.71	14.53	2100
120	0.01329	3.0689	0.7615	583.5	1779.7	20.996	12.23	16.24	2018
140	0.01418	2.9813	0.6595	839.6	2116.1	23.587	13.13	17.24	1978
160	0.01508	2.8959	0.5722	1107.7	2464.6	25.913	13.44	17.55	1945
180	0.01599	2.7697	0.5084	1377.0	2816.1	27.983	13.34	17.63	1913
200	0.01693	2.7672	0.4587	1642.3	3165.9	29.826	13.04	17.40	1921
220	0.01787	2.8492	0.4157	1900.9	3509.1	31.462	12.69	16.95	1951
240	0.01880	2.8914	0.3780	2152.1	3844.1	32.920	12.36	16.55	1968
260	0.01972	2.9172	0.3463	2396.6	4171.6	34.231	12.08	16.24	1980
280	0.02065	2.9541	0.3196	2635.4	4493.5	35.424	11.86	15.99	1995
300	0.02163	3.0270	0.3042	2868.3	4795.1	36.437	11.36	15.65	2042
350	0.02397	3.1770	0.2578	3409.2	5566.6	38.815	11.04	15.25	2095
400	0.02629	3.3404	0.2236	3956.6	6323.0	40.836	10.88	15.02	2147
450	0.02860	3.5114	0.1975	4496.3	7070.3	42.598	10.81	14.89	2200
500	0.03090	3.6874	0.1769	5032.4	7813.0	44.162	10.75	14.81	2253
550	0.03318	3.8667	0.1603	5565.3	8551.6	45.570	10.73	14.75	2306
600	0.03546	4.0486	0.1466	6097.0	9288.5	46.851	10.71	14.72	2358
700	0.04001	4.4178	0.1253	7158.7	10759.5	49.120	10.73	14.71	2461
800	0.04455	4.7929	0.1096	8223.7	12232.8	51.086	10.79	14.76	2561
900	0.04908	5.1726	0.0974	9296.5	13713.8	52.828	10.89	14.86	2657
1000	0.05362	5.5561	0.0877	10381.2	15206.6	54.404	11.03	15.01	2749
1200	0.06269	6.3323	0.0731	12602.3	18244.4	57.160	11.39	15.37	2924
1400	0.07177	7.1179	0.0628	14902.4	21362.0	59.567	11.80	15.80	3087
1600	0.08087	7.9107	0.0550	17286.0	24564.0	61.682	12.20	16.21	3241
1800	0.08997	8.7088	0.0490	19752.8	27850.2	63.579	12.57	16.59	3390
2000	0.09909	9.5111	0.0442	22302.2	31219.9	65.420	12.94	16.97	3531
2500	0.12194	11.5300	0.0354	29027.3	40002.2	71.683	14.05	18.13	3857
3000	0.14512	13.5613	0.0296	36497.5	49558.7	78.534	15.98	20.24	4144

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

90.00 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(\partial H/\partial V)_P$ KJ/KG	$V(\partial P/\partial U)_V$ MPA-CU M/KJ X 10^2	$-V(\partial P/\partial V)_T$ MPA	$-(\partial V/\partial T)_P/V$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 32.614	100.8714	2616.4	0.22833	491.5039	0.00304	263.61	857.52	0.00118	1.33730	2.5839
33	100.7531	2629.0	0.22707	489.8700	0.00304	263.77	827.99	0.00118	1.33687	2.5091
34	100.4467	2661.2	0.22386	485.6133	0.00305	264.08	759.30	0.00117	1.33575	2.3349
35	100.1401	2691.8	0.22082	481.3228	0.00306	264.16	700.18	0.00115	1.33462	2.1852
36	99.8333	2721.1	0.21794	477.0030	0.00307	264.04	648.95	0.00114	1.33350	2.0556
37	99.5264	2748.9	0.21519	472.6586	0.00308	263.73	604.29	0.00113	1.33238	1.9428
38	99.2193	2774.7	0.21265	468.2939	0.00310	263.28	565.12	0.00111	1.33125	1.8436
39	98.9121	2797.8	0.21036	463.9132	0.00311	262.69	530.59	0.00110	1.33013	1.7554
40	98.6048	2819.6	0.20819	459.5205	0.00312	261.99	499.99	0.00109	1.32900	1.6774
42	97.9899	2861.3	0.20398	450.7152	0.00314	260.22	448.40	0.00106	1.32676	1.5477
44	97.3745	2902.1	0.19984	441.9079	0.00316	258.16	406.84	0.00104	1.32451	1.4456
46	96.7587	2951.9	0.19492	433.1268	0.00318	255.91	372.86	0.00101	1.32227	1.3690
48	96.1426	2995.2	0.19059	424.3983	0.00321	253.52	344.72	0.00099	1.32003	1.3053
50	95.5262	3035.4	0.18654	415.7470	0.00323	251.04	321.14	0.00097	1.31778	1.2531
52	94.9095	3073.2	0.18270	407.1958	0.00325	248.52	301.17	0.00094	1.31554	1.2101
54	94.2927	3109.1	0.17904	398.7661	0.00327	245.98	284.10	0.00092	1.31330	1.1746
56	93.6758	3142.8	0.17557	390.4774	0.00329	243.45	269.39	0.00090	1.31107	1.1450
58	93.0590	3173.6	0.17234	382.3478	0.00331	240.96	256.61	0.00089	1.30883	1.1198
60	92.4426	3205.0	0.16910	374.3937	0.00333	238.83	245.43	0.00087	1.30660	1.0978
65	90.9041	3289.9	0.16078	355.3682	0.00338	234.76	222.87	0.00084	1.30105	1.0552
70	89.3730	3367.9	0.15207	337.7071	0.00341	230.85	205.89	0.00080	1.29553	1.0316
75	87.8545	3501.5	0.14308	321.5186	0.00344	227.26	192.71	0.00077	1.29008	1.0209
80	86.3545	3631.4	0.13402	306.8348	0.00345	224.18	182.23	0.00075	1.28471	1.0178
85	84.8790	3776.9	0.12513	293.6117	0.00344	225.18	173.71	0.00073	1.27943	1.0032
90	83.4336	3935.9	0.11663	281.7316	0.00342	226.16	166.66	0.00072	1.27428	0.9933
95	82.0230	4105.4	0.10869	271.0114	0.00339	227.24	160.73	0.00072	1.26927	0.9856
100	80.4651	4237.4	0.10403	261.4332	0.00343	234.40	126.52	0.00072	1.26375	0.7843
120	75.2353	4924.3	0.08272	230.8886	0.00330	252.31	130.51	0.00074	1.24532	0.8400
140	70.5036	5494.3	0.07124	210.1927	0.00314	257.78	128.61	0.00076	1.22880	0.8601
160	66.3292	5892.5	0.06418	192.0795	0.00298	256.71	124.87	0.00079	1.21435	0.8538
180	62.5400	6008.2	0.06094	173.2180	0.00293	252.74	121.11	0.00083	1.20132	0.8450
200	59.0710	6200.8	0.05954	163.4613	0.00281	248.05	118.00	0.00087	1.18948	0.8278
220	55.9659	6502.8	0.05852	159.4606	0.00261	243.85	115.69	0.00093	1.17895	0.8042
240	53.1923	6734.3	0.05750	153.7984	0.00246	240.73	114.19	0.00098	1.16960	0.7851
260	50.7026	6935.2	0.05654	147.9087	0.00234	238.91	113.39	0.00104	1.16124	0.7707
280	48.4373	7157.2	0.05564	143.0900	0.00223	238.39	113.22	0.00111	1.15368	0.7592
300	46.2315	7199.7	0.05793	139.9443	0.00217	239.04	113.57	0.00119	1.14634	0.7435
350	41.7167	7841.3	0.05595	132.5354	0.00194	244.93	116.24	0.00139	1.13143	0.7238
400	38.0322	8535.3	0.05402	127.0413	0.00176	255.13	120.78	0.00161	1.11936	0.7112
450	34.9644	9258.7	0.05228	122.7753	0.00161	268.21	126.58	0.00185	1.10938	0.7029
500	32.3671	9987.5	0.05083	119.3503	0.00148	283.08	133.26	0.00213	1.10098	0.6970
550	30.1370	10723.0	0.04959	116.5315	0.00138	299.30	140.56	0.00242	1.09380	0.6928
600	28.1996	11462.5	0.04853	114.1675	0.00128	316.52	148.32	0.00274	1.08759	0.6898
700	24.9947	12960.7	0.04675	110.4230	0.00114	353.26	164.75	0.00346	1.07737	0.6861
800	22.4485	14498.6	0.04524	107.5944	0.00102	392.50	181.95	0.00426	1.06930	0.6843
900	20.3744	16089.6	0.04388	105.3896	0.00092	433.85	199.57	0.00516	1.06276	0.6837
1000	18.6513	17742.0	0.04260	103.6291	0.00085	440.56	217.40	0.00567	1.05734	0.7405
1200	15.9516	21230.6	0.04026	101.0104	0.00072	511.13	253.25	0.00750	1.04890	0.7617
1400	13.9327	24953.6	0.03818	99.1723	0.00063	583.30	288.89	0.00954	1.04262	0.7825
1600	12.3659	28815.3	0.03646	97.8224	0.00056	655.28	324.06	0.01177	1.03776	0.8017
1800	11.1146	32773.5	0.03506	96.7950	0.00051	726.63	358.65	0.01419	1.03389	0.8187
2000	10.0923	36887.5	0.03381	95.9893	0.00046	799.36	392.61	0.01680	1.03074	0.8334
2500	8.2006	48404.0	0.03074	94.5528	0.00037	1009.19	474.83	0.02443	1.02493	0.8532
3000	6.8906	63938.3	0.02687	93.4458	0.00032	1343.93	553.83	0.03469	1.02092	0.8341

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

100 MPA ISOBAR

TEMPERATURE DEG. K	VOLUME CU M/KG	ISOTHERM DERIVATIVE CU M-MPA/KG	ISOCHORE DERIVATIVE MPA/K	INTERNAL ENERGY KJ/KG-K	ENTHALPY KJ/KG	ENTROPY KJ/KG-K	CV KJ / KG-K	CP	VELOCITY OF SOUND M/S
* 34.169	0.00977	5.2095	1.542	-166.3	810.4	6.279	6.60	8.08	2527
35	0.00979	5.1881	1.535	-161.9	817.2	6.474	6.66	8.18	2525
36	0.00982	5.1618	1.526	-156.5	825.4	6.706	6.73	8.30	2522
37	0.00985	5.1350	1.517	-151.0	833.8	6.935	6.81	8.41	2520
38	0.00988	5.1078	1.508	-145.4	842.2	7.161	6.87	8.52	2517
39	0.00990	5.0801	1.499	-139.7	850.8	7.384	6.93	8.62	2514
40	0.00993	5.0520	1.490	-133.9	859.5	7.603	6.98	8.72	2511
42	0.00999	4.9948	1.472	-122.1	877.1	8.033	7.09	8.90	2505
44	0.01005	4.9365	1.453	-110.1	895.1	8.452	7.19	9.09	2498
46	0.01011	4.8773	1.434	-98.2	913.0	8.848	7.32	9.31	2490
48	0.01017	4.8175	1.415	-85.4	931.8	9.249	7.44	9.51	2481
50	0.01023	4.7573	1.396	-72.3	951.0	9.641	7.55	9.70	2472
52	0.01029	4.6971	1.377	-58.9	970.6	10.025	7.66	9.88	2462
54	0.01036	4.6369	1.359	-45.2	990.5	10.401	7.76	10.06	2453
56	0.01042	4.5771	1.340	-31.0	1011.1	10.775	7.85	10.23	2443
58	0.01048	4.5178	1.321	-16.7	1031.7	11.137	7.93	10.40	2433
60	0.01055	4.4591	1.302	-2.2	1052.7	11.493	8.02	10.56	2423
65	0.01071	4.3169	1.255	35.2	1106.5	12.355	8.26	10.99	2396
70	0.01088	4.1826	1.209	74.3	1162.6	13.185	8.54	11.44	2367
75	0.01106	4.0581	1.162	115.4	1221.0	13.991	8.87	11.92	2336
80	0.01123	3.9448	1.116	158.5	1281.8	14.776	9.23	12.41	2304
85	0.01141	3.8431	1.070	203.9	1345.1	15.543	9.62	12.91	2272
90	0.01160	3.7530	1.024	251.4	1411.0	16.296	10.03	13.41	2240
95	0.01178	3.6737	0.9796	301.2	1479.2	17.034	10.44	13.89	2210
100	0.01197	3.6035	0.9357	353.3	1549.8	17.758	10.86	14.34	2181
120	0.01276	3.3346	0.8066	584.0	1860.0	20.580	12.38	16.19	2088
140	0.01355	3.1987	0.7030	839.3	2194.3	23.155	13.28	17.25	2039
160	0.01437	3.1972	0.6180	1107.5	2544.5	25.493	13.59	17.53	2031
180	0.01517	3.1143	0.5439	1377.3	2893.9	27.551	13.49	17.42	2005
200	0.01597	2.9502	0.4914	1642.2	3239.6	29.372	13.18	17.36	1971
220	0.01684	2.9419	0.4488	1900.6	3584.7	31.017	12.82	17.09	1981
240	0.01768	3.0865	0.4119	2152.3	3920.5	32.478	12.48	16.60	2026
260	0.01852	3.1323	0.3779	2397.5	4249.2	33.794	12.20	16.26	2044
280	0.01934	3.1686	0.3488	2637.2	4571.2	34.988	11.97	15.99	2057
300	0.02024	3.2500	0.3354	2847.0	4870.5	35.991	11.42	15.67	2112
350	0.02234	3.3883	0.2846	3409.3	5643.3	38.373	11.10	15.28	2159
400	0.02443	3.5426	0.2470	3958.2	6400.9	40.398	10.94	15.05	2208
450	0.02650	3.7063	0.2182	4499.3	7149.3	42.162	10.86	14.92	2257
500	0.02856	3.8759	0.1955	5036.7	7892.9	43.728	10.80	14.82	2306
550	0.03061	4.0497	0.1771	5570.9	8632.3	45.137	10.77	14.77	2356
600	0.03266	4.2264	0.1620	6103.7	9369.9	46.419	10.76	14.73	2406
700	0.03674	4.5866	0.1385	7167.4	10841.7	48.690	10.77	14.72	2504
800	0.04082	4.9536	0.1210	8233.9	12315.4	50.656	10.82	14.76	2599
900	0.04488	5.3261	0.1076	9308.1	13796.5	52.399	10.93	14.86	2692
1000	0.04895	5.7030	0.0968	10393.9	15289.2	53.974	11.06	15.01	2781
1200	0.05710	6.4678	0.0808	12616.8	18326.5	56.730	11.42	15.37	2951
1400	0.06525	7.2439	0.0694	14918.2	21443.4	59.136	11.83	15.80	3110
1600	0.07342	8.0286	0.0609	17302.8	24644.6	61.251	12.23	16.21	3262
1800	0.08160	8.8200	0.0542	19770.4	27930.0	63.148	12.59	16.58	3408
2000	0.08978	9.6165	0.0489	22320.2	31298.6	64.988	12.96	16.96	3548
2500	0.11033	11.6239	0.0392	29042.2	40074.7	71.248	14.05	18.11	3871
3000	0.13115	13.6469	0.0328	36488.4	49603.8	78.089	15.91	20.14	4156

* TWO-PHASE BOUNDARY

100 MPA ISOBAR

TEMPERATURE DEG. K	DENSITY KG/CU M	$V(DH/DV)_P$ KJ/KG	$V(DP/DU)_V$ MPA-CU M/KJ X 10^2	$-V(DP/DV)_T$ MPA	$-(DV/DT)/V_P$ 1/DEG. K	THERMAL CONDUCTIVITY W/K-M X 10^3	VISCOSITY KG/M-S X 10^7	THERMAL DIFFUSIVITY SQ M/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 34.169	102.3875	2796.3	0.22830	533.3893	0.00289	276.26	937.81	0.00120	1.34287	2.7436
35	102.1417	2825.5	0.22560	529.9203	0.00290	276.34	870.98	0.00119	1.34197	2.5791
36	101.8460	2859.4	0.22250	525.7090	0.00290	276.25	800.91	0.00118	1.34088	2.4065
37	101.5504	2891.7	0.21955	521.4625	0.00291	275.96	740.27	0.00116	1.33980	2.2570
38	101.2550	2921.8	0.21682	517.1855	0.00292	275.51	687.46	0.00115	1.33871	2.1263
39	100.9598	2949.0	0.21436	512.8820	0.00292	274.92	641.22	0.00114	1.33763	2.0108
40	100.6647	2974.8	0.21203	508.5564	0.00293	274.20	600.50	0.00112	1.33655	1.9090
42	100.0751	3024.3	0.20754	499.8546	0.00294	272.38	532.43	0.00110	1.33439	1.7406
44	99.4861	3072.7	0.20314	491.1104	0.00296	270.25	478.19	0.00108	1.33223	1.6086
46	98.8978	3130.6	0.19798	482.3525	0.00297	267.90	434.26	0.00105	1.33008	1.5088
48	98.3099	3181.3	0.19345	473.6076	0.00299	265.41	398.20	0.00102	1.32793	1.4263
50	97.7226	3228.6	0.18922	464.9006	0.00300	262.83	368.22	0.00100	1.32578	1.3586
52	97.1359	3273.1	0.18524	456.2550	0.00302	260.20	343.02	0.00098	1.32364	1.3028
54	96.5496	3315.5	0.18144	447.6927	0.00303	257.54	321.63	0.00095	1.32151	1.2565
56	95.9639	3355.2	0.17786	439.2340	0.00305	254.90	303.31	0.00093	1.31937	1.2178
58	95.3788	3391.6	0.17454	430.8979	0.00307	252.29	287.50	0.00092	1.31725	1.1849
60	94.7943	3428.5	0.17122	422.7017	0.00308	250.06	273.74	0.00090	1.31512	1.1563
65	93.3370	3526.6	0.16276	402.9244	0.00312	245.78	246.24	0.00086	1.30984	1.1009
70	91.8870	3637.2	0.15398	384.3249	0.00315	241.67	225.80	0.00083	1.30459	1.0690
75	90.4480	3763.4	0.14496	367.0497	0.00317	237.86	210.14	0.00079	1.29940	1.0529
80	89.0241	3905.9	0.13589	351.1813	0.00318	234.58	197.82	0.00076	1.29428	1.0468
85	87.6203	4064.2	0.12700	336.7366	0.00318	235.54	187.92	0.00075	1.28924	1.0304
90	86.2414	4236.7	0.11848	323.6679	0.00317	236.46	179.81	0.00074	1.28430	1.0197
95	84.8920	4421.2	0.11049	311.8664	0.00314	237.48	173.06	0.00073	1.27948	1.0120
100	83.5760	4614.4	0.10311	301.1690	0.00311	245.13	132.99	0.00074	1.27479	0.7778
120	78.3682	5246.8	0.08312	261.3250	0.00309	263.75	137.43	0.00075	1.25634	0.8438
140	73.7994	5791.3	0.07176	236.0605	0.00298	269.09	135.46	0.00076	1.24029	0.8682
160	69.5909	6312.1	0.06536	222.4929	0.00278	267.50	131.38	0.00079	1.22563	0.8611
180	65.9363	6578.4	0.06114	205.3481	0.00265	262.90	127.19	0.00082	1.21299	0.8429
200	62.6024	6524.4	0.05955	184.6887	0.00266	257.59	123.64	0.00085	1.20154	0.8333
220	59.3817	6650.9	0.05898	174.6977	0.00257	252.80	120.93	0.00090	1.19054	0.8174
240	56.5559	7036.2	0.05836	174.5602	0.00236	249.16	119.06	0.00096	1.18095	0.7933
260	54.0061	7278.9	0.05737	169.1637	0.00223	246.88	117.94	0.00101	1.17234	0.7768
280	51.7071	7513.4	0.05633	163.8406	0.00213	245.96	117.48	0.00107	1.16461	0.7639
300	49.4193	7504.2	0.05944	160.6133	0.00209	246.25	117.58	0.00114	1.15695	0.7483
350	44.7643	8142.5	0.05726	151.6740	0.00188	251.48	119.78	0.00132	1.14148	0.7276
400	40.9388	8836.4	0.05515	145.0297	0.00170	261.29	124.03	0.00153	1.12888	0.7143
450	37.7361	9561.1	0.05326	139.8609	0.00156	274.23	129.68	0.00175	1.11840	0.7053
500	35.0120	10291.3	0.05168	135.7041	0.00144	289.17	136.33	0.00201	1.10953	0.6989
550	32.6639	11028.1	0.05033	132.2775	0.00134	305.65	143.70	0.00228	1.10193	0.6943
600	30.6169	11768.7	0.04918	129.3991	0.00125	323.29	151.62	0.00258	1.09534	0.6909
700	27.2161	13268.3	0.04725	124.8291	0.00111	361.32	168.59	0.00325	1.08444	0.6867
800	24.5007	14806.7	0.04564	121.3674	0.00100	402.34	186.57	0.00400	1.07580	0.6847
900	22.2795	16397.7	0.04419	118.6628	0.00091	445.92	205.17	0.00485	1.06876	0.6839
1000	20.4277	18050.0	0.04285	116.4995	0.00083	440.56	224.14	0.00517	1.06292	0.7634
1200	17.5141	21538.1	0.04043	113.2774	0.00071	511.13	262.64	0.00684	1.05378	0.7898
1400	15.3253	25260.6	0.03829	111.0148	0.00063	583.30	301.29	0.00867	1.04695	0.8159
1600	13.6206	29121.1	0.03654	109.3547	0.00056	655.28	339.74	0.01069	1.04165	0.8403
1800	12.2556	33076.7	0.03512	108.0935	0.00050	726.59	377.78	0.01287	1.03742	0.8622
2000	11.1379	37185.9	0.03385	107.1068	0.00046	799.20	415.31	0.01523	1.03397	0.8814
2500	9.0641	48652.2	0.03080	105.3609	0.00037	1007.18	506.73	0.02209	1.02758	0.9111
3000	7.6246	63967.6	0.02702	104.0528	0.00031	1333.50	595.02	0.03126	1.02316	0.8988

* TWO-PHASE BOUNDARY

Table C-5b

Thermodynamic Properties of Coexisting Gaseous and Liquid Parahydrogen (English Units)

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID PARAHYDROGEN

TEMPERATURE DEG. R	PRESSURE PSIA	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC	SURFACE TENSION LB/IN X 10^5
* 24.845	1.02	2724.15	74.4014	-132.907	-132.867	1.18663	1.117	1.521	4146	1.7077
* 24.845	1.02	128.17	0.0420	36.241	60.357	8.96636	1.484	2.513	1003	
26	1.46	2593.05	74.0651	-131.081	-131.024	1.25848	1.149	1.596	4085	1.6469
26	1.46	132.85	0.0578	37.759	62.879	8.71777	1.487	2.532	1024	
28	2.55	2405.46	72.2360	-127.744	-127.644	1.38214	1.203	1.709	3979	1.5419
28	2.55	140.16	0.0952	40.277	67.062	8.33642	1.496	2.573	1057	
30	4.17	2186.59	70.8869	-124.175	-124.009	1.50529	1.253	1.844	3860	1.4374
30	4.17	146.32	0.1480	42.632	70.977	8.00510	1.507	2.627	1087	
32	6.45	1997.29	69.6460	-120.361	-120.100	1.62845	1.299	1.984	3759	1.3333
32	6.45	151.19	0.2194	44.801	74.584	7.71284	1.520	2.695	1114	
34	9.53	1850.59	68.3464	-116.288	-115.897	1.75202	1.339	2.120	3684	1.2298
34	9.53	154.63	0.3135	46.759	77.848	7.45133	1.535	2.778	1139	
36	13.56	1710.97	66.8805	-111.944	-111.379	1.87637	1.374	2.259	3610	1.1267
36	13.56	156.53	0.4348	48.482	80.729	7.21406	1.551	2.879	1160	
* 36.483	14.70	1647.83	66.5010	-110.853	-110.237	1.90656	1.381	2.310	3573	1.1019
* 36.483	14.70	156.83	0.4675	48.872	81.452	7.16223	1.555	2.904	1165	
38	18.69	1520.71	65.2422	-107.311	-106.517	2.00193	1.403	2.440	3500	1.0243
38	18.69	156.84	0.5871	49.954	83.256	6.99812	1.567	2.998	1179	
40	25.09	1348.54	63.3589	-102.364	-101.277	2.12926	1.427	2.635	3396	0.9225
40	25.09	155.23	0.7799	51.110	85.199	6.79381	1.584	3.146	1195	
42	32.91	1187.64	61.0993	-97.075	-95.616	2.25895	1.446	2.845	3290	0.8213
42	32.91	151.65	1.0203	51.921	86.614	6.60055	1.601	3.331	1209	
44	42.33	1025.43	58.4067	-91.407	-89.486	2.39170	1.462	3.090	3169	0.7209
44	42.33	145.98	1.3190	52.332	87.431	6.41516	1.619	3.566	1220	
46	53.51	857.66	55.2132	-85.315	-82.819	2.52842	1.475	3.396	3025	0.6214
46	53.51	138.03	1.6912	52.274	87.546	6.23433	1.639	3.875	1230	
48	66.62	706.72	51.5351	-78.733	-75.527	2.67035	1.490	3.746	2869	0.5228
48	66.62	127.60	2.1584	51.645	86.817	6.05448	1.663	4.300	1236	
50	81.84	545.41	47.5470	-71.555	-67.471	2.81951	1.508	4.295	2683	0.4253
50	81.84	114.38	2.7535	50.302	85.043	5.87141	1.693	4.919	1241	
52	99.33	393.40	43.1688	-63.614	-58.437	2.97913	1.529	5.142	2475	0.3292
52	99.33	97.95	3.5294	48.022	81.916	5.67958	1.734	5.892	1242	
54	119.30	270.29	38.3458	-54.614	-48.053	3.15485	1.556	6.355	2261	0.2348
54	119.30	77.63	4.5820	44.410	76.912	5.47014	1.792	7.646	1239	
56	142.03	151.32	32.8351	-43.939	-35.540	3.35871	1.596	9.131	2003	0.1427
56	142.03	52.14	6.1211	38.627	68.943	5.22531	1.881	11.782	1230	
58	167.85	50.12	25.9466	-29.602	-18.442	3.63008	1.674	20.272	1677	0.0544
58	167.85	23.54	8.7360	28.004	54.564	4.88948	2.071	27.498	1203	
* 59.357	187.51		15.4925	-2.215	15.224	4.17692				0.0000

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID PARAHYDROGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.845	4.80828	267.84	13.853	13098.46	0.0056802	0.04199	1.713	0.00574	1.25159	2.2345
* 24.845	0.00784	60.15	3.609	1.00	0.0417860	0.00719	0.049	0.36492	1.00038	0.6231
26	4.77434	266.76	13.500	12380.10	0.0059826	0.04551	1.570	0.00597	1.24968	1.9821
26	0.01077	62.65	3.609	1.43	0.0404077	0.00739	0.052	0.27078	1.00052	0.6424
28	4.71359	268.27	12.740	11338.37	0.0063709	0.05004	1.371	0.00621	1.24626	1.6857
28	0.01765	66.82	3.608	2.47	0.0384993	0.00775	0.057	0.17058	1.00085	0.6757
30	4.65003	264.46	12.163	10167.69	0.0069718	0.05297	1.216	0.00618	1.24270	1.5241
30	0.02724	70.76	3.605	3.99	0.0371221	0.00813	0.061	0.11361	1.00132	0.7094
32	4.58321	260.77	11.699	9153.99	0.0076083	0.05489	1.093	0.00604	1.23895	1.4217
32	0.04008	74.41	3.602	6.06	0.0362124	0.00856	0.065	0.07929	1.00194	0.7419
34	4.51266	258.99	11.309	8351.08	0.0081841	0.05601	0.991	0.00586	1.23501	1.3500
34	0.05675	77.74	3.600	8.78	0.0357318	0.00904	0.070	0.05734	1.00274	0.7748
36	4.43782	256.43	10.970	7592.98	0.0088082	0.05690	0.906	0.00568	1.23083	1.2942
36	0.07787	80.70	3.600	12.19	0.0356683	0.00962	0.075	0.04291	1.00376	0.8042
* 36.483	4.41903	252.91	10.895	7281.80	0.0091325	0.05720	0.887	0.00560	1.22978	1.2893
* 36.483	0.08353	81.37	3.600	13.10	0.0356912	0.00979	0.076	0.04037	1.00404	0.8090
38	4.35801	247.85	10.671	6627.28	0.0098445	0.05793	0.832	0.00545	1.22639	1.2620
38	0.10395	83.26	3.604	16.30	0.0360086	0.01036	0.079	0.03325	1.00503	0.8266
40	4.27243	239.61	10.392	5761.53	0.0109969	0.05843	0.768	0.00519	1.22163	1.2467
40	0.13629	85.35	3.613	21.16	0.0368634	0.01117	0.084	0.02604	1.00659	0.8540
42	4.18010	231.15	10.110	4964.43	0.0123074	0.05848	0.711	0.00492	1.21652	1.2444
42	0.17568	86.97	3.627	26.64	0.0382948	0.01204	0.089	0.02058	1.00850	0.8878
44	4.07975	221.33	9.795	4183.48	0.0139613	0.05811	0.658	0.00461	1.21098	1.2603
44	0.22335	88.13	3.648	32.60	0.0404560	0.01301	0.094	0.01634	1.01082	0.9307
46	3.96975	209.44	9.428	3404.69	0.0162168	0.05734	0.610	0.00425	1.20492	1.3009
46	0.28094	88.86	3.673	38.78	0.0436108	0.01411	0.100	0.01296	1.01363	0.9868
48	3.84786	197.66	8.989	2719.35	0.0189513	0.05616	0.564	0.00390	1.19823	1.3554
48	0.35076	89.17	3.701	44.76	0.0482254	0.01539	0.106	0.01020	1.01703	1.0632
50	3.71079	182.82	8.497	2023.91	0.0234927	0.05459	0.521	0.00343	1.19074	1.4746
50	0.43621	89.13	3.728	49.89	0.0551860	0.01694	0.112	0.00789	1.02121	1.1722
52	3.55344	166.50	7.943	1397.92	0.0308807	0.05258	0.478	0.00288	1.18218	1.6809
52	0.54266	88.75	3.750	53.16	0.0663962	0.01895	0.120	0.00593	1.02644	1.3386
54	3.36676	150.81	7.320	910.01	0.0421378	0.05005	0.434	0.00234	1.17208	1.9833
54	0.67967	88.05	3.761	52.76	0.0868408	0.02189	0.129	0.00421	1.03319	1.6195
56	3.13140	131.76	6.570	473.85	0.0692941	0.04971	0.388	0.00174	1.15943	2.5631
56	0.86751	87.06	3.752	45.23	0.1353227	0.02772	0.142	0.00271	1.04250	2.1731
58	2.78507	109.06	5.565	139.60	0.1858697	0.05633	0.332	0.00100	1.14098	4.3030
58	1.17023	86.71	3.605	27.55	0.3171457	0.04585	0.167	0.00142	1.05764	3.5964
* 59.357	1.99098	85.47					0.241		1.09945	

Table C-2b

Thermodynamic Properties of Parahydrogen (Isobars, English Units)

1 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.000	131.12050	129.12	0.0408	36.485	60.765	9.00257	1.483	2.511	1006
26	136.55195	134.67	0.0392	37.988	63.273	9.10097	1.483	2.506	1027
28	147.38482	145.70	0.0363	40.986	68.278	9.28641	1.482	2.499	1067
30	158.18709	156.66	0.0338	43.978	73.270	9.45861	1.481	2.493	1105
32	168.96628	167.58	0.0316	46.964	78.252	9.61939	1.481	2.489	1142
34	179.72741	178.45	0.0297	49.947	83.228	9.77021	1.481	2.486	1178
36	190.47402	189.30	0.0280	52.927	88.197	9.91223	1.480	2.483	1213
38	201.20872	200.12	0.0265	55.904	93.162	10.04645	1.480	2.481	1247
40	211.93349	210.93	0.0252	58.879	98.123	10.17368	1.480	2.479	1279
42	222.64991	221.71	0.0240	61.852	103.081	10.29462	1.480	2.478	1311
44	233.35921	232.48	0.0229	64.824	108.035	10.40987	1.480	2.477	1343
46	244.06240	243.24	0.0218	67.794	112.988	10.51993	1.480	2.475	1373
48	254.76032	253.99	0.0209	70.763	117.938	10.62527	1.480	2.474	1403
50	265.45363	264.73	0.0201	73.731	122.886	10.72627	1.480	2.474	1432
52	276.14292	275.46	0.0193	76.699	127.833	10.82327	1.480	2.473	1460
54	286.82868	286.19	0.0186	79.665	132.778	10.91658	1.480	2.472	1488
56	297.51131	296.91	0.0179	82.631	137.722	11.00648	1.480	2.472	1516
58	308.19116	307.62	0.0173	85.596	142.665	11.09321	1.480	2.471	1543
60	318.86855	318.33	0.0167	88.561	147.607	11.17698	1.480	2.471	1569
62	329.54373	329.03	0.0162	91.526	152.548	11.25799	1.480	2.470	1595
64	340.21691	339.73	0.0157	94.490	157.489	11.33642	1.480	2.470	1621
66	350.88832	350.42	0.0152	97.455	162.430	11.41244	1.480	2.470	1646
68	361.55810	361.12	0.0147	100.419	167.370	11.48618	1.480	2.470	1671
70	372.22642	371.81	0.0143	103.385	172.311	11.55779	1.481	2.470	1695
75	398.89165	398.52	0.0134	110.802	184.666	11.72827	1.483	2.472	1754
80	425.55022	425.22	0.0125	118.231	197.031	11.88787	1.486	2.474	1811
85	452.20341	451.91	0.0118	125.678	209.414	12.03801	1.491	2.479	1866
90	478.85219	478.59	0.0111	133.155	221.825	12.17989	1.498	2.486	1918
95	505.49732	505.26	0.0105	140.675	234.279	12.31455	1.508	2.496	1968
100	532.13940	531.93	0.0100	148.253	246.791	12.44290	1.522	2.509	2016
105	558.77889	558.59	0.0095	155.908	259.379	12.56573	1.539	2.526	2061
110	585.41619	585.24	0.0091	163.660	272.063	12.68374	1.560	2.548	2104
115	612.05159	611.90	0.0087	171.528	284.863	12.79753	1.586	2.573	2144
120	638.68536	638.55	0.0083	179.534	297.801	12.90765	1.616	2.603	2183
125	665.31771	665.19	0.0080	187.700	310.899	13.01458	1.650	2.637	2219
130	691.94882	691.84	0.0077	196.047	324.177	13.11874	1.688	2.675	2253
140	745.20788	745.12	0.0071	213.363	351.355	13.32010	1.776	2.763	2317
150	798.46349	798.40	0.0067	231.623	379.477	13.51408	1.877	2.863	2375
160	851.71634	851.67	0.0063	250.936	408.651	13.70233	1.986	2.973	2430
170	904.96696	904.93	0.0059	271.371	438.947	13.88596	2.101	3.087	2482
180	958.21573	958.20	0.0056	292.959	470.395	14.06568	2.216	3.202	2533
190	1011.46287	1011.45	0.0053	315.655	502.950	14.24131	2.329	3.315	2583
200	1064.70872	1064.71	0.0050	339.481	536.636	14.41395	2.435	3.421	2632
220	1171.19724	1171.22	0.0045	390.115	606.989	14.74910	2.621	3.607	2733
240	1277.68247	1277.72	0.0042	444.041	680.633	15.06921	2.762	3.748	2834
260	1384.16519	1384.21	0.0038	500.300	756.610	15.37341	2.857	3.843	2937
280	1490.64598	1490.70	0.0036	558.043	834.070	15.66031	2.908	3.894	3041
300	1597.12524	1597.19	0.0033	616.411	912.156	15.92980	2.925	3.911	3145
320	1703.60328	1703.68	0.0031	674.857	990.318	16.18212	2.916	3.902	3250
340	1810.08031	1810.16	0.0029	732.948	1068.126	16.41762	2.891	3.876	3353
360	1916.55653	1916.64	0.0028	790.410	1145.304	16.63827	2.855	3.841	3456
380	2023.03206	2023.12	0.0026	847.095	1221.706	16.84482	2.813	3.799	3558
400	2129.50701	2129.60	0.0025	902.941	1297.268	17.03870	2.771	3.757	3657
420	2235.98148	2236.08	0.0024	957.953	1371.996	17.22098	2.731	3.716	3755
440	2342.45552	2342.56	0.0023	1012.184	1445.943	17.39302	2.693	3.678	3850
460	2448.92921	2449.03	0.0022	1065.692	1519.167	17.55579	2.659	3.645	3944
480	2555.40259	2555.51	0.0021	1118.564	1591.755	17.71003	2.629	3.615	4035
500	2661.87569	2661.99	0.0020	1170.876	1663.784	17.85720	2.603	3.589	4123
520	2768.34856	2768.46	0.0019	1222.710	1735.333	17.99765	2.581	3.567	4210
540	2874.60466	2874.72	0.0019	1274.151	1806.450	18.13180	2.562	3.548	4294
560	2981.06900	2981.19	0.0018	1325.155	1877.168	18.25990	2.547	3.533	4377
580	3087.53318	3087.65	0.0017	1375.948	1947.676	18.38347	2.534	3.520	4457
600	3193.99723	3194.12	0.0017	1426.549	2017.990	18.50273	2.524	3.510	4536
650	3460.15583	3460.28	0.0015	1552.194	2192.921	18.78304	2.505	3.491	4726
700	3726.31585	3726.44	0.0014	1677.191	2367.203	19.04161	2.495	3.480	4908
800	4258.63266	4258.76	0.0013	1926.062	2714.646	19.50586	2.487	3.473	5249
1000	5323.26333	5323.40	0.0010	2423.349	3409.073	20.28014	2.488	3.474	5868
2000	10646.40034	10646.54	0.0005	4969.898	6941.323	22.72075	2.644	3.630	8229
3000	15972.80667	15969.67	0.0003	7774.055	10731.786	24.24319	3.020	4.013	9914
4000	21552.73166	21292.80	0.0003	11944.624	15935.606	25.91245	6.491	7.799	10886
5000	30430.82500	26515.93	0.0002	27388.787	33023.752	30.46359	26.475	31.705	12139

* TWO-PHASE BOUNDRY

1 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV)$_P$ BTU/LB	V(DP/DU)$_V$ PSIA-CU FT/BTU	-V(DP/DV)$_T$ PSIA	(DV/DT)$_P$/V 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.380	0.00763	60.56	3.609	0.98	0.0414674	0.00721	0.050	0.37634	1.00037	0.6250
26	0.00732	63.07	3.609	0.99	0.0397332	0.00735	0.052	0.40042	1.00035	0.6384
28	0.00678	68.10	3.608	0.99	0.0366918	0.00763	0.056	0.45032	1.00033	0.6633
30	0.00632	73.11	3.607	0.99	0.0341031	0.00792	0.061	0.50264	1.00031	0.6860
32	0.00592	78.11	3.606	0.99	0.0318675	0.00824	0.065	0.55911	1.00029	0.7045
34	0.00556	83.10	3.606	0.99	0.0299147	0.00856	0.069	0.61914	1.00027	0.7201
36	0.00525	88.09	3.605	0.99	0.0281925	0.00896	0.073	0.68717	1.00025	0.7285
38	0.00497	93.07	3.604	0.99	0.0266615	0.00947	0.077	0.76791	1.00024	0.7268
40	0.00472	98.04	3.604	1.00	0.0252909	0.00998	0.081	0.85309	1.00023	0.7249
42	0.00449	103.01	3.604	1.00	0.0240563	0.01049	0.085	0.94269	1.00022	0.7227
44	0.00429	107.97	3.603	1.00	0.0229382	0.01100	0.089	1.03672	1.00021	0.7204
46	0.00410	112.93	3.603	1.00	0.0219207	0.01151	0.093	1.13494	1.00020	0.7180
48	0.00393	117.88	3.603	1.00	0.0209905	0.01202	0.097	1.23720	1.00019	0.7157
50	0.00377	122.84	3.603	1.00	0.0201369	0.01252	0.100	1.34383	1.00018	0.7132
52	0.00362	127.79	3.602	1.00	0.0193506	0.01303	0.104	1.45481	1.00017	0.7107
54	0.00349	132.74	3.602	1.00	0.0186239	0.01353	0.108	1.57015	1.00017	0.7080
56	0.00336	137.69	3.602	1.00	0.0179502	0.01398	0.111	1.68299	1.00016	0.7082
58	0.00324	142.64	3.602	1.00	0.0173240	0.01443	0.115	1.79960	1.00016	0.7081
60	0.00314	147.59	3.601	1.00	0.0167402	0.01488	0.118	1.92020	1.00015	0.7077
62	0.00303	152.55	3.601	1.00	0.0161948	0.01533	0.122	2.04516	1.00015	0.7070
64	0.00294	157.50	3.600	1.00	0.0156839	0.01578	0.125	2.17397	1.00014	0.7060
66	0.00285	162.46	3.600	1.00	0.0152045	0.01624	0.129	2.30660	1.00014	0.7050
68	0.00277	167.43	3.599	1.00	0.0147537	0.01669	0.132	2.44302	1.00013	0.7039
70	0.00269	172.40	3.598	1.00	0.0143290	0.01714	0.135	2.58319	1.00013	0.7026
75	0.00251	184.90	3.593	1.00	0.0133674	0.01827	0.144	2.94889	1.00012	0.6995
80	0.00235	197.52	3.585	1.00	0.0125272	0.01940	0.152	3.33592	1.00011	0.6963
85	0.00221	210.32	3.573	1.00	0.0117867	0.02052	0.159	3.74339	1.00011	0.6933
90	0.00209	223.37	3.555	1.00	0.0111291	0.02165	0.167	4.16947	1.00010	0.6906
95	0.00198	236.78	3.531	1.00	0.0105411	0.02277	0.174	4.61137	1.00010	0.6885
100	0.00188	250.62	3.500	1.00	0.0100123	0.02389	0.182	5.06722	1.00009	0.6872
105	0.00179	264.98	3.460	1.00	0.0095341	0.02502	0.189	5.53343	1.00009	0.6867
110	0.00171	279.96	3.413	1.00	0.0090996	0.02623	0.196	6.02670	1.00008	0.6851
115	0.00163	295.64	3.358	1.00	0.0087030	0.02747	0.203	6.53475	1.00008	0.6837
120	0.00157	312.10	3.295	1.00	0.0083396	0.02872	0.210	7.04646	1.00008	0.6836
125	0.00150	329.38	3.227	1.00	0.0080054	0.02996	0.216	7.55983	1.00007	0.6848
130	0.00145	347.54	3.154	1.00	0.0076970	0.03121	0.223	8.07209	1.00007	0.6871
140	0.00134	386.60	2.998	1.00	0.0071464	0.03370	0.235	9.08925	1.00006	0.6947
150	0.00125	429.30	2.837	1.00	0.0066693	0.03662	0.248	10.21332	1.00006	0.6972
160	0.00117	475.45	2.681	1.00	0.0062520	0.03981	0.260	11.40600	1.00006	0.6982
170	0.00111	524.64	2.535	1.00	0.0058839	0.04299	0.271	12.60369	1.00005	0.7016
180	0.00104	576.27	2.403	1.00	0.0055568	0.05175	0.307	15.48441	1.00005	0.6847
190	0.00099	629.67	2.287	1.00	0.0052641	0.05675	0.327	17.31786	1.00005	0.6866
200	0.00094	684.14	2.186	1.00	0.0050007	0.06130	0.343	19.07702	1.00005	0.6883
220	0.00085	793.50	2.031	1.00	0.0045459	0.06916	0.368	22.45669	1.00004	0.6909
240	0.00078	899.50	1.928	1.00	0.0041669	0.07554	0.388	25.74961	1.00004	0.6926
260	0.00072	999.04	1.864	1.00	0.0038463	0.08058	0.404	29.02747	1.00003	0.6935
280	0.00067	1090.20	1.831	1.00	0.0035715	0.08446	0.418	32.33574	1.00003	0.6939
300	0.00063	1173.24	1.820	1.00	0.0033333	0.08741	0.431	35.69732	1.00003	0.6938
320	0.00059	1248.69	1.826	1.00	0.0031250	0.08962	0.442	39.12616	1.00003	0.6935
340	0.00055	1318.03	1.842	1.00	0.0029411	0.09130	0.453	42.63304	1.00003	0.6929
360	0.00052	1382.65	1.865	1.00	0.0027777	0.09262	0.464	46.21917	1.00003	0.6922
380	0.00049	1443.72	1.892	1.00	0.0026315	0.09369	0.474	49.89042	1.00002	0.6915
400	0.00047	1502.94	1.921	1.00	0.0024999	0.09465	0.483	53.64764	1.00002	0.6908
420	0.00045	1560.94	1.950	1.00	0.0023808	0.09556	0.493	57.49263	1.00002	0.6901
440	0.00043	1618.58	1.977	1.00	0.0022726	0.09645	0.502	61.42370	1.00002	0.6894
460	0.00041	1676.61	2.002	1.00	0.0021738	0.09739	0.511	65.44125	1.00002	0.6888
480	0.00039	1735.09	2.025	1.00	0.0020832	0.09837	0.520	69.54768	1.00002	0.6882
500	0.00038	1794.48	2.045	1.00	0.0019999	0.09942	0.529	73.74392	1.00002	0.6878
520	0.00036	1854.80	2.063	1.00	0.0019230	0.10053	0.538	78.02903	1.00002	0.6873
540	0.00035	1915.84	2.078	1.00	0.0018518	0.10169	0.547	82.39456	1.00002	0.6869
560	0.00034	1978.42	2.090	1.00	0.0017857	0.10293	0.556	86.85574	1.00002	0.6866
580	0.00032	2041.66	2.101	1.00	0.0017241	0.10421	0.564	91.40774	1.00002	0.6863
600	0.00031	2105.82	2.109	1.00	0.0016666	0.10554	0.573	96.04876	1.00002	0.6861
650	0.00029	2269.30	2.125	1.00	0.0015384	0.10901	0.595	108.04447	1.00001	0.6856
700	0.00027	2436.36	2.134	1.00	0.0014285	0.11265	0.616	120.61295	1.00001	0.6852
800	0.00023	2778.39	2.140	1.00	0.0012500	0.12024	0.658	147.44036	1.00001	0.6847
1000	0.00019	3473.84	2.140	1.00	0.0010000	0.13562	0.742	207.82049	1.00001	0.6841
2000	0.00009	7259.72	2.013	1.00	0.0005000	0.27727	1.126	813.25974	1.00000	0.5316
3000	0.00006	12035.99	1.763	1.00	0.0003334	0.40937	1.4721629.50147		1.00000	0.5194
4000	0.00005	30820.45	0.630	0.99	0.0002531	1.23893	1.7953423.73169		1.00000	0.4068
5000	0.00003	138651.05	0.230	0.87	0.0002287	6.53184	2.1806269.37164		1.00000	0.3810

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

5 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.862	0.20795	2705.08	74.4209	-132.897	-132.704	1.18704	1.117	1.525	4136
25	0.20815	2668.34	74.4144	-132.674	-132.482	1.19597	1.121	1.538	4117
26	0.20938	2472.18	74.1641	-131.108	-130.914	1.25744	1.149	1.619	4017
28	0.21210	2304.98	72.2950	-127.765	-127.569	1.38139	1.203	1.732	3921
30	0.21503	2144.10	70.9071	-124.184	-123.985	1.50499	1.253	1.856	3835
* 30.806	0.21629	2114.56	70.3780	-122.668	-122.468	1.55491	1.272	1.897	3822
* 30.806	31.25715	148.45	0.1743	43.530	72.470	7.88311	1.512	2.652	1098
32	32.62070	155.77	0.1665	45.418	75.620	7.98346	1.505	2.627	1122
34	34.88263	167.79	0.1551	48.545	80.842	8.14173	1.497	2.596	1161
36	37.12350	179.57	0.1454	51.640	86.011	8.28947	1.493	2.575	1198
38	39.34858	191.19	0.1370	54.713	91.144	8.42824	1.490	2.559	1233
40	41.56135	202.68	0.1295	57.769	96.249	8.55917	1.488	2.547	1268
42	43.76420	214.06	0.1229	60.813	101.333	8.68318	1.487	2.537	1301
44	45.95890	225.36	0.1169	63.847	106.399	8.80102	1.486	2.529	1333
46	48.14677	236.60	0.1115	66.873	111.451	8.91330	1.485	2.522	1364
48	50.32883	247.77	0.1066	69.892	116.490	9.02053	1.484	2.517	1395
50	52.50592	258.89	0.1021	72.906	121.519	9.12318	1.484	2.512	1425
52	54.67870	269.97	0.0980	75.914	126.539	9.22162	1.484	2.508	1454
54	56.84772	281.02	0.0942	78.918	131.551	9.31620	1.483	2.504	1483
56	59.01345	292.03	0.0907	81.918	136.557	9.40722	1.483	2.501	1511
58	61.17626	303.01	0.0875	84.915	141.556	9.49494	1.483	2.498	1538
60	63.33650	313.96	0.0845	87.909	146.550	9.57959	1.482	2.496	1565
62	65.49444	324.89	0.0817	90.901	151.540	9.66139	1.482	2.494	1591
64	67.65032	335.80	0.0791	93.890	156.525	9.74053	1.482	2.492	1617
66	69.80436	346.70	0.0766	96.878	161.507	9.81718	1.482	2.490	1643
68	71.95673	357.57	0.0743	99.864	166.486	9.89150	1.483	2.489	1668
70	74.10761	368.43	0.0721	102.850	171.463	9.96364	1.483	2.488	1692
75	79.47911	395.53	0.0672	110.312	183.899	10.13523	1.484	2.486	1752
80	84.84382	422.56	0.0629	117.779	196.333	10.29572	1.487	2.487	1809
85	90.20307	449.53	0.0592	125.259	208.775	10.44658	1.492	2.490	1864
90	95.55786	476.46	0.0559	132.765	221.239	10.58905	1.499	2.496	1917
95	100.90896	503.36	0.0529	140.310	233.738	10.72422	1.509	2.505	1967
100	106.25697	530.22	0.0502	147.911	246.291	10.85298	1.523	2.517	2015
105	111.60238	557.06	0.0478	155.586	258.915	10.97617	1.540	2.533	2060
110	116.94558	583.87	0.0456	163.355	271.631	11.09447	1.561	2.554	2104
115	122.28688	610.66	0.0436	171.240	284.461	11.20853	1.587	2.579	2144
120	127.62654	637.44	0.0418	179.261	297.425	11.31887	1.616	2.608	2183
125	132.96477	664.21	0.0401	187.440	310.547	11.42600	1.651	2.641	2219
130	138.30176	690.96	0.0386	195.799	323.848	11.53033	1.689	2.679	2254
140	148.97257	744.43	0.0358	213.136	351.065	11.73198	1.777	2.766	2317
150	159.63992	797.87	0.0334	231.414	379.219	11.92619	1.877	2.866	2376
160	170.30452	851.28	0.0313	250.742	408.421	12.11461	1.986	2.975	2430
170	180.96687	904.67	0.0295	271.191	438.742	12.29840	2.101	3.089	2483
180	191.62738	958.04	0.0278	292.790	470.211	12.47824	2.216	3.204	2533
190	202.28625	1011.39	0.0263	315.498	502.788	12.65399	2.329	3.316	2583
200	212.94384	1064.73	0.0250	339.333	536.490	12.82671	2.435	3.423	2633
220	234.25585	1171.38	0.0227	389.984	606.873	13.16200	2.621	3.609	2733
240	255.56455	1278.00	0.0208	443.923	680.542	13.48222	2.762	3.749	2835
260	276.87076	1384.59	0.0192	500.194	756.539	13.78650	2.857	3.844	2938
280	298.17504	1491.16	0.0179	557.946	834.016	14.07347	2.908	3.894	3042
300	319.47779	1597.72	0.0167	616.323	912.116	14.34300	2.925	3.911	3146
320	340.77931	1704.26	0.0156	674.776	990.291	14.59537	2.916	3.903	3250
340	362.07984	1810.80	0.0147	732.873	1068.109	14.83090	2.891	3.877	3354
360	383.37955	1917.32	0.0139	790.340	1145.298	15.05157	2.855	3.841	3457
380	404.67857	2023.84	0.0132	847.031	1221.708	15.25815	2.813	3.800	3558
400	425.97702	2130.36	0.0125	902.880	1297.277	15.45205	2.771	3.758	3658
420	447.27498	2236.87	0.0119	957.896	1372.012	15.63435	2.731	3.717	3756
440	468.57252	2343.37	0.0114	1012.131	1445.966	15.80640	2.693	3.679	3851
460	489.86971	2449.87	0.0109	1065.643	1519.196	15.96918	2.659	3.645	3944
480	511.16658	2556.37	0.0104	1118.517	1591.788	16.12344	2.629	3.615	4035
500	532.46318	2662.87	0.0100	1170.833	1663.822	16.27062	2.603	3.589	4124
520	553.75954	2769.36	0.0096	1222.669	1735.375	16.41107	2.581	3.567	4211
540	575.01291	2875.64	0.0093	1274.114	1806.498	16.54527	2.562	3.548	4295
560	596.30718	2982.12	0.0089	1325.120	1877.220	16.67338	2.547	3.533	4378
580	617.60129	3088.60	0.0086	1375.915	1947.730	16.79695	2.534	3.520	4458
600	638.89527	3195.08	0.0083	1426.518	2018.048	16.91621	2.524	3.510	4537
650	692.12971	3461.26	0.0077	1552.167	2192.985	17.19653	2.505	3.491	4727
700	745.36356	3727.45	0.0071	1677.167	2367.272	17.45511	2.495	3.481	4908
800	851.83004	4259.80	0.0063	1926.043	2714.722	17.91938	2.487	3.473	5249
1000	1064.76004	5324.47	0.0050	2423.336	3409.159	18.69366	2.488	3.474	5869
2000	2129.39315	10647.67	0.0025	4969.891	6941.420	21.13428	2.644	3.630	8229
3000	3194.31357	15970.82	0.0017	7763.472	10720.973	22.65286	2.965	3.953	9933
4000	4261.91111	21293.95	0.0013	11315.249	15279.719	24.14867	4.648	5.774	11069
5000	5667.35478	26617.09	0.0010	20073.865	25321.068	27.17964	14.270	16.878	12065

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

5 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.862	4.80887	266.55	13.850	13008.37	0.0057210	0.04206	1.713	0.00573	1.25163	2.2367
25	4.80429	264.88	13.813	12819.49	0.0058048	0.04251	1.694	0.00575	1.25137	2.2055
26	4.77607	257.67	13.516	11607.30	0.0062812	0.04553	1.573	0.00589	1.24978	2.0138
28	4.71484	260.30	12.749	10867.59	0.0066523	0.05006	1.373	0.00613	1.24633	1.7098
30	4.65051	260.93	12.166	9971.19	0.0071112	0.05298	1.217	0.00614	1.24272	1.5344
* 30.806	4.62351	263.58	11.964	9776.70	0.0071985	0.05382	1.163	0.00614	1.24121	1.4764
* 30.806	0.03199	72.27	3.604	4.75	0.0367019	0.00829	0.063	0.09774	1.00154	0.7230
32	0.03066	75.34	3.610	4.78	0.0348681	0.00846	0.065	0.10509	1.00148	0.7295
34	0.02867	80.49	3.615	4.81	0.0322543	0.00876	0.069	0.11767	1.00138	0.7408
36	0.02694	85.64	3.617	4.84	0.0300645	0.00913	0.073	0.13164	1.00130	0.7461
38	0.02541	90.77	3.618	4.86	0.0281847	0.00962	0.078	0.14800	1.00123	0.7420
40	0.02406	95.90	3.617	4.88	0.0265558	0.01012	0.082	0.16520	1.00116	0.7382
42	0.02285	101.01	3.616	4.89	0.0251169	0.01062	0.085	0.18326	1.00110	0.7345
44	0.02176	106.10	3.615	4.90	0.0238366	0.01113	0.089	0.20218	1.00105	0.7309
46	0.02077	111.18	3.615	4.91	0.0226883	0.01163	0.093	0.22193	1.00100	0.7275
48	0.01987	116.25	3.614	4.92	0.0216514	0.01213	0.097	0.24247	1.00096	0.7244
50	0.01905	121.30	3.613	4.93	0.0207096	0.01262	0.101	0.26388	1.00092	0.7212
52	0.01829	126.34	3.612	4.94	0.0198500	0.01312	0.104	0.28614	1.00088	0.7180
54	0.01759	131.37	3.611	4.94	0.0190617	0.01362	0.108	0.30926	1.00085	0.7148
56	0.01695	136.40	3.611	4.95	0.0183359	0.01407	0.112	0.33200	1.00082	0.7143
58	0.01635	141.42	3.610	4.95	0.0176653	0.01452	0.115	0.35549	1.00079	0.7136
60	0.01579	146.43	3.610	4.96	0.0170436	0.01496	0.119	0.37976	1.00076	0.7128
62	0.01527	151.44	3.609	4.96	0.0164655	0.01542	0.122	0.40488	1.00074	0.7116
64	0.01478	156.45	3.608	4.96	0.0159264	0.01587	0.126	0.43077	1.00071	0.7103
66	0.01433	161.46	3.607	4.97	0.0154224	0.01632	0.129	0.45742	1.00069	0.7089
68	0.01390	166.48	3.606	4.97	0.0149501	0.01677	0.132	0.48482	1.00067	0.7075
70	0.01349	171.50	3.604	4.97	0.0145066	0.01722	0.136	0.51296	1.00065	0.7060
75	0.01258	184.09	3.599	4.98	0.0135071	0.01834	0.144	0.58636	1.00061	0.7023
80	0.01179	196.79	3.591	4.98	0.0126387	0.01946	0.152	0.66400	1.00057	0.6987
85	0.01109	209.65	3.579	4.98	0.0118769	0.02059	0.160	0.74572	1.00054	0.6953
90	0.01046	222.77	3.561	4.99	0.0112029	0.02171	0.167	0.83116	1.00051	0.6923
95	0.00991	236.23	3.536	4.99	0.0106022	0.02283	0.175	0.91975	1.00048	0.6900
100	0.00941	250.11	3.504	4.99	0.0100632	0.02395	0.182	1.01112	1.00045	0.6885
105	0.00896	264.51	3.465	4.99	0.0095770	0.02507	0.189	1.10456	1.00043	0.6879
110	0.00855	279.52	3.417	4.99	0.0091359	0.02628	0.196	1.20341	1.00041	0.6860
115	0.00818	295.23	3.362	4.99	0.0087340	0.02752	0.203	1.30520	1.00039	0.6846
120	0.00784	311.71	3.299	4.99	0.0083662	0.02876	0.210	1.40772	1.00038	0.6844
125	0.00752	329.02	3.231	5.00	0.0080283	0.03001	0.216	1.51058	1.00036	0.6855
130	0.00723	347.19	3.157	5.00	0.0077168	0.03125	0.223	1.61320	1.00035	0.6877
140	0.00671	386.28	3.001	5.00	0.0071614	0.03374	0.236	1.81684	1.00032	0.6953
150	0.00626	429.01	2.840	5.00	0.0066810	0.03666	0.248	2.04197	1.00030	0.6977
160	0.00587	475.18	2.683	5.00	0.0062611	0.03985	0.260	2.28080	1.00028	0.6986
170	0.00553	524.39	2.537	5.00	0.0058911	0.04303	0.272	2.52060	1.00027	0.7019
180	0.00522	576.04	2.405	5.00	0.0055625	0.05175	0.307	3.09506	1.00025	0.6850
190	0.00494	629.47	2.288	5.00	0.0052687	0.05675	0.327	3.46172	1.00024	0.6869
200	0.00470	683.97	2.188	5.00	0.0050044	0.06130	0.343	3.81364	1.00023	0.6886
220	0.00427	793.37	2.033	5.00	0.0045483	0.06916	0.368	4.48987	1.00021	0.6911
240	0.00391	899.42	1.929	5.00	0.0041685	0.07554	0.388	5.14881	1.00019	0.6928
260	0.00361	999.00	1.865	5.00	0.0038474	0.08058	0.404	5.80474	1.00017	0.6937
280	0.00335	1090.21	1.832	5.00	0.0035722	0.08446	0.418	6.46675	1.00016	0.6940
300	0.00313	1173.29	1.821	5.00	0.0033338	0.08741	0.431	7.13939	1.00015	0.6940
320	0.00293	1248.77	1.826	5.00	0.0031252	0.08962	0.442	7.82546	1.00014	0.6936
340	0.00276	1318.14	1.842	5.00	0.0029412	0.09130	0.453	8.52713	1.00013	0.6930
360	0.00261	1382.78	1.866	5.00	0.0027777	0.09262	0.464	9.24464	1.00013	0.6923
380	0.00247	1443.89	1.893	5.00	0.0026315	0.09369	0.474	9.97915	1.00012	0.6916
400	0.00235	1503.12	1.922	5.00	0.0024998	0.09466	0.483	10.73086	1.00011	0.6908
420	0.00224	1561.14	1.950	5.00	0.0023807	0.09556	0.493	11.50010	1.00011	0.6901
440	0.00213	1618.79	1.978	5.00	0.0022725	0.09646	0.502	12.28655	1.00010	0.6895
460	0.00204	1676.83	2.003	5.00	0.0021737	0.09740	0.511	13.09030	1.00010	0.6888
480	0.00196	1735.32	2.026	5.00	0.0020831	0.09838	0.520	13.91181	1.00009	0.6883
500	0.00188	1794.72	2.046	5.00	0.0019997	0.09943	0.529	14.75130	1.00009	0.6878
520	0.00181	1855.06	2.063	5.00	0.0019228	0.10054	0.538	15.60851	1.00009	0.6874
540	0.00174	1916.11	2.078	5.00	0.0018516	0.10170	0.547	16.48189	1.00008	0.6870
560	0.00168	1978.69	2.090	5.00	0.0017855	0.10294	0.556	17.37435	1.00008	0.6866
580	0.00162	2041.94	2.101	5.00	0.0017239	0.10422	0.564	18.28496	1.00008	0.6863
600	0.00157	2106.11	2.110	5.00	0.0016665	0.10555	0.573	19.21337	1.00008	0.6861
650	0.00144	2269.59	2.125	5.00	0.0015383	0.10902	0.595	21.61303	1.00007	0.6856
700	0.00134	2436.67	2.134	5.00	0.0014284	0.11266	0.616	24.12724	1.00006	0.6852
800	0.00117	2778.71	2.141	5.00	0.0012498	0.12025	0.659	29.49379	1.00006	0.6847
1000	0.00094	3474.18	2.140	5.00	0.0009999	0.13563	0.742	41.57208	1.00005	0.6841
2000	0.00047	7260.02	2.013	5.00	0.0005000	0.27727	1.128	162.65951	1.00002	0.5317
3000	0.00031	11859.77	1.796	5.00	0.0003333	0.40002	1.472	323.21142	1.00002	0.5237
4000	0.00023	22969.65	1.151	4.97	0.0002514	0.83563	1.790	619.73457	1.00001	0.4453
5000	0.00018	79269.92	0.397	4.70	0.0002129	3.53131	2.141	1185.73541	1.00001	0.3684

* TWO-PHASE BOUNDRY

10 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.883	0.20790	2710.17	74.4536	-132.891	-132.507	1.18724	1.118	1.525	4139
25	0.20807	2580.94	74.4466	-132.702	-132.316	1.19487	1.121	1.535	4124
26	0.20929	2480.32	74.2740	-131.138	-130.751	1.25628	1.149	1.618	4023
28	0.21200	2312.75	72.3931	-127.800	-127.407	1.38014	1.202	1.730	3927
30	0.21492	2151.80	71.0016	-124.225	-123.827	1.50361	1.253	1.854	3841
32	0.21810	1998.67	69.7120	-120.396	-119.992	1.62735	1.299	1.984	3761
34	0.22158	1852.27	68.3613	-116.297	-115.887	1.75175	1.339	2.127	3672
* 34.263	0.22207	1832.68	68.1606	-115.733	-115.322	1.76832	1.344	2.137	3674
* 34.263	16.87591	154.98	0.3278	47.000	78.249	7.41887	1.537	2.790	1142
36	17.91211	166.54	0.3069	49.872	83.040	7.55529	1.521	2.730	1177
38	19.08466	179.40	0.2866	53.110	88.450	7.70153	1.509	2.682	1215
40	20.24101	191.90	0.2692	56.298	93.779	7.83821	1.502	2.648	1252
42	21.38502	204.15	0.2542	59.451	99.050	7.96680	1.498	2.623	1287
44	22.51931	216.19	0.2409	62.577	104.276	8.08836	1.495	2.604	1321
46	23.64569	228.07	0.2290	65.682	109.467	8.20374	1.493	2.588	1353
48	24.76552	239.82	0.2184	68.771	114.630	8.31360	1.491	2.575	1385
50	25.87983	251.46	0.2087	71.847	119.769	8.41850	1.490	2.564	1416
52	26.98943	263.00	0.1999	74.911	124.888	8.51888	1.489	2.555	1446
54	28.09497	274.47	0.1919	77.965	129.989	8.61514	1.488	2.547	1475
56	29.19697	285.86	0.1845	81.011	135.076	8.70764	1.487	2.540	1504
58	30.29587	297.19	0.1777	84.050	140.150	8.79666	1.487	2.534	1532
60	31.39206	308.46	0.1714	87.083	145.212	8.88247	1.486	2.528	1559
62	32.48582	319.69	0.1655	90.109	150.264	8.96530	1.486	2.524	1586
64	33.57744	330.87	0.1600	93.131	155.308	9.04536	1.485	2.520	1612
66	34.66714	342.01	0.1549	96.149	160.343	9.12284	1.485	2.516	1638
68	35.75512	353.13	0.1501	99.163	165.372	9.19790	1.485	2.513	1664
70	36.84156	364.21	0.1457	102.175	170.395	9.27070	1.485	2.510	1689
75	39.55179	391.79	0.1356	109.695	182.934	9.44371	1.486	2.505	1749
80	42.25507	419.24	0.1268	117.210	195.455	9.60534	1.489	2.503	1807
85	44.95279	446.57	0.1191	124.733	207.974	9.75712	1.493	2.504	1863
90	47.64598	473.81	0.1123	132.276	220.503	9.90035	1.500	2.508	1916
95	50.33543	500.98	0.1063	139.853	233.061	10.03614	1.510	2.515	1966
100	53.02175	528.09	0.1009	147.483	245.665	10.16543	1.524	2.527	2014
105	55.70546	555.15	0.0960	155.183	258.334	10.28906	1.541	2.542	2060
110	58.38693	582.16	0.0915	162.975	271.091	10.40774	1.562	2.561	2103
115	61.06649	609.13	0.0875	170.879	283.958	10.52212	1.587	2.586	2144
120	63.74440	636.07	0.0838	178.918	296.956	10.63276	1.617	2.614	2183
125	66.42088	662.98	0.0804	187.114	310.108	10.74013	1.651	2.647	2219
130	69.09610	689.87	0.0773	195.489	323.436	10.84467	1.689	2.685	2254
140	74.44338	743.58	0.0717	212.852	350.701	11.04669	1.777	2.771	2318
150	79.78719	797.22	0.0669	231.153	378.897	11.24118	1.877	2.870	2376
160	85.12824	850.80	0.0627	250.500	408.134	11.42983	1.987	2.978	2431
170	90.46705	904.35	0.0590	270.966	438.486	11.61380	2.101	3.092	2483
180	95.80402	957.85	0.0557	292.579	469.982	11.79380	2.216	3.207	2534
190	101.13934	1011.32	0.0527	315.302	502.584	11.96969	2.329	3.319	2584
200	106.47338	1064.76	0.0501	339.149	536.309	12.14252	2.436	3.425	2634
220	117.13830	1171.59	0.0455	389.820	606.728	12.47799	2.621	3.610	2734
240	127.79993	1278.35	0.0417	443.776	680.427	12.79834	2.762	3.751	2836
260	138.45905	1385.07	0.0385	500.061	756.450	13.10272	2.857	3.845	2939
280	149.11625	1491.74	0.0357	557.825	833.948	13.38977	2.908	3.895	3043
300	159.77193	1598.38	0.0334	616.212	912.066	13.65936	2.925	3.912	3147
320	170.42638	1705.00	0.0313	674.674	990.257	13.91178	2.916	3.903	3251
340	181.07983	1811.60	0.0294	732.779	1068.089	14.14735	2.891	3.878	3355
360	191.73247	1918.18	0.0278	790.253	1145.290	14.36806	2.855	3.842	3458
380	202.38442	2024.75	0.0263	846.950	1221.711	14.57467	2.813	3.800	3559
400	213.03580	2131.30	0.0250	902.805	1297.290	14.76859	2.772	3.758	3659
420	223.68670	2237.85	0.0238	957.826	1372.033	14.95091	2.731	3.717	3757
440	234.33717	2344.39	0.0227	1012.065	1445.994	15.12298	2.693	3.679	3852
460	244.98729	2450.92	0.0217	1065.581	1519.231	15.28578	2.659	3.645	3945
480	255.63710	2557.45	0.0208	1118.459	1591.830	15.44005	2.629	3.615	4036
500	266.28663	2663.97	0.0200	1170.778	1663.869	15.58724	2.603	3.589	4125
520	276.93593	2770.48	0.0192	1222.618	1735.428	15.72770	2.581	3.567	4212
540	287.56395	2876.79	0.0185	1274.068	1806.559	15.86193	2.562	3.548	4296
560	298.21196	2983.29	0.0179	1325.077	1877.285	15.99005	2.547	3.533	4378
580	308.85982	3089.78	0.0172	1375.874	1947.799	16.11363	2.534	3.520	4459
600	319.50754	3196.27	0.0167	1426.479	2018.120	16.23289	2.524	3.510	4538
650	346.12632	3462.49	0.0154	1552.133	2193.065	16.51323	2.505	3.491	4728
700	372.74453	3728.70	0.0143	1677.136	2367.358	16.77181	2.495	3.481	4909
800	425.97972	4261.09	0.0125	1926.019	2714.818	17.23609	2.487	3.473	5250
1000	532.44713	5325.81	0.0100	2423.319	3409.267	18.01039	2.488	3.474	5869
2000	1064.76728	10649.09	0.0050	4969.885	6941.545	20.45103	2.644	3.630	8230
3000	1597.18539	15972.25	0.0033	7760.962	10718.516	21.96869	2.952	3.939	9936
4000	2137.62104	21295.39	0.0025	11166.100	15124.395	23.42340	4.210	5.293	11137
5000	2783.49371	26618.53	0.0020	18318.724	23473.000	26.08940	11.157	13.230	12082

* TWO-PHASE BOUNDRY

10 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.883	4.81011	267.03	13.848	13036.22	0.0057113	0.04214	1.715	0.00574	1.25170	2.2343
25	4.80614	265.75	13.816	12884.98	0.0057778	0.04252	1.698	0.00576	1.25147	2.2072
26	4.77799	258.13	13.533	11850.93	0.0062674	0.04555	1.577	0.00589	1.24989	2.0169
28	4.71691	260.76	12.764	10909.03	0.0066361	0.05008	1.376	0.00614	1.24645	1.7118
30	4.65279	261.43	12.181	10011.90	0.0070917	0.05302	1.220	0.00615	1.24285	1.5358
32	4.58500	260.80	11.708	9163.91	0.0076072	0.05492	1.094	0.00604	1.23905	1.4233
34	4.51309	257.35	11.311	8269.22	0.0082670	0.05602	0.991	0.00583	1.23503	1.3553
* 34.263	4.50308	258.77	11.262	8252.71	0.0082592	0.05611	0.979	0.00583	1.23447	1.3424
* 34.263	0.05926	78.16	3.600	9.18	0.0356996	0.00910	0.071	0.05507	1.00286	0.7793
36	0.05583	82.71	3.615	9.30	0.0330055	0.00939	0.074	0.06161	1.00270	0.7760
38	0.05240	87.98	3.624	9.40	0.0304856	0.00985	0.078	0.07008	1.00253	0.7661
40	0.04940	93.26	3.628	9.48	0.0283983	0.01032	0.082	0.07890	1.00239	0.7583
42	0.04676	98.52	3.629	9.55	0.0266250	0.01081	0.086	0.08809	1.00226	0.7517
44	0.04441	103.77	3.629	9.60	0.0250904	0.01129	0.090	0.09768	1.00214	0.7459
46	0.04229	108.99	3.628	9.65	0.0237437	0.01178	0.094	0.10765	1.00204	0.7408
48	0.04038	114.19	3.627	9.68	0.0225491	0.01227	0.097	0.11801	1.00195	0.7362
50	0.03864	119.37	3.625	9.72	0.0214799	0.01276	0.101	0.12879	1.00187	0.7319
52	0.03705	124.53	3.624	9.74	0.0205160	0.01325	0.105	0.13997	1.00179	0.7278
54	0.03559	129.66	3.623	9.77	0.0196414	0.01374	0.108	0.15158	1.00172	0.7239
56	0.03425	134.79	3.622	9.79	0.0188435	0.01419	0.112	0.16307	1.00165	0.7224
58	0.03301	139.89	3.621	9.81	0.0181122	0.01463	0.116	0.17492	1.00159	0.7209
60	0.03186	144.99	3.620	9.83	0.0174388	0.01507	0.119	0.18716	1.00154	0.7194
62	0.03078	150.07	3.618	9.84	0.0168167	0.01552	0.123	0.19981	1.00149	0.7176
64	0.02978	155.15	3.617	9.85	0.0162399	0.01597	0.126	0.21284	1.00144	0.7158
66	0.02885	160.22	3.616	9.87	0.0157032	0.01642	0.129	0.22624	1.00139	0.7140
68	0.02797	165.29	3.615	9.88	0.0152026	0.01687	0.133	0.24002	1.00135	0.7121
70	0.02714	170.36	3.613	9.89	0.0147343	0.01732	0.136	0.25416	1.00131	0.7103
75	0.02528	183.08	3.607	9.91	0.0136853	0.01844	0.144	0.29103	1.00122	0.7058
80	0.02367	195.88	3.599	9.92	0.0127805	0.01955	0.152	0.33000	1.00114	0.7017
85	0.02225	208.83	3.586	9.93	0.0119913	0.02067	0.160	0.37101	1.00107	0.6978
90	0.02099	222.02	3.567	9.94	0.0112962	0.02179	0.168	0.41386	1.00101	0.6945
95	0.01987	235.54	3.542	9.95	0.0106792	0.02290	0.175	0.45829	1.00096	0.6919
100	0.01886	249.48	3.510	9.96	0.0101273	0.02402	0.182	0.50411	1.00091	0.6901
105	0.01795	263.93	3.470	9.97	0.0096308	0.02514	0.189	0.55095	1.00087	0.6893
110	0.01713	278.98	3.422	9.97	0.0091814	0.02634	0.196	0.60050	1.00083	0.6873
115	0.01638	294.72	3.367	9.97	0.0087727	0.02758	0.203	0.65151	1.00079	0.6857
120	0.01569	311.24	3.304	9.98	0.0083994	0.02883	0.210	0.70288	1.00076	0.6854
125	0.01506	328.57	3.235	9.98	0.0080569	0.03007	0.217	0.75442	1.00073	0.6863
130	0.01447	346.77	3.162	9.98	0.0077416	0.03131	0.223	0.80585	1.00070	0.6885
140	0.01343	385.89	3.005	9.99	0.0071802	0.03379	0.236	0.90779	1.00065	0.6960
150	0.01253	428.65	2.843	9.99	0.0066955	0.03671	0.248	1.02056	1.00060	0.6982
160	0.01175	474.85	2.686	9.99	0.0062725	0.03989	0.260	1.14015	1.00057	0.6990
170	0.01105	524.08	2.539	10.00	0.0059001	0.04307	0.272	1.26022	1.00053	0.7023
180	0.01044	575.76	2.407	10.00	0.0055697	0.05176	0.307	1.54640	1.00050	0.6854
190	0.00989	629.22	2.290	10.00	0.0052744	0.05676	0.326	1.72971	1.00048	0.6873
200	0.00939	683.75	2.190	10.00	0.0050090	0.06130	0.343	1.90572	1.00045	0.6889
220	0.00854	793.21	2.034	10.00	0.0045513	0.06916	0.368	2.24403	1.00041	0.6914
240	0.00782	899.31	1.930	10.00	0.0041705	0.07553	0.388	2.57372	1.00038	0.6930
260	0.00722	998.96	1.866	10.00	0.0038487	0.08058	0.404	2.90191	1.00035	0.6939
280	0.00671	1090.22	1.833	10.00	0.0035730	0.08446	0.418	3.23313	1.00032	0.6942
300	0.00626	1173.35	1.822	10.00	0.0033343	0.08741	0.431	3.56965	1.00030	0.6941
320	0.00587	1248.88	1.827	10.00	0.0031256	0.08962	0.442	3.91288	1.00028	0.6937
340	0.00552	1318.29	1.843	10.00	0.0029414	0.09131	0.453	4.26390	1.00027	0.6931
360	0.00522	1382.96	1.866	10.00	0.0027778	0.09262	0.464	4.62283	1.00025	0.6924
380	0.00494	1444.09	1.894	10.00	0.0026314	0.09370	0.474	4.99025	1.00024	0.6917
400	0.00469	1503.35	1.922	10.00	0.0024998	0.09466	0.483	5.36626	1.00023	0.6909
420	0.00447	1561.39	1.951	10.00	0.0023806	0.09557	0.493	5.75104	1.00022	0.6902
440	0.00427	1619.06	1.978	10.00	0.0022723	0.09647	0.502	6.14441	1.00021	0.6895
460	0.00408	1677.12	2.003	10.00	0.0021735	0.09741	0.511	6.54643	1.00020	0.6889
480	0.00391	1735.62	2.026	10.00	0.0020829	0.09839	0.520	6.95733	1.00019	0.6883
500	0.00376	1795.03	2.046	10.00	0.0019995	0.09944	0.529	7.37721	1.00018	0.6878
520	0.00361	1855.38	2.064	10.00	0.0019226	0.10055	0.538	7.80596	1.00017	0.6874
540	0.00348	1916.45	2.079	10.00	0.0018514	0.10171	0.547	8.24281	1.00017	0.6870
560	0.00335	1979.04	2.091	10.00	0.0017853	0.10295	0.556	8.68917	1.00016	0.6867
580	0.00324	2042.29	2.102	10.00	0.0017237	0.10423	0.564	9.14461	1.00016	0.6864
600	0.00313	2106.47	2.110	10.00	0.0016663	0.10556	0.573	9.60895	1.00015	0.6861
650	0.00289	2269.97	2.126	10.00	0.0015381	0.10903	0.595	10.80910	1.00014	0.6856
700	0.00258	2437.05	2.135	10.00	0.0014282	0.11268	0.616	12.06654	1.00013	0.6852
800	0.00235	2779.11	2.141	10.00	0.0012497	0.12026	0.659	14.75047	1.00011	0.6847
1000	0.00188	3474.60	2.140	10.00	0.0009998	0.13565	0.742	20.79100	1.00009	0.6841
2000	0.00094	7260.48	2.014	10.00	0.0004999	0.27727	1.128	81.33490	1.00005	0.5318
3000	0.00063	11818.43	1.804	10.00	0.0003333	0.39781	1.472	161.28694	1.00003	0.5248
4000	0.00047	21093.88	1.269	9.96	0.0002509	0.73924	1.789	298.51987	1.00002	0.4613
5000	0.00036	63258.93	0.499	9.56	0.0002091	2.72170	2.126	572.62853	1.00002	0.3721

* TWO-PHASE BOUNDRY

14.696 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.903	0.20785	2714.95	74.4842	-132.867	-132.321	1.18743	1.118	1.525	4142
25	0.20799	2692.74	74.4767	-132.727	-132.161	1.19383	1.121	1.533	4131
26	0.20921	2487.94	74.3768	-131.166	-130.597	1.25520	1.149	1.617	4028
28	0.21192	2320.03	72.4851	-127.832	-127.256	1.37897	1.202	1.729	3932
30	0.21483	2159.01	71.0900	-124.264	-123.679	1.50231	1.252	1.853	3846
32	0.21799	2006.29	69.7983	-120.441	-119.848	1.62592	1.298	1.982	3767
34	0.22145	1839.75	68.4486	-116.350	-115.748	1.75018	1.339	2.125	3678
36	0.22528	1577.90	66.9173	-111.971	-111.358	1.87564	1.374	2.276	3589
* 36.483	0.22629	1647.82	66.5009	-110.853	-110.237	1.90657	1.381	2.310	3573
* 36.483	11.97202	156.83	0.4675	48.872	81.452	7.16221	1.555	2.904	1165
38	12.58367	167.56	0.4417	51.469	85.713	7.27660	1.536	2.834	1197
40	13.40923	181.23	0.4118	54.818	91.309	7.42015	1.521	2.767	1236
42	14.21951	194.43	0.3865	58.097	96.793	7.55393	1.511	2.719	1273
44	15.01820	207.27	0.3647	61.326	102.196	7.67960	1.505	2.684	1309
46	15.80777	219.84	0.3456	64.518	107.536	7.79831	1.501	2.657	1343
48	16.58996	232.18	0.3285	67.682	112.828	7.91092	1.498	2.635	1376
50	17.36603	244.34	0.3133	70.822	118.081	8.01813	1.496	2.617	1407
52	18.13695	256.34	0.2995	73.944	123.300	8.12049	1.494	2.602	1438
54	18.90349	268.22	0.2869	77.050	128.492	8.21846	1.493	2.590	1468
56	19.66626	279.99	0.2755	80.142	133.660	8.31243	1.492	2.579	1497
58	20.42573	291.66	0.2649	83.223	138.808	8.40275	1.491	2.569	1526
60	21.18234	303.25	0.2552	86.294	143.938	8.48971	1.490	2.561	1554
62	21.93641	314.76	0.2462	89.356	149.051	8.57354	1.489	2.553	1581
64	22.68824	326.21	0.2379	92.410	154.151	8.65450	1.488	2.547	1608
66	23.43808	337.59	0.2301	95.457	159.239	8.73278	1.488	2.541	1634
68	24.18615	348.93	0.2229	98.498	164.316	8.80856	1.488	2.536	1660
70	24.93261	360.22	0.2161	101.535	169.384	8.88202	1.488	2.532	1685
75	26.79277	388.27	0.2008	109.111	182.022	9.05640	1.488	2.524	1746
80	28.64584	416.11	0.1876	116.673	194.627	9.21911	1.491	2.519	1805
85	30.49323	443.79	0.1761	124.237	207.218	9.37176	1.495	2.518	1861
90	32.33603	471.33	0.1659	131.814	219.810	9.51571	1.502	2.520	1914
95	34.17504	498.76	0.1569	139.422	232.423	9.65210	1.511	2.526	1965
100	36.01089	526.10	0.1488	147.079	245.075	9.78189	1.525	2.536	2013
105	37.84410	553.36	0.1416	154.803	257.788	9.90594	1.542	2.550	2059
110	39.67506	580.56	0.1350	162.616	270.584	10.02498	1.563	2.569	2103
115	41.50409	607.70	0.1290	170.540	283.485	10.13967	1.588	2.592	2144
120	43.33147	634.79	0.1235	178.596	296.514	10.25057	1.618	2.620	2183
125	45.15741	661.84	0.1185	186.808	309.695	10.35818	1.652	2.653	2219
130	46.98209	688.85	0.1138	195.197	323.049	10.46293	1.690	2.689	2254
140	50.62827	742.78	0.1056	212.585	350.360	10.66528	1.777	2.775	2318
150	54.27098	796.61	0.0985	230.907	378.595	10.86004	1.878	2.874	2377
160	57.91092	850.36	0.0923	250.273	407.866	11.04891	1.987	2.982	2431
170	61.54862	904.05	0.0868	270.754	438.246	11.23306	2.101	3.095	2484
180	65.18448	957.68	0.0819	292.381	469.768	11.41320	2.217	3.209	2534
190	68.81869	1011.26	0.0776	315.118	502.394	11.58922	2.329	3.321	2585
200	72.45163	1064.80	0.0737	338.976	536.139	11.76216	2.436	3.427	2634
220	79.71433	1171.79	0.0669	389.666	606.593	12.09779	2.622	3.612	2735
240	86.97374	1278.69	0.0613	443.638	680.320	12.41826	2.763	3.752	2836
260	94.23066	1385.51	0.0566	499.936	756.366	12.72273	2.857	3.846	2939
280	101.48566	1492.28	0.0526	557.712	833.885	13.00986	2.908	3.896	3043
300	108.73913	1599.00	0.0490	616.108	912.020	13.27951	2.925	3.913	3148
320	115.99138	1705.69	0.0460	674.578	990.226	13.53198	2.917	3.904	3252
340	123.24263	1812.35	0.0433	732.690	1068.071	13.76759	2.891	3.878	3356
360	130.49307	1918.98	0.0409	790.172	1145.283	13.98633	2.855	3.842	3459
380	137.74283	2025.60	0.0387	846.874	1221.714	14.19497	2.814	3.801	3560
400	144.99201	2132.20	0.0368	902.735	1297.301	14.38891	2.772	3.758	3660
420	152.24071	2238.78	0.0350	957.760	1372.053	14.57125	2.731	3.717	3758
440	159.48899	2345.35	0.0334	1012.004	1446.021	14.74334	2.693	3.679	3853
460	166.73691	2451.91	0.0320	1065.523	1519.264	14.90615	2.659	3.646	3946
480	173.98452	2558.46	0.0306	1118.405	1591.869	15.06043	2.629	3.615	4037
500	181.23186	2665.00	0.0294	1170.727	1663.914	15.20763	2.603	3.590	4126
520	188.47897	2771.54	0.0283	1222.570	1735.478	15.34810	2.581	3.567	4213
540	195.71174	2877.87	0.0272	1274.025	1806.616	15.48235	2.562	3.548	4297
560	202.95782	2984.39	0.0262	1325.036	1877.345	15.61048	2.547	3.533	4379
580	210.20374	3090.89	0.0253	1375.836	1947.864	15.73407	2.534	3.521	4460
600	217.44952	3197.40	0.0245	1426.442	2018.188	15.85333	2.524	3.510	4539
650	235.56347	3463.65	0.0226	1552.101	2193.140	16.13368	2.505	3.492	4729
700	253.67684	3729.88	0.0210	1677.108	2367.439	16.39228	2.495	3.481	4910
800	289.90234	4262.31	0.0184	1925.996	2714.908	16.85657	2.487	3.473	5251
1000	362.35041	5327.07	0.0147	2423.304	3409.368	17.63088	2.488	3.474	5870
2000	724.57382	10650.42	0.0073	4969.880	6941.663	20.07153	2.644	3.630	8230
3000	1086.84976	15973.59	0.0049	7759.900	10717.545	21.58881	2.946	3.933	9940
4000	1453.62588	21296.74	0.0037	11103.048	15058.801	23.02614	4.024	5.091	11171
5000	1879.61030	26619.88	0.0029	17575.283	22690.268	25.53754	9.818	11.678	12101

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

14.696 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	(DH/DV)$_T$ BTU/LB	(DP/DV)$_T$ PSIA-CU FT/BTU	-V(DP/DV)$_T$ PSIA	(DV/DT)$_P$/V 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.933	4.81124	267.47	13.846	13062.39	0.0057022	0.04222	1.716	0.00575	1.25176	2.2321
25	4.80787	266.57	13.819	12946.36	0.0057527	0.04253	1.702	0.00577	1.25157	2.2088
26	4.77376	258.48	13.548	11891.82	0.0062545	0.04556	1.581	0.00589	1.24999	2.0199
28	4.71485	241.20	12.779	10947.86	0.0066209	0.05011	1.379	0.00614	1.24656	1.7137
30	4.65493	241.90	12.194	10050.02	0.0070736	0.05305	1.223	0.00615	1.24297	1.5370
32	4.58734	241.34	11.720	9203.54	0.0075839	0.05497	1.097	0.00605	1.23918	1.4240
34	4.51552	237.91	11.323	8307.61	0.0082393	0.05607	0.994	0.00584	1.23517	1.3556
36	4.43398	233.28	10.975	7448.17	0.0089844	0.05692	0.906	0.00563	1.23089	1.3051
* 36.483	4.41312	232.90	10.895	7281.73	0.0091326	0.05720	0.887	0.00560	1.22978	1.2892
* 36.483	0.08353	81.37	3.600	13.10	0.0356912	0.00979	0.076	0.04037	1.00404	0.8090
38	0.07947	89.43	3.619	13.32	0.0331737	0.01010	0.079	0.04487	1.00384	0.7954
40	0.07458	98.31	3.632	13.52	0.0304691	0.01054	0.083	0.05109	1.00360	0.7815
42	0.07133	96.21	3.638	13.67	0.0282697	0.01100	0.087	0.05750	1.00340	0.7708
44	0.06659	101.58	3.640	13.80	0.0264268	0.01147	0.090	0.06415	1.00322	0.7620
46	0.06326	106.93	3.640	13.91	0.0248487	0.01194	0.094	0.07103	1.00306	0.7547
48	0.06028	112.26	3.638	14.00	0.0234756	0.01242	0.098	0.07815	1.00291	0.7485
50	0.05758	117.55	3.637	14.07	0.0222656	0.01289	0.102	0.08555	1.00278	0.7429
52	0.05514	122.82	3.635	14.13	0.0211886	0.01337	0.105	0.09321	1.00266	0.7378
54	0.05293	128.06	3.633	14.19	0.0202220	0.01386	0.109	0.10114	1.00256	0.7330
56	0.05385	133.27	3.632	14.24	0.0193483	0.01430	0.113	0.10904	1.00246	0.7305
58	0.04896	138.46	3.630	14.28	0.0185538	0.01474	0.116	0.11719	1.00236	0.7282
60	0.04721	143.63	3.629	14.32	0.0178274	0.01518	0.120	0.12558	1.00228	0.7259
62	0.04559	148.78	3.628	14.35	0.0171605	0.01563	0.123	0.13426	1.00220	0.7235
64	0.04408	153.92	3.626	14.38	0.0165454	0.01607	0.126	0.14318	1.00213	0.7212
66	0.04267	159.05	3.625	14.40	0.0159760	0.01652	0.130	0.15235	1.00206	0.7189
68	0.04135	164.16	3.623	14.43	0.0154471	0.01696	0.133	0.16178	1.00200	0.7166
70	0.04011	169.26	3.621	14.45	0.0149542	0.01741	0.136	0.17145	1.00194	0.7144
75	0.03732	182.13	3.615	14.49	0.0138565	0.01852	0.145	0.19665	1.00180	0.7093
80	0.03491	195.02	3.606	14.53	0.0129161	0.01963	0.153	0.22327	1.00169	0.7045
85	0.03279	208.06	3.592	14.55	0.0121002	0.02075	0.160	0.25127	1.00158	0.7003
90	0.03093	221.32	3.574	14.58	0.0113849	0.02186	0.168	0.28052	1.00149	0.6966
95	0.02926	234.96	3.548	14.59	0.0107521	0.02297	0.175	0.31083	1.00141	0.6937
100	0.02777	248.89	3.516	14.61	0.0101880	0.02409	0.183	0.34209	1.00134	0.6916
105	0.02642	263.39	3.475	14.62	0.0096816	0.02520	0.190	0.37405	1.00128	0.6906
110	0.02520	278.48	3.427	14.63	0.0092243	0.02641	0.197	0.40784	1.00122	0.6885
115	0.02409	294.25	3.371	14.64	0.0088093	0.02764	0.203	0.44263	1.00116	0.6867
120	0.02308	310.79	3.308	14.65	0.0084306	0.02888	0.210	0.47766	1.00111	0.6863
125	0.02214	328.15	3.239	14.66	0.0080838	0.03012	0.217	0.51280	1.00107	0.6871
130	0.02128	346.37	3.166	14.66	0.0077648	0.03136	0.223	0.54786	1.00103	0.6892
140	0.01975	385.52	3.008	14.67	0.0071979	0.03384	0.236	0.61732	1.00095	0.6966
150	0.01843	426.32	2.846	14.68	0.0067091	0.03676	0.248	0.69417	1.00089	0.6987
160	0.01727	474.54	2.689	14.68	0.0062831	0.03994	0.260	0.77567	1.00083	0.6994
170	0.01625	523.79	2.542	14.69	0.0059085	0.04312	0.272	0.85747	1.00078	0.7026
180	0.01534	575.58	2.409	14.69	0.0055764	0.05177	0.307	1.05154	1.00074	0.6859
190	0.01453	629.88	2.292	14.69	0.0052797	0.05676	0.326	1.17627	1.00070	0.6876
200	0.01380	683.55	2.192	14.70	0.0050133	0.06130	0.342	1.29607	1.00067	0.6892
220	0.01254	793.86	2.036	14.70	0.0045542	0.06916	0.368	1.52639	1.00061	0.6917
240	0.01150	899.22	1.931	14.70	0.0041724	0.07553	0.388	1.75087	1.00055	0.6933
260	0.01061	998.92	1.867	14.70	0.0038499	0.08058	0.404	1.97433	1.00051	0.6941
280	0.00985	1098.23	1.834	14.70	0.0035739	0.08446	0.418	2.19985	1.00048	0.6944
300	0.00920	1173.40	1.823	14.70	0.0033348	0.08741	0.431	2.42897	1.00044	0.6943
320	0.00862	1248.97	1.828	14.71	0.0031259	0.08962	0.442	2.66265	1.00042	0.6938
340	0.00811	1318.42	1.844	14.71	0.0029416	0.09131	0.453	2.90162	1.00039	0.6932
360	0.00766	1383.12	1.867	14.71	0.0027779	0.09263	0.464	3.14596	1.00037	0.6925
380	0.00726	1444.28	1.894	14.71	0.0026314	0.09370	0.474	3.39608	1.00035	0.6917
400	0.00690	1503.57	1.923	14.71	0.0024997	0.09467	0.483	3.65205	1.00033	0.6910
420	0.00657	1561.62	1.952	14.71	0.0023805	0.09557	0.493	3.91397	1.00032	0.6903
440	0.00627	1619.31	1.979	14.71	0.0022722	0.09647	0.502	4.18174	1.00030	0.6896
460	0.00600	1677.38	2.004	14.71	0.0021733	0.09741	0.511	4.45539	1.00029	0.6889
480	0.00575	1735.98	2.027	14.71	0.0020827	0.09839	0.520	4.73508	1.00028	0.6884
500	0.00552	1795.33	2.047	14.70	0.0019994	0.09944	0.529	5.02088	1.00027	0.6879
520	0.00531	1855.68	2.064	14.70	0.0019224	0.10056	0.538	5.31271	1.00026	0.6874
540	0.00511	1916.76	2.079	14.70	0.0018512	0.10171	0.547	5.61007	1.00025	0.6870
560	0.00493	1979.36	2.092	14.70	0.0017851	0.10296	0.556	5.91389	1.00024	0.6867
580	0.00476	2042.62	2.102	14.70	0.0017235	0.10424	0.565	6.22388	1.00023	0.6864
600	0.00460	2106.61	2.111	14.70	0.0016661	0.10557	0.573	6.53993	1.00022	0.6861
650	0.00425	2270.32	2.126	14.70	0.0015379	0.10904	0.595	7.35679	1.00020	0.6856
700	0.00394	2437.41	2.135	14.70	0.0014280	0.11269	0.616	8.21262	1.00019	0.6852
800	0.00345	2779.49	2.141	14.70	0.0012496	0.12027	0.659	10.03934	1.00017	0.6847
1000	0.00276	3475.00	2.140	14.70	0.0009997	0.13566	0.742	14.15056	1.00013	0.6841
2000	0.00138	7260.92	2.014	14.70	0.0004999	0.27727	1.128	55.34825	1.00007	0.5318
3000	0.00092	11001.22	1.807	14.70	0.0003333	0.39687	1.472	109.65920	1.00004	0.5253
4000	0.00069	20299.41	1.327	14.65	0.0002508	0.69840	1.789	199.43043	1.00003	0.4695
5000	0.00053	56272.01	0.563	14.16	0.0002075	2.36829	2.120	381.17027	1.00003	0.3763

* TWO-PHASE BOUNDRY

15 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.904	0.20784	2715.26	74.4862	-132.886	-132.309	1.18744	1.118	1.525	4142
25	0.20799	2693.50	74.4787	-132.729	-132.151	1.19377	1.121	1.533	4132
26	0.20921	2488.43	74.3835	-131.168	-130.587	1.25513	1.149	1.617	4029
28	0.21191	2320.50	72.4910	-127.835	-127.246	1.37890	1.202	1.729	3933
30	0.21482	2159.47	71.0957	-124.267	-123.670	1.50223	1.252	1.852	3847
32	0.21798	2006.78	69.8038	-120.444	-119.839	1.62582	1.298	1.982	3767
34	0.22145	1840.23	68.4542	-116.354	-115.739	1.75008	1.339	2.125	3679
36	0.22527	1578.40	66.9229	-111.975	-111.349	1.87553	1.374	2.276	3590
* 36.608	0.22655	1637.31	66.4004	-110.568	-109.938	1.91439	1.383	2.320	3567
* 36.608	11.75296	156.87	0.4766	48.968	81.613	7.14838	1.556	2.912	1166
38	12.30213	166.76	0.4523	51.357	85.527	7.25330	1.538	2.845	1195
40	13.11369	180.52	0.4215	54.719	91.144	7.39735	1.522	2.775	1235
42	13.90975	193.79	0.3955	58.007	96.643	7.53151	1.512	2.726	1272
44	14.69408	206.68	0.3730	61.243	102.058	7.65746	1.506	2.690	1308
46	15.46920	219.29	0.3533	64.442	107.409	7.77640	1.502	2.662	1342
48	16.23688	231.68	0.3359	67.610	112.710	7.88920	1.499	2.639	1375
50	16.99840	243.87	0.3202	70.755	117.970	7.99657	1.496	2.621	1407
52	17.75475	255.91	0.3061	73.881	123.196	8.09906	1.495	2.606	1438
54	18.50669	267.82	0.2932	76.990	128.394	8.19715	1.493	2.592	1468
56	19.25483	279.61	0.2815	80.086	133.568	8.29122	1.492	2.581	1497
58	19.99968	291.30	0.2707	83.169	138.720	8.38162	1.491	2.571	1526
60	20.74165	302.91	0.2607	86.243	143.855	8.46866	1.490	2.563	1554
62	21.48107	314.44	0.2515	89.307	148.972	8.55256	1.489	2.555	1581
64	22.21824	325.90	0.2430	92.363	154.076	8.63358	1.489	2.548	1608
66	22.95343	337.31	0.2350	95.412	159.167	8.71191	1.488	2.543	1634
68	23.68683	348.66	0.2276	98.455	164.248	8.78774	1.488	2.538	1660
70	24.41863	359.96	0.2207	101.493	169.318	8.86124	1.488	2.533	1685
75	26.24211	388.04	0.2051	109.073	181.963	9.03571	1.488	2.525	1746
80	28.05849	415.91	0.1916	116.639	194.574	9.19849	1.491	2.520	1805
85	29.86919	443.61	0.1798	124.204	207.169	9.35120	1.495	2.518	1861
90	31.67529	471.17	0.1694	131.784	219.765	9.49520	1.502	2.521	1914
95	33.47760	498.62	0.1602	139.394	232.382	9.63162	1.511	2.526	1965
100	35.27675	525.97	0.1520	147.053	245.037	9.76145	1.525	2.536	2013
105	37.07325	553.25	0.1445	154.779	257.753	9.88552	1.542	2.551	2059
110	38.86751	580.46	0.1378	162.593	270.551	10.00459	1.563	2.569	2103
115	40.65984	607.61	0.1317	170.516	283.454	10.11930	1.588	2.593	2144
120	42.45051	634.71	0.1261	178.575	296.486	10.23022	1.618	2.621	2183
125	44.23974	661.77	0.1209	186.788	309.668	10.33784	1.652	2.653	2219
130	46.02771	688.79	0.1162	195.178	323.024	10.44260	1.690	2.690	2254
140	49.60048	742.73	0.1078	212.568	350.338	10.64498	1.777	2.775	2318
150	53.16978	796.58	0.1005	230.891	378.975	10.83975	1.878	2.874	2377
160	56.73630	850.33	0.0942	250.258	407.848	11.02864	1.987	2.982	2431
170	60.30059	904.03	0.0886	270.740	438.231	11.21279	2.101	3.095	2484
180	63.86303	957.66	0.0836	292.369	469.754	11.39294	2.217	3.209	2534
190	67.42382	1011.25	0.0792	315.106	502.382	11.56897	2.329	3.321	2585
200	70.98334	1064.80	0.0752	338.965	536.128	11.74192	2.436	3.427	2634
220	78.09922	1171.81	0.0683	389.656	606.584	12.07756	2.622	3.612	2735
240	85.21180	1278.71	0.0626	443.630	680.313	12.39804	2.763	3.752	2836
260	92.32189	1385.54	0.0578	499.928	756.361	12.70252	2.857	3.846	2939
280	99.43005	1492.32	0.0536	557.704	833.880	12.98965	2.908	3.896	3044
300	106.53669	1599.05	0.0501	616.101	912.017	13.25931	2.925	3.913	3148
320	113.64211	1705.74	0.0469	674.572	990.224	13.51178	2.917	3.904	3252
340	120.74654	1812.40	0.0442	732.685	1068.070	13.74739	2.891	3.878	3356
360	127.85014	1919.04	0.0417	790.166	1145.282	13.96814	2.855	3.842	3459
380	134.95307	2025.65	0.0395	846.869	1221.714	14.17477	2.814	3.801	3560
400	142.05542	2132.25	0.0375	902.730	1297.302	14.36871	2.772	3.758	3660
420	149.15729	2238.84	0.0357	957.756	1372.054	14.55106	2.731	3.717	3758
440	156.25874	2345.41	0.0341	1012.000	1446.023	14.72315	2.693	3.679	3853
460	163.35983	2451.97	0.0326	1065.519	1519.267	14.88596	2.659	3.646	3946
480	170.46062	2558.53	0.0313	1118.402	1591.872	15.04024	2.629	3.615	4037
500	177.56113	2665.07	0.0300	1170.724	1663.917	15.18744	2.603	3.590	4126
520	184.66141	2771.61	0.0289	1222.566	1735.481	15.32791	2.581	3.567	4213
540	191.74765	2877.94	0.0278	1274.022	1806.619	15.46217	2.562	3.548	4297
560	198.84691	2984.46	0.0268	1325.033	1877.349	15.59029	2.547	3.533	4379
580	205.94601	3090.97	0.0259	1375.833	1947.868	15.71388	2.534	3.521	4460
600	213.04497	3197.47	0.0250	1426.440	2018.192	15.83315	2.524	3.510	4539
650	230.79187	3463.72	0.0231	1552.099	2193.145	16.11350	2.505	3.492	4729
700	248.53820	3729.96	0.0214	1677.106	2367.444	16.37209	2.495	3.481	4910
800	284.02961	4262.39	0.0188	1925.995	2714.914	16.83638	2.487	3.473	5251
1000	355.00949	5327.16	0.0150	2423.303	3409.375	17.61069	2.488	3.474	5870
2000	709.89199	10650.50	0.0075	4969.879	6941.671	20.05135	2.644	3.630	8230
3000	1064.82525	15973.68	0.0050	7759.848	10717.500	21.56861	2.946	3.933	9940
4000	1424.12258	21296.83	0.0038	11100.022	15055.656	23.00511	4.016	5.081	11173
5000	1840.83856	26619.96	0.0030	17539.593	22652.694	25.50908	9.754	11.604	12102

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

15 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.904	4.81135	267.50	13.845	13064.08	0.0057016	0.04222	1.716	0.00575	1.25177	2.2319
25	4.80798	266.62	13.819	12950.33	0.0057511	0.04254	1.702	0.00577	1.25158	2.2089
26	4.77990	258.58	13.549	11894.47	0.0062536	0.04557	1.581	0.00590	1.24999	2.0201
28	4.71898	261.23	12.780	10950.37	0.0066200	0.05011	1.380	0.00614	1.24657	1.7138
30	4.65506	261.93	12.195	10052.49	0.0070724	0.05305	1.223	0.00615	1.24298	1.5371
32	4.58749	261.38	11.721	9206.10	0.0075823	0.05497	1.097	0.00605	1.23919	1.4240
34	4.51579	257.95	11.324	8310.10	0.0082375	0.05607	0.994	0.00584	1.23518	1.3556
36	4.43916	253.42	10.975	7450.69	0.0089821	0.05692	0.907	0.00563	1.23090	1.3051
* 36.608	4.41411	252.51	10.876	7227.29	0.0091875	0.05727	0.882	0.00559	1.22951	1.2865
* 36.608	0.08508	81.54	3.601	13.35	0.0357072	0.00984	0.076	0.03972	1.00411	0.8104
38	0.08129	85.25	3.618	13.56	0.0333702	0.01012	0.079	0.04377	1.00393	0.7975
40	0.07626	90.65	3.632	13.77	0.0306169	0.01056	0.083	0.04988	1.00369	0.7832
42	0.07189	96.05	3.638	13.93	0.0283852	0.01101	0.087	0.05617	1.00347	0.7721
44	0.06805	101.44	3.640	14.07	0.0265194	0.01148	0.090	0.06269	1.00329	0.7632
46	0.06464	106.80	3.640	14.18	0.0249245	0.01195	0.094	0.06944	1.00312	0.7557
48	0.06159	112.13	3.639	14.27	0.0235386	0.01242	0.098	0.07643	1.00298	0.7493
50	0.05883	117.44	3.638	14.35	0.0223187	0.01290	0.102	0.08368	1.00284	0.7436
52	0.05632	122.71	3.636	14.41	0.0212339	0.01338	0.105	0.09118	1.00272	0.7384
54	0.05403	127.95	3.634	14.47	0.0202609	0.01386	0.109	0.09896	1.00261	0.7336
56	0.05194	133.17	3.632	14.52	0.0193820	0.01430	0.113	0.10671	1.00251	0.7310
58	0.05000	138.37	3.631	14.57	0.0185832	0.01475	0.116	0.11470	1.00242	0.7286
60	0.04821	143.54	3.629	14.60	0.0178532	0.01519	0.120	0.12292	1.00233	0.7263
62	0.04655	148.70	3.628	14.64	0.0171832	0.01563	0.123	0.13143	1.00225	0.7239
64	0.04501	153.84	3.627	14.67	0.0165656	0.01608	0.126	0.14017	1.00217	0.7215
66	0.04357	158.98	3.625	14.70	0.0159940	0.01652	0.130	0.14917	1.00210	0.7192
68	0.04222	164.11	3.624	14.72	0.0154632	0.01697	0.133	0.15840	1.00204	0.7169
70	0.04095	169.23	3.622	14.74	0.0149687	0.01742	0.136	0.16788	1.00198	0.7147
75	0.03811	182.07	3.615	14.79	0.0138677	0.01853	0.145	0.19257	1.00184	0.7095
80	0.03564	194.97	3.606	14.82	0.0129249	0.01964	0.153	0.21867	1.00172	0.7047
85	0.03348	208.01	3.593	14.85	0.0121073	0.02075	0.160	0.24610	1.00162	0.7004
90	0.03157	221.28	3.574	14.88	0.0113907	0.02186	0.168	0.27476	1.00152	0.6967
95	0.02987	234.86	3.549	14.89	0.0107569	0.02298	0.175	0.30447	1.00144	0.6938
100	0.02835	248.86	3.516	14.91	0.0101919	0.02409	0.183	0.33510	1.00137	0.6917
105	0.02697	263.35	3.476	14.92	0.0096849	0.02521	0.190	0.36642	1.00130	0.6907
110	0.02573	278.44	3.428	14.93	0.0092271	0.02641	0.197	0.39953	1.00124	0.6885
115	0.02459	294.22	3.372	14.94	0.0088116	0.02765	0.203	0.43361	1.00119	0.6868
120	0.02356	310.76	3.309	14.95	0.0084327	0.02889	0.210	0.46794	1.00114	0.6864
125	0.02260	328.12	3.240	14.96	0.0080855	0.03013	0.217	0.50237	1.00109	0.6872
130	0.02173	346.34	3.166	14.96	0.0077663	0.03137	0.223	0.53673	1.00105	0.6893
140	0.02016	385.50	3.008	14.97	0.0071991	0.03384	0.236	0.60478	1.00097	0.6966
150	0.01881	428.29	2.847	14.98	0.0067100	0.03676	0.248	0.68009	1.00091	0.6987
160	0.01763	474.52	2.689	14.99	0.0062838	0.03994	0.260	0.75994	1.00085	0.6995
170	0.01658	523.78	2.542	14.99	0.0059090	0.04312	0.272	0.84009	1.00080	0.7026
180	0.01566	575.48	2.409	15.00	0.0055768	0.05177	0.307	1.03018	1.00076	0.6859
190	0.01483	628.98	2.292	15.00	0.0052800	0.05676	0.326	1.15238	1.00072	0.6877
200	0.01409	683.54	2.192	15.00	0.0050136	0.06130	0.342	1.26976	1.00068	0.6893
220	0.01280	793.05	2.036	15.00	0.0045543	0.06916	0.368	1.49542	1.00062	0.6917
240	0.01174	899.21	1.931	15.01	0.0041725	0.07553	0.388	1.71536	1.00057	0.6933
260	0.01083	998.91	1.867	15.01	0.0038500	0.08058	0.404	1.93430	1.00052	0.6941
280	0.01006	1090.23	1.834	15.01	0.0035739	0.08446	0.418	2.15526	1.00049	0.6944
300	0.00939	1173.41	1.823	15.01	0.0033349	0.08741	0.431	2.37974	1.00045	0.6943
320	0.00880	1248.98	1.828	15.01	0.0031259	0.08962	0.442	2.60869	1.00042	0.6938
340	0.00828	1318.43	1.844	15.01	0.0029416	0.09131	0.453	2.84282	1.00040	0.6932
360	0.00782	1383.13	1.867	15.01	0.0027779	0.09263	0.464	3.08222	1.00038	0.6925
380	0.00741	1444.29	1.895	15.01	0.0026314	0.09370	0.474	3.32728	1.00036	0.6918
400	0.00704	1503.58	1.923	15.01	0.0024997	0.09467	0.483	3.57807	1.00034	0.6910
420	0.00670	1561.64	1.952	15.01	0.0023805	0.09557	0.493	3.83469	1.00032	0.6903
440	0.00640	1619.33	1.979	15.01	0.0022722	0.09647	0.502	4.09704	1.00031	0.6896
460	0.00612	1677.40	2.004	15.01	0.0021733	0.09741	0.511	4.36515	1.00030	0.6889
480	0.00587	1735.92	2.027	15.01	0.0020827	0.09840	0.520	4.63917	1.00028	0.6884
500	0.00563	1795.35	2.047	15.01	0.0019993	0.09944	0.529	4.91918	1.00027	0.6879
520	0.00542	1855.70	2.064	15.01	0.0019224	0.10056	0.538	5.20510	1.00026	0.6874
540	0.00522	1916.78	2.079	15.01	0.0018512	0.10171	0.547	5.49645	1.00025	0.6870
560	0.00503	1979.38	2.092	15.01	0.0017851	0.10296	0.556	5.79412	1.00024	0.6867
580	0.00486	2042.65	2.102	15.01	0.0017235	0.10424	0.565	6.09783	1.00023	0.6864
600	0.00469	2106.83	2.111	15.01	0.0016661	0.10557	0.573	6.40748	1.00023	0.6861
650	0.00433	2270.34	2.126	15.01	0.0015379	0.10904	0.595	7.20779	1.00021	0.6856
700	0.00402	2437.44	2.135	15.01	0.0014280	0.11269	0.616	8.04630	1.00019	0.6852
800	0.00352	2779.51	2.141	15.01	0.0012495	0.12028	0.659	9.83602	1.00017	0.6847
1000	0.00282	3475.03	2.140	15.01	0.0009997	0.13566	0.742	13.86397	1.00014	0.6841
2000	0.00141	7260.94	2.014	15.00	0.0004999	0.27727	1.128	54.22674	1.00007	0.5318
3000	0.00094	11800.41	1.807	15.00	0.0003333	0.39683	1.472	107.43262	1.00005	0.5254
4000	0.00070	20261.27	1.330	14.95	0.0002508	0.69643	1.789	195.20752	1.00003	0.4699
5000	0.00054	55933.54	0.566	14.46	0.0002075	2.35117	2.119	372.98989	1.00003	0.3765

* TWO-PHASE BOUNDRY

20 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.925	0.20779	2720.36	74.5188	-132.881	-132.112	1.18764	1.119	1.525	4146
25	0.20791	2706.04	74.5106	-132.756	-131.986	1.19267	1.121	1.531	4139
26	0.20913	2496.52	74.4927	-131.198	-130.423	1.25398	1.148	1.616	4035
28	0.21174	2349.90	72.6678	-127.900	-127.116	1.37654	1.201	1.724	3952
30	0.21465	2182.76	71.2445	-124.333	-123.538	1.49999	1.252	1.847	3863
32	0.21787	2014.86	69.8952	-120.493	-119.686	1.62430	1.298	1.980	3774
34	0.22131	1848.16	68.5467	-116.410	-115.591	1.74841	1.338	2.122	3685
36	0.22512	1686.60	67.0150	-112.040	-111.206	1.87370	1.373	2.273	3596
38	0.22940	1515.89	65.2770	-107.339	-106.490	2.00119	1.403	2.444	3498
* 38.444	0.23044	1486.07	64.8429	-106.240	-105.386	2.03005	1.409	2.478	3480
* 38.444	9.04340	156.65	0.6263	50.239	83.731	6.95161	1.571	3.029	1183
40	9.53159	168.42	0.5892	53.010	88.310	7.06834	1.548	2.936	1216
42	10.15855	182.91	0.5486	56.469	94.091	7.20940	1.530	2.851	1257
44	10.77121	196.79	0.5146	59.840	99.730	7.34058	1.519	2.791	1294
46	11.37304	210.22	0.4853	63.146	105.266	7.46361	1.512	2.746	1330
48	11.96635	223.31	0.4597	66.406	110.722	7.57973	1.507	2.712	1364
50	12.55275	236.11	0.4371	69.628	116.117	7.68984	1.503	2.684	1397
52	13.13344	248.68	0.4168	72.822	121.461	7.79464	1.501	2.661	1429
54	13.70934	261.06	0.3985	75.991	126.763	7.89469	1.499	2.642	1460
56	14.28115	273.27	0.3818	79.140	132.030	7.99046	1.497	2.625	1490
58	14.84944	285.35	0.3667	82.272	137.266	8.08233	1.495	2.611	1519
60	15.41467	297.30	0.3527	85.389	142.476	8.17065	1.494	2.599	1548
62	15.97723	309.15	0.3399	88.492	147.663	8.25569	1.493	2.588	1576
64	16.53743	320.90	0.3280	91.584	152.829	8.33770	1.492	2.579	1603
66	17.09556	332.57	0.3170	94.666	157.978	8.41692	1.491	2.570	1630
68	17.65184	344.17	0.3067	97.739	163.112	8.49355	1.491	2.563	1656
70	18.20647	355.70	0.2972	100.805	168.232	8.56776	1.490	2.557	1681
75	19.58685	384.29	0.2757	108.445	180.985	8.74373	1.491	2.545	1743
80	20.95995	412.58	0.2573	116.063	193.687	8.90769	1.492	2.537	1802
85	22.32727	440.65	0.2413	123.673	206.361	9.06135	1.496	2.533	1859
90	23.68990	468.53	0.2272	131.291	219.025	9.20613	1.503	2.533	1913
95	25.04870	496.26	0.2147	138.934	231.701	9.34319	1.513	2.538	1964
100	26.40430	523.86	0.2035	146.621	244.409	9.47355	1.526	2.546	2013
105	27.75723	551.36	0.1935	154.373	257.171	9.59808	1.542	2.559	2059
110	29.10789	578.76	0.1844	162.210	270.010	9.71754	1.563	2.577	2102
115	30.45662	606.09	0.1761	170.156	282.951	9.83258	1.589	2.600	2144
120	31.80368	633.35	0.1686	178.232	296.016	9.94378	1.618	2.627	2182
125	33.14929	660.56	0.1617	186.462	309.229	10.05165	1.652	2.659	2219
130	34.49365	687.71	0.1553	194.867	322.612	10.15663	1.690	2.695	2254
140	37.17916	741.90	0.1440	212.284	349.975	10.35937	1.778	2.780	2318
150	39.86119	795.94	0.1343	230.629	378.254	10.55443	1.878	2.878	2377
160	42.54045	849.87	0.1258	250.016	407.562	10.74355	1.987	2.985	2432
170	45.21746	903.72	0.1183	270.515	437.976	10.92789	2.102	3.098	2484
180	47.89264	957.49	0.1116	292.158	469.526	11.10819	2.217	3.212	2535
190	50.56616	1011.19	0.1057	314.910	502.179	11.28436	2.329	3.323	2585
200	53.23841	1064.84	0.1004	338.781	535.947	11.45742	2.436	3.429	2635
220	58.57975	1172.02	0.0912	389.493	606.440	11.79324	2.622	3.613	2736
240	63.91780	1279.07	0.0835	443.483	680.200	12.11385	2.763	3.753	2837
260	69.25336	1386.03	0.0771	499.796	756.272	12.41843	2.857	3.847	2940
280	74.58699	1492.90	0.0716	557.583	833.813	12.70564	2.908	3.897	3044
300	79.91911	1599.71	0.0668	615.991	911.968	12.97536	2.925	3.914	3149
320	85.25001	1706.48	0.0626	674.471	990.190	13.22788	2.917	3.905	3253
340	90.57992	1813.20	0.0589	732.591	1068.050	13.46353	2.891	3.879	3357
360	95.90901	1919.89	0.0556	790.080	1145.275	13.68431	2.855	3.843	3460
380	101.23742	2026.56	0.0527	846.788	1221.717	13.89098	2.814	3.801	3561
400	106.56525	2133.20	0.0500	902.655	1297.315	14.08494	2.772	3.759	3661
420	111.89260	2239.83	0.0476	957.686	1372.075	14.26731	2.731	3.718	3759
440	117.21954	2346.43	0.0455	1011.934	1446.052	14.43941	2.693	3.680	3854
460	122.54612	2453.02	0.0435	1065.458	1519.302	14.60224	2.659	3.646	3947
480	127.87239	2559.60	0.0417	1118.344	1591.914	14.75654	2.629	3.616	4038
500	133.19839	2666.17	0.0400	1170.670	1663.964	14.90375	2.603	3.590	4127
520	138.52415	2772.73	0.0385	1222.515	1735.534	15.04423	2.581	3.568	4214
540	143.83951	2879.09	0.0370	1273.976	1806.680	15.17851	2.562	3.549	4298
560	149.16438	2985.63	0.0357	1324.990	1877.414	15.30664	2.547	3.534	4380
580	154.48911	3092.15	0.0345	1375.792	1947.936	15.43023	2.534	3.521	4461
600	159.81369	3198.67	0.0333	1426.401	2018.265	15.54951	2.524	3.510	4540
650	173.12465	3464.95	0.0308	1552.065	2193.224	15.82987	2.506	3.492	4730
700	186.43503	3731.21	0.0286	1677.076	2367.531	16.08847	2.495	3.481	4911
800	213.05456	4263.68	0.0250	1925.971	2715.009	16.55278	2.487	3.473	5252
1000	266.29067	5328.50	0.0200	2423.286	3409.483	17.32710	2.488	3.474	5871
2000	532.45434	10651.92	0.0100	4969.874	6941.797	19.76777	2.644	3.630	8231
3000	798.64901	15975.11	0.0067	7759.184	10716.947	21.28479	2.942	3.929	9942
4000	1067.67810	21298.26	0.0050	11060.631	15014.732	22.71044	3.900	4.954	11196
5000	1374.01105	26621.40	0.0040	17074.776	22163.369	25.11774	8.910	10.632	12121

* TWO-PHASE BOUNDRY

20 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.925	4.81259	267.98	13.843	13091.97	0.0056919	0.04231	1.718	0.00576	1.25184	2.2296
25	4.80982	267.49	13.822	13015.55	0.0057247	0.04255	1.706	0.00578	1.25168	2.2106
26	4.78181	259.03	13.566	11937.91	0.0062400	0.04558	1.585	0.00590	1.25010	2.0233
28	4.72288	263.27	12.807	11098.31	0.0065476	0.05017	1.386	0.00616	1.24679	1.7143
30	4.65875	263.62	12.217	10168.93	0.0070061	0.05311	1.228	0.00617	1.24318	1.5368
32	4.58997	261.94	11.734	9248.12	0.0075578	0.05501	1.100	0.00605	1.23933	1.4247
34	4.51847	258.54	11.336	8350.83	0.0082084	0.05613	0.996	0.00585	1.23533	1.3560
36	4.44207	254.08	10.987	7491.99	0.0089449	0.05698	0.909	0.00564	1.23107	1.3048
38	4.35918	247.37	10.675	6608.03	0.0098784	0.05795	0.833	0.00544	1.22645	1.2645
* 38.444	4.33952	246.47	10.608	6448.84	0.0100550	0.05808	0.817	0.00540	1.22536	1.2553
* 38.444	0.11058	83.77	3.605	17.32	0.0361539	0.01054	0.080	0.03146	1.00535	0.8322
40	0.10491	88.03	3.627	17.67	0.0333470	0.01083	0.083	0.03516	1.00507	0.8141
42	0.09844	93.56	3.642	18.01	0.0304710	0.01124	0.087	0.04006	1.00476	0.7966
44	0.09284	99.09	3.649	18.27	0.0281660	0.01168	0.091	0.04508	1.00449	0.7832
46	0.08793	104.59	3.651	18.48	0.0262563	0.01213	0.095	0.05025	1.00425	0.7726
48	0.08357	110.06	3.651	18.66	0.0246359	0.01259	0.099	0.05557	1.00404	0.7639
50	0.07966	115.50	3.649	18.81	0.0232362	0.01305	0.102	0.06106	1.00385	0.7565
52	0.07614	120.89	3.647	18.93	0.0220103	0.01352	0.106	0.06674	1.00368	0.7499
54	0.07294	126.24	3.645	19.04	0.0209247	0.01399	0.109	0.07261	1.00352	0.7439
56	0.07002	131.56	3.643	19.14	0.0199544	0.01443	0.113	0.07850	1.00338	0.7402
58	0.06734	136.85	3.641	19.22	0.0190805	0.01487	0.117	0.08455	1.00325	0.7368
60	0.06487	142.10	3.639	19.29	0.0182880	0.01530	0.120	0.09078	1.00313	0.7336
62	0.06259	147.33	3.638	19.35	0.0175659	0.01575	0.123	0.09721	1.00302	0.7305
64	0.06047	152.54	3.636	19.40	0.0169042	0.01619	0.127	0.10382	1.00292	0.7275
66	0.05849	157.74	3.634	19.45	0.0162952	0.01663	0.130	0.11061	1.00283	0.7246
68	0.05665	162.92	3.633	19.50	0.0157322	0.01707	0.134	0.11758	1.00274	0.7219
70	0.05493	168.11	3.630	19.54	0.0152099	0.01752	0.137	0.12473	1.00265	0.7193
75	0.05105	181.06	3.624	19.62	0.0140544	0.01862	0.145	0.14334	1.00247	0.7132
80	0.04771	194.07	3.614	19.68	0.0130721	0.01973	0.153	0.16299	1.00230	0.7078
85	0.04479	207.20	3.600	19.74	0.0122251	0.02083	0.161	0.18364	1.00216	0.7030
90	0.04221	220.54	3.581	19.78	0.0114863	0.02194	0.168	0.20521	1.00204	0.6989
95	0.03992	234.19	3.555	19.81	0.0108354	0.02305	0.176	0.22756	1.00193	0.6957
100	0.03787	248.24	3.522	19.84	0.0102570	0.02417	0.183	0.25060	1.00183	0.6934
105	0.03603	262.78	3.481	19.86	0.0097393	0.02528	0.190	0.27415	1.00174	0.6922
110	0.03435	277.91	3.433	19.88	0.0092731	0.02648	0.197	0.29904	1.00166	0.6898
115	0.03283	293.72	3.377	19.90	0.0088506	0.02771	0.204	0.32466	1.00159	0.6879
120	0.03144	310.29	3.313	19.91	0.0084660	0.02895	0.210	0.35047	1.00152	0.6873
125	0.03017	327.68	3.244	19.93	0.0081142	0.03019	0.217	0.37635	1.00146	0.6881
130	0.02899	345.92	3.170	19.94	0.0077911	0.03142	0.223	0.40217	1.00140	0.6900
140	0.02690	385.12	3.012	19.95	0.0072179	0.03389	0.236	0.45328	1.00130	0.6973
150	0.02509	427.94	2.850	19.97	0.0067245	0.03681	0.248	0.50986	1.00121	0.6993
160	0.02351	474.20	2.692	19.98	0.0062951	0.03999	0.260	0.56983	1.00113	0.6999
170	0.02212	523.47	2.545	19.99	0.0059179	0.04316	0.272	0.63003	1.00107	0.7030
180	0.02088	575.20	2.412	19.99	0.0055839	0.04678	0.307	0.77208	1.00101	0.6863
190	0.01978	628.74	2.295	20.00	0.0052857	0.05677	0.326	0.86372	1.00095	0.6881
200	0.01878	683.33	2.194	20.00	0.0050181	0.06130	0.342	0.95178	1.00091	0.6896
220	0.01707	792.90	2.037	20.01	0.0045573	0.06916	0.368	1.12112	1.00082	0.6920
240	0.01565	899.12	1.933	20.01	0.0041745	0.07553	0.388	1.28618	1.00076	0.6935
260	0.01444	998.87	1.868	20.01	0.0038513	0.08057	0.404	1.45050	1.00070	0.6943
280	0.01341	1090.24	1.835	20.02	0.0035748	0.08446	0.418	1.61632	1.00065	0.6946
300	0.01251	1173.47	1.824	20.02	0.0033354	0.08741	0.431	1.78479	1.00060	0.6944
320	0.01173	1249.09	1.829	20.02	0.0031262	0.08962	0.442	1.95660	1.00057	0.6940
340	0.01104	1318.57	1.845	20.02	0.0029418	0.09131	0.453	2.13229	1.00053	0.6933
360	0.01043	1383.31	1.868	20.02	0.0027779	0.09263	0.464	2.31193	1.00050	0.6926
380	0.00988	1444.50	1.895	20.02	0.0026314	0.09371	0.474	2.49580	1.00048	0.6918
400	0.00938	1503.81	1.924	20.02	0.0024996	0.09467	0.483	2.68397	1.00045	0.6911
420	0.00894	1561.89	1.952	20.02	0.0023804	0.09558	0.493	2.87651	1.00043	0.6903
440	0.00853	1619.60	1.980	20.02	0.0022720	0.09648	0.502	3.07335	1.00041	0.6896
460	0.00816	1677.69	2.005	20.02	0.0021732	0.09742	0.511	3.27450	1.00039	0.6890
480	0.00782	1736.22	2.028	20.02	0.0020825	0.09840	0.520	3.48009	1.00038	0.6884
500	0.00751	1795.66	2.047	20.02	0.0019992	0.09945	0.529	3.69017	1.00036	0.6879
520	0.00722	1856.03	2.065	20.02	0.0019222	0.10056	0.538	3.90468	1.00035	0.6875
540	0.00695	1917.12	2.080	20.02	0.0018510	0.10172	0.547	4.12327	1.00034	0.6870
560	0.00670	1979.73	2.092	20.02	0.0017849	0.10297	0.556	4.34659	1.00032	0.6867
580	0.00647	2043.00	2.103	20.02	0.0017233	0.10425	0.565	4.57444	1.00031	0.6864
600	0.00626	2107.19	2.111	20.02	0.0016659	0.10558	0.573	4.80674	1.00030	0.6862
650	0.00578	2270.71	2.127	20.01	0.0015377	0.10905	0.595	5.40714	1.00028	0.6856
700	0.00536	2437.82	2.136	20.01	0.0014279	0.11270	0.616	6.03618	1.00026	0.6852
800	0.00469	2779.92	2.142	20.01	0.0012494	0.12029	0.659	7.37880	1.00023	0.6847
1000	0.00376	3475.45	2.141	20.01	0.0009996	0.13568	0.742	10.40046	1.00018	0.6841
2000	0.00188	7261.42	2.014	20.01	0.0004999	0.27727	1.129	40.67267	1.00009	0.5319
3000	0.00125	11789.87	1.810	20.00	0.0003333	0.39624	1.473	80.53466	1.00006	0.5257
4000	0.00094	19764.61	1.369	19.95	0.0002506	0.67089	1.789	144.58911	1.00005	0.4756
5000	0.00073	51499.77	0.617	19.37	0.0002065	2.12685	2.115	274.85339	1.00004	0.3806

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

25 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.945	0.20774	2725.46	74.5513	-132.876	-131.914	1.18784	1.119	1.525	4149
25	0.20783	2718.53	74.5425	-132.783	-131.821	1.19158	1.121	1.529	4146
26	0.20905	2565.87	74.5454	-131.226	-130.258	1.25289	1.148	1.604	4075
28	0.21164	2358.46	72.7601	-127.934	-126.954	1.37530	1.201	1.722	3958
30	0.21455	2191.02	71.3334	-124.373	-123.380	1.49863	1.251	1.845	3869
32	0.21775	2022.89	69.9862	-120.541	-119.533	1.62279	1.297	1.978	3780
34	0.22118	1856.04	68.6388	-116.466	-115.442	1.74675	1.338	2.120	3691
36	0.22497	1694.76	67.1068	-112.105	-111.064	1.87187	1.373	2.269	3603
38	0.22923	1524.46	65.3741	-107.418	-106.356	1.99911	1.402	2.439	3505
* 39.975	0.23400	1350.87	63.3848	-102.429	-101.346	2.12763	1.427	2.632	3398
* 39.975	7.36165	155.26	0.7772	51.098	85.177	6.79632	1.584	3.144	1195
40	7.36419	155.44	0.7768	51.141	85.232	6.79769	1.583	3.143	1196
42	7.89501	171.42	0.7163	54.820	91.369	6.94743	1.553	3.004	1239
44	8.40808	186.46	0.6673	58.354	97.278	7.08488	1.535	2.910	1280
46	8.90823	200.83	0.6261	61.789	103.028	7.21269	1.524	2.843	1318
48	9.39854	214.69	0.5907	65.153	108.662	7.33258	1.516	2.793	1353
50	9.88105	228.16	0.5598	68.463	114.206	7.44575	1.511	2.753	1388
52	10.35724	241.31	0.5324	71.732	119.679	7.55308	1.507	2.721	1421
54	10.82819	254.19	0.5079	74.967	125.094	7.65526	1.504	2.695	1452
56	11.29472	266.85	0.4859	78.173	130.460	7.75285	1.502	2.672	1483
58	11.75749	279.33	0.4658	81.356	135.786	7.84628	1.500	2.653	1513
60	12.21701	291.64	0.4475	84.520	141.076	7.93596	1.498	2.637	1542
62	12.67371	303.81	0.4307	87.665	146.335	8.02218	1.497	2.622	1570
64	13.12794	315.87	0.4152	90.794	151.567	8.10524	1.495	2.610	1598
66	13.58001	327.81	0.4009	93.910	156.776	8.18539	1.494	2.599	1625
68	14.03016	339.66	0.3876	97.015	161.965	8.26283	1.493	2.590	1652
70	14.47860	351.42	0.3752	100.110	167.136	8.33778	1.493	2.581	1678
75	15.59334	380.52	0.3476	107.813	180.000	8.51528	1.493	2.565	1741
80	16.70062	409.25	0.3240	115.483	192.796	8.68046	1.494	2.554	1800
85	17.80201	437.69	0.3035	123.138	205.549	8.83509	1.498	2.548	1857
90	18.89863	465.90	0.2855	130.795	218.282	8.98065	1.504	2.546	1911
95	19.99137	493.91	0.2697	138.472	231.018	9.11836	1.514	2.549	1963
100	21.08088	521.76	0.2555	146.189	243.779	9.24927	1.527	2.556	2012
105	22.16769	549.47	0.2428	153.966	256.588	9.37425	1.543	2.568	2058
110	23.25221	577.08	0.2313	161.827	269.469	9.49410	1.564	2.585	2102
115	24.33478	604.58	0.2209	169.793	282.447	9.60947	1.589	2.607	2143
120	25.41568	632.01	0.2114	177.888	295.546	9.72096	1.619	2.633	2182
125	26.49513	659.36	0.2026	186.135	308.789	9.82908	1.653	2.665	2219
130	27.57331	686.65	0.1946	194.555	322.201	9.93428	1.691	2.700	2254
140	29.72646	741.07	0.1804	211.999	349.613	10.13738	1.778	2.784	2319
150	31.87613	795.31	0.1681	230.368	377.933	10.33273	1.878	2.882	2377
160	34.02302	849.42	0.1574	249.773	407.277	10.52207	1.988	2.988	2432
170	36.16767	903.41	0.1480	270.289	437.721	10.70661	2.102	3.101	2485
180	38.31048	957.31	0.1397	291.947	469.299	10.88707	2.217	3.214	2536
190	40.45163	1011.13	0.1323	314.714	501.977	11.06337	2.330	3.326	2586
200	42.59152	1064.89	0.1256	338.597	535.767	11.23654	2.436	3.431	2636
220	46.86812	1172.25	0.1141	389.329	606.297	11.57253	2.622	3.615	2736
240	51.14144	1279.44	0.1045	443.336	680.086	11.89328	2.763	3.755	2838
260	55.41228	1386.51	0.0964	499.663	756.184	12.19796	2.857	3.848	2941
280	59.68120	1493.48	0.0895	557.463	833.746	12.48524	2.908	3.898	3045
300	63.94860	1600.38	0.0835	615.880	911.919	12.75503	2.925	3.915	3150
320	68.21478	1707.22	0.0782	674.369	990.157	13.00760	2.917	3.906	3254
340	72.47997	1814.01	0.0736	732.497	1068.030	13.24329	2.891	3.880	3358
360	76.74434	1920.75	0.0695	789.993	1145.267	13.46411	2.855	3.843	3461
380	81.00804	2027.47	0.0659	846.708	1221.720	13.67080	2.814	3.802	3562
400	85.27117	2134.15	0.0626	902.580	1297.327	13.86479	2.772	3.759	3662
420	89.53381	2240.81	0.0596	957.616	1372.096	14.04718	2.731	3.718	3760
440	93.79603	2347.45	0.0569	1011.868	1446.080	14.21930	2.693	3.680	3855
460	98.05790	2454.08	0.0544	1065.396	1519.338	14.38214	2.659	3.646	3948
480	102.31946	2560.68	0.0521	1118.286	1591.956	14.53645	2.629	3.616	4039
500	106.58075	2667.28	0.0500	1170.615	1664.012	14.68368	2.603	3.590	4128
520	110.84181	2773.86	0.0481	1222.464	1735.587	14.82417	2.581	3.568	4215
540	115.09463	2880.25	0.0463	1273.930	1806.741	14.95846	2.562	3.549	4299
560	119.35488	2986.80	0.0447	1324.947	1877.479	15.08660	2.547	3.534	4381
580	123.61497	3093.34	0.0431	1375.752	1948.005	15.21020	2.534	3.521	4462
600	127.87493	3199.87	0.0417	1426.363	2018.337	15.32948	2.524	3.510	4541
650	138.52432	3466.19	0.0385	1552.031	2193.304	15.60986	2.506	3.492	4731
700	149.17313	3732.47	0.0357	1677.046	2367.617	15.86847	2.495	3.481	4912
800	170.46953	4264.98	0.0313	1925.947	2715.105	16.33279	2.487	3.473	5253
1000	213.05938	5329.84	0.0250	2423.270	3409.590	17.10713	2.488	3.474	5872
2000	425.99174	10653.33	0.0125	4969.869	6941.922	19.54781	2.644	3.630	8231
3000	638.94471	15976.54	0.0083	7758.729	10716.611	21.06467	2.940	3.927	9943
4000	853.92568	21299.70	0.0063	11033.749	14986.846	22.48290	3.820	4.867	11212
5000	1095.60366	26622.84	0.0050	16757.437	21829.340	24.82422	8.332	9.968	12138

* TWO-PHASE BOUNDRY

25 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 24.945	4.81382	268.45	13.841	13119.87	0.0056823	0.04239	1.719	0.00577	1.25191	2.2273
25	4.81166	268.35	13.825	13080.65	0.0056987	0.04256	1.710	0.00578	1.25178	2.2124
26	4.78362	264.07	13.573	12274.12	0.0060734	0.04560	1.589	0.00594	1.25020	2.0115
28	4.72493	263.80	12.821	11143.57	0.0065293	0.05019	1.389	0.00617	1.24690	1.7161
30	4.66098	264.17	12.230	10212.31	0.0069850	0.05315	1.230	0.00618	1.24331	1.5380
32	4.59243	262.51	11.747	9289.99	0.0075335	0.05506	1.102	0.00606	1.23947	1.4255
34	4.52114	259.13	11.349	8391.43	0.0081796	0.05618	0.999	0.00586	1.23548	1.3563
36	4.44497	254.73	10.998	7533.17	0.0089082	0.05704	0.911	0.00566	1.23123	1.3047
38	4.36245	248.10	10.686	6650.39	0.0098301	0.05802	0.835	0.00545	1.22663	1.2638
* 39.975	4.27355	239.74	10.395	5773.02	0.0109795	0.05843	0.769	0.00519	1.22170	1.2467
* 39.975	0.13584	85.33	3.613	21.09	0.0368492	0.01116	0.084	0.02612	1.00657	0.8536
40	0.13579	85.39	3.613	21.11	0.0368026	0.01116	0.084	0.02615	1.00657	0.8533
42	0.12666	91.06	3.642	21.71	0.0329896	0.01151	0.088	0.03026	1.00613	0.8262
44	0.11893	96.72	3.655	22.18	0.0300882	0.01191	0.092	0.03441	1.00575	0.8067
46	0.11226	102.37	3.661	22.54	0.0277723	0.01233	0.095	0.03864	1.00543	0.7919
48	0.10640	107.98	3.662	22.84	0.0258609	0.01277	0.099	0.04298	1.00514	0.7802
50	0.10120	113.55	3.660	23.09	0.0242449	0.01322	0.103	0.04744	1.00489	0.7706
52	0.09655	119.06	3.658	23.30	0.0228534	0.01367	0.106	0.05203	1.00467	0.7623
54	0.09235	124.53	3.656	23.47	0.0216380	0.01413	0.110	0.05677	1.00446	0.7550
56	0.08854	129.95	3.653	23.63	0.0205642	0.01456	0.113	0.06154	1.00428	0.7499
58	0.08505	135.33	3.651	23.76	0.0196066	0.01499	0.117	0.06644	1.00411	0.7454
60	0.08185	140.66	3.649	23.87	0.0187451	0.01543	0.120	0.07148	1.00396	0.7413
62	0.07890	145.96	3.647	23.97	0.0179661	0.01586	0.124	0.07667	1.00381	0.7373
64	0.07617	151.24	3.646	24.06	0.0172567	0.01630	0.127	0.08200	1.00368	0.7337
66	0.07364	156.50	3.644	24.14	0.0166074	0.01674	0.131	0.08747	1.00356	0.7302
68	0.07128	161.75	3.642	24.21	0.0160101	0.01718	0.134	0.09308	1.00344	0.7270
70	0.06907	166.98	3.639	24.27	0.0154585	0.01762	0.137	0.09883	1.00334	0.7239
75	0.06413	180.06	3.632	24.40	0.0142454	0.01872	0.145	0.11379	1.00310	0.7170
80	0.05988	193.17	3.621	24.51	0.0132219	0.01982	0.153	0.12958	1.00289	0.7110
85	0.05617	206.39	3.607	24.59	0.0123447	0.02092	0.161	0.14616	1.00271	0.7057
90	0.05291	219.80	3.587	24.65	0.0115830	0.02202	0.168	0.16348	1.00256	0.7012
95	0.05002	233.52	3.561	24.71	0.0109146	0.02313	0.176	0.18141	1.00242	0.6977
100	0.04744	247.62	3.528	24.75	0.0103225	0.02424	0.183	0.19990	1.00229	0.6951
105	0.04511	262.21	3.487	24.79	0.0097941	0.02535	0.190	0.21879	1.00218	0.6936
110	0.04301	277.38	3.438	24.82	0.0093192	0.02654	0.197	0.23875	1.00208	0.6911
115	0.04109	293.23	3.382	24.84	0.0088898	0.02778	0.204	0.25930	1.00198	0.6890
120	0.03935	309.83	3.318	24.87	0.0084995	0.02901	0.211	0.27999	1.00190	0.6883
125	0.03774	327.24	3.249	24.89	0.0081480	0.03025	0.217	0.30074	1.00182	0.6889
130	0.03627	345.50	3.174	24.90	0.0078160	0.03148	0.224	0.32144	1.00175	0.6908
140	0.03364	384.74	3.016	24.93	0.0072366	0.03394	0.236	0.36238	1.00162	0.6980
150	0.03137	427.59	2.853	24.95	0.0067389	0.03686	0.249	0.40772	1.00151	0.6998
160	0.02939	473.87	2.695	24.97	0.0063064	0.04003	0.261	0.45577	1.00142	0.7003
170	0.02765	523.18	2.548	24.98	0.0059268	0.04321	0.272	0.50400	1.00134	0.7034
180	0.02610	574.93	2.414	24.99	0.0055910	0.05179	0.307	0.61722	1.00126	0.6868
190	0.02472	628.51	2.297	25.00	0.0052913	0.05677	0.326	0.69053	1.00119	0.6884
200	0.02348	683.12	2.195	25.00	0.0050226	0.06130	0.342	0.76100	1.00113	0.6900
220	0.02134	792.74	2.039	25.01	0.0045603	0.06915	0.368	0.89654	1.00103	0.6923
240	0.01955	899.02	1.934	25.02	0.0041765	0.07552	0.388	1.02868	1.00094	0.6938
260	0.01805	998.63	1.869	25.02	0.0038526	0.08057	0.404	1.16022	1.00087	0.6945
280	0.01676	1090.26	1.836	25.02	0.0035756	0.08446	0.418	1.29297	1.00081	0.6948
300	0.01564	1173.53	1.825	25.03	0.0033360	0.08741	0.431	1.42782	1.00075	0.6946
320	0.01466	1249.19	1.830	25.03	0.0031265	0.08962	0.442	1.56534	1.00071	0.6941
340	0.01380	1318.72	1.846	25.03	0.0029419	0.09131	0.453	1.70597	1.00067	0.6935
360	0.01303	1383.49	1.869	25.03	0.0027780	0.09263	0.464	1.84975	1.00063	0.6927
380	0.01234	1444.70	1.896	25.03	0.0026314	0.09371	0.474	1.99692	1.00060	0.6919
400	0.01173	1504.04	1.925	25.03	0.0024995	0.09468	0.484	2.14751	1.00057	0.6912
420	0.01117	1562.14	1.953	25.03	0.0023803	0.09558	0.493	2.30161	1.00054	0.6904
440	0.01066	1619.87	1.980	25.03	0.0022719	0.09649	0.502	2.45914	1.00051	0.6897
460	0.01020	1677.97	2.005	25.03	0.0021730	0.09743	0.511	2.62012	1.00049	0.6890
480	0.00977	1736.52	2.028	25.03	0.0020823	0.09841	0.520	2.78465	1.00047	0.6885
500	0.00938	1795.97	2.048	25.03	0.0019990	0.09946	0.529	2.95277	1.00045	0.6880
520	0.00902	1856.35	2.065	25.03	0.0019220	0.10057	0.538	3.12443	1.00044	0.6875
540	0.00869	1917.46	2.080	25.03	0.0018508	0.10173	0.547	3.29937	1.00042	0.6871
560	0.00838	1980.07	2.093	25.02	0.0017847	0.10298	0.556	3.47807	1.00040	0.6867
580	0.00809	2043.35	2.103	25.02	0.0017231	0.10426	0.565	3.66041	1.00039	0.6864
600	0.00782	2107.55	2.112	25.02	0.0016656	0.10559	0.573	3.84630	1.00038	0.6862
650	0.00722	2271.09	2.127	25.02	0.0015375	0.10906	0.595	4.32675	1.00035	0.6856
700	0.00670	2438.21	2.136	25.02	0.0014277	0.11271	0.616	4.83011	1.00032	0.6853
800	0.00587	2780.32	2.142	25.02	0.0012492	0.12030	0.659	5.90447	1.00028	0.6847
1000	0.00469	3475.88	2.141	25.02	0.0009995	0.13570	0.742	8.32235	1.00023	0.6841
2000	0.00235	7261.89	2.014	25.01	0.0004998	0.27727	1.129	32.54022	1.00011	0.5320
3000	0.00157	11782.85	1.811	25.00	0.0003333	0.39584	1.473	64.40685	1.00008	0.5260
4000	0.00117	19425.62	1.397	24.94	0.0002506	0.65344	1.789	114.63711	1.00006	0.4798
5000	0.00091	48445.60	0.657	24.30	0.0002058	1.97229	2.112	216.77108	1.00004	0.3843

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

30 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 24.966	0.20768	2730.56	74.5838	-132.871	-131.717	1.18804	1.119	1.526	4152
25	0.20775	2731.00	74.5743	-132.810	-131.656	1.19049	1.120	1.527	4153
26	0.20896	2577.49	74.5789	-131.255	-130.094	1.25174	1.148	1.602	4082
28	0.21155	2367.00	72.8521	-127.968	-126.793	1.37407	1.201	1.721	3964
30	0.21444	2199.26	71.4220	-124.413	-123.222	1.49728	1.251	1.844	3875
32	0.21760	2036.29	70.0987	-120.601	-119.392	1.62089	1.297	1.974	3789
34	0.22105	1863.90	68.7305	-116.522	-115.294	1.74510	1.337	2.117	3697
36	0.22483	1702.90	67.1981	-112.170	-110.921	1.87006	1.372	2.266	3609
38	0.22906	1532.99	65.4707	-107.495	-106.223	1.99704	1.402	2.434	3512
40	0.23386	1355.09	63.4628	-102.458	-101.158	2.12690	1.427	2.631	3402
* 41.299	0.23734	1231.61	61.9440	-98.969	-97.650	2.21321	1.440	2.782	3320
* 41.299	6.21091	153.14	0.9300	51.679	86.182	6.66720	1.595	3.261	1204
42	6.37309	159.20	0.9019	53.036	88.440	6.72142	1.581	3.195	1221
44	6.82350	175.62	0.8331	56.773	94.679	6.86656	1.554	3.053	1264
46	7.25829	191.07	0.7770	60.361	100.682	7.00000	1.537	2.955	1304
48	7.68157	205.81	0.7298	63.846	106.519	7.12421	1.527	2.884	1342
50	8.09600	220.00	0.6891	67.256	112.231	7.24081	1.520	2.830	1378
52	8.50337	233.77	0.6536	70.608	117.846	7.35093	1.515	2.787	1412
54	8.90498	247.20	0.6220	73.915	123.384	7.45543	1.511	2.752	1444
56	9.30181	260.34	0.5938	77.184	128.858	7.55496	1.508	2.723	1476
58	9.69460	273.23	0.5683	80.423	134.278	7.65007	1.505	2.698	1506
60	10.08395	285.92	0.5451	83.635	139.654	7.74119	1.503	2.677	1536
62	10.47031	298.43	0.5240	86.824	144.989	7.82866	1.500	2.658	1565
64	10.85408	310.79	0.5046	89.993	150.290	7.91281	1.499	2.643	1593
66	11.23560	323.02	0.4868	93.145	155.561	7.99391	1.497	2.629	1621
68	11.61512	335.13	0.4702	96.282	160.807	8.07221	1.496	2.617	1648
70	11.99288	347.13	0.4549	99.407	166.030	8.14792	1.495	2.606	1674
75	12.93071	376.75	0.4208	107.176	179.008	8.32700	1.495	2.586	1738
80	13.86090	405.92	0.3917	114.900	191.900	8.49341	1.496	2.572	1798
85	14.78508	434.74	0.3666	122.600	204.734	8.64903	1.499	2.563	1855
90	15.70443	463.27	0.3446	130.296	217.537	8.79539	1.506	2.559	1910
95	16.61983	491.56	0.3252	138.007	230.334	8.93376	1.515	2.560	1962
100	17.53197	519.66	0.3079	145.755	243.148	9.06521	1.528	2.566	2011
105	18.44138	547.60	0.2925	153.559	256.004	9.19066	1.544	2.577	2058
110	19.34849	575.40	0.2785	161.443	268.927	9.31089	1.565	2.593	2102
115	20.25363	603.09	0.2659	169.430	281.943	9.42660	1.590	2.614	2143
120	21.15710	630.67	0.2544	177.544	295.076	9.53838	1.619	2.640	2182
125	22.05910	658.17	0.2438	185.808	308.350	9.64675	1.653	2.671	2219
130	22.95983	685.59	0.2341	194.244	321.790	9.75217	1.691	2.706	2254
140	24.75808	740.24	0.2169	211.715	349.250	9.95563	1.779	2.789	2319
150	26.55284	794.69	0.2021	230.106	377.612	10.15127	1.879	2.885	2378
160	28.34482	848.97	0.1892	249.531	406.992	10.34084	1.988	2.992	2433
170	30.13455	903.11	0.1779	270.064	437.467	10.52556	2.102	3.104	2485
180	31.92244	957.15	0.1678	291.736	469.072	10.70618	2.217	3.217	2536
190	33.70868	1011.08	0.1589	314.518	501.776	10.88262	2.330	3.328	2587
200	35.49364	1064.94	0.1508	338.413	535.587	11.05590	2.436	3.433	2637
220	39.06042	1172.47	0.1370	389.166	606.154	11.39207	2.622	3.617	2737
240	42.62392	1279.81	0.1255	443.190	679.973	11.71295	2.763	3.756	2839
260	46.18493	1387.00	0.1157	499.530	756.096	12.01773	2.857	3.849	2942
280	49.74403	1494.07	0.1074	557.342	833.680	12.30509	2.908	3.899	3046
300	53.30161	1601.05	0.1002	615.770	911.871	12.57494	2.926	3.916	3151
320	56.85798	1707.96	0.0939	674.268	990.124	12.82756	2.917	3.906	3255
340	60.41336	1814.81	0.0884	732.404	1068.011	13.06329	2.891	3.880	3359
360	63.96792	1921.62	0.0835	789.906	1145.260	13.28415	2.855	3.844	3462
380	67.52181	2028.38	0.0790	846.627	1221.724	13.49087	2.814	3.802	3563
400	71.07512	2135.11	0.0751	902.505	1297.340	13.68488	2.772	3.760	3663
420	74.62795	2241.80	0.0715	957.545	1372.118	13.86729	2.731	3.719	3761
440	78.18037	2348.48	0.0682	1011.803	1446.109	14.03943	2.693	3.681	3856
460	81.73243	2455.13	0.0653	1065.335	1519.374	14.20229	2.659	3.647	3949
480	85.28418	2561.76	0.0625	1118.228	1591.998	14.35661	2.629	3.616	4040
500	88.83567	2668.38	0.0600	1170.561	1664.060	14.50385	2.603	3.590	4129
520	92.38691	2774.99	0.0577	1222.413	1735.640	14.64435	2.581	3.568	4216
540	95.93138	2881.40	0.0556	1273.885	1806.801	14.77866	2.562	3.549	4300
560	99.48188	2987.97	0.0536	1324.904	1877.544	14.90681	2.547	3.534	4382
580	103.03222	3094.53	0.0517	1375.711	1948.074	15.03041	2.535	3.521	4463
600	106.58243	3201.07	0.0500	1426.324	2018.409	15.14970	2.524	3.511	4542
650	115.45744	3467.42	0.0462	1551.997	2193.384	15.43009	2.506	3.492	4732
700	124.33187	3733.73	0.0429	1677.016	2367.703	15.68871	2.495	3.481	4913
800	142.07951	4266.27	0.0375	1925.923	2715.201	16.15304	2.487	3.473	5254
1000	177.57185	5331.18	0.0300	2423.253	3409.698	16.92739	2.488	3.474	5872
2000	355.01668	10654.74	0.0150	4969.864	6942.048	19.36808	2.644	3.630	8232
3000	532.47585	15977.97	0.0100	7758.393	10716.396	20.88482	2.938	3.925	9944
4000	711.47764	21301.13	0.0075	11013.905	14966.296	22.29759	3.762	4.804	11225
5000	910.79118	26524.28	0.0060	16523.125	21582.741	24.59018	7.903	9.478	12153

* TWO-PHASE BOUNDRY

30 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.966	4.81505	268.93	13.838	13147.80	0.0056727	0.04247	1.721	0.00578	1.25197	2.2249
25	4.81348	269.21	13.828	13145.61	0.0056729	0.04258	1.715	0.00579	1.25189	2.2141
26	4.78551	264.89	13.576	12334.64	0.0060463	0.04562	1.593	0.00595	1.25031	2.0128
28	4.72698	264.33	12.834	11188.73	0.0065112	0.05022	1.392	0.00617	1.24702	1.7179
30	4.66320	264.72	12.243	10255.58	0.0069642	0.05318	1.233	0.00619	1.24343	1.5392
32	4.59552	263.50	11.763	9357.80	0.0074909	0.05511	1.106	0.00608	1.23964	1.4256
34	4.52379	259.72	11.361	8431.88	0.0081513	0.05623	1.001	0.00587	1.23563	1.3567
36	4.44786	255.39	11.010	7574.23	0.0088719	0.05710	0.913	0.00567	1.23139	1.3045
38	4.36570	248.83	10.697	6692.57	0.0097826	0.05809	0.837	0.00547	1.22681	1.2630
40	4.27610	240.19	10.402	5794.48	0.0109523	0.05851	0.770	0.00520	1.22184	1.2463
* 41.299	4.21329	233.05	10.211	5189.14	0.0119372	0.05851	0.730	0.00499	1.21836	1.2494
* 41.299	0.16101	86.46	3.622	24.66	0.0377198	0.01173	0.087	0.02233	1.00779	0.8751
42	0.15691	88.50	3.635	24.98	0.0361040	0.01183	0.089	0.02359	1.00759	0.8626
44	0.14655	94.33	3.658	25.74	0.0323680	0.01217	0.092	0.02720	1.00709	0.8344
46	0.13777	100.13	3.668	26.32	0.0295170	0.01256	0.096	0.03084	1.00667	0.8141
48	0.13018	105.88	3.671	26.79	0.0272393	0.01297	0.100	0.03453	1.00630	0.7986
50	0.12352	111.58	3.671	27.17	0.0253602	0.01339	0.103	0.03831	1.00597	0.7861
52	0.11760	117.23	3.669	27.49	0.0237726	0.01383	0.107	0.04219	1.00569	0.7758
54	0.11230	122.81	3.666	27.76	0.0224071	0.01427	0.110	0.04618	1.00543	0.7670
56	0.10751	128.33	3.664	27.99	0.0212156	0.01470	0.114	0.05021	1.00520	0.7603
58	0.10315	133.81	3.661	28.18	0.0201640	0.01512	0.117	0.05434	1.00499	0.7545
60	0.09917	139.23	3.658	28.35	0.0192262	0.01555	0.121	0.05859	1.00479	0.7493
62	0.09551	144.60	3.657	28.50	0.0183849	0.01598	0.124	0.06295	1.00462	0.7445
64	0.09213	149.94	3.655	28.63	0.0176239	0.01642	0.128	0.06743	1.00445	0.7401
66	0.08900	155.27	3.653	28.75	0.0169313	0.01685	0.131	0.07203	1.00430	0.7361
68	0.08609	160.57	3.651	28.85	0.0162974	0.01729	0.134	0.07673	1.00416	0.7323
70	0.08338	165.86	3.648	28.94	0.0157145	0.01772	0.138	0.08156	1.00403	0.7287
75	0.07734	179.06	3.640	29.14	0.0144410	0.01882	0.146	0.09409	1.00374	0.7209
80	0.07215	192.27	3.629	29.29	0.0133747	0.01991	0.154	0.10731	1.00349	0.7142
85	0.06764	205.58	3.614	29.40	0.0124661	0.02100	0.161	0.12118	1.00327	0.7084
90	0.06368	219.07	3.594	29.50	0.0116810	0.02210	0.169	0.13565	1.00308	0.7035
95	0.06017	232.85	3.568	29.58	0.0109946	0.02321	0.176	0.15065	1.00291	0.6996
100	0.05704	247.01	3.534	29.64	0.0103886	0.02431	0.183	0.16610	1.00276	0.6968
105	0.05423	261.65	3.493	29.69	0.0098492	0.02542	0.190	0.18188	1.00262	0.6951
110	0.05168	276.86	3.444	29.74	0.0093655	0.02661	0.197	0.19856	1.00250	0.6924
115	0.04937	292.74	3.387	29.78	0.0089291	0.02784	0.204	0.21572	1.00238	0.6901
120	0.04727	309.37	3.323	29.81	0.0085330	0.02907	0.211	0.23300	1.00228	0.6893
125	0.04533	326.80	3.253	29.84	0.0081717	0.03031	0.217	0.25033	1.00219	0.6898
130	0.04355	345.09	3.179	29.86	0.0078408	0.03154	0.224	0.26762	1.00210	0.6916
140	0.04039	384.36	3.020	29.90	0.0072554	0.03399	0.237	0.30178	1.00195	0.6987
150	0.03766	427.25	2.857	29.93	0.0067533	0.03691	0.249	0.33963	1.00182	0.7004
160	0.03528	473.55	2.698	29.95	0.0063176	0.04008	0.261	0.37973	1.00170	0.7008
170	0.03318	522.88	2.550	29.97	0.0059357	0.04325	0.272	0.41998	1.00160	0.7037
180	0.03133	574.66	2.417	29.98	0.0055980	0.05180	0.307	0.51399	1.00151	0.6872
190	0.02967	628.28	2.299	29.99	0.0052969	0.05677	0.326	0.57507	1.00143	0.6888
200	0.02817	682.91	2.197	30.00	0.0050272	0.06131	0.342	0.63381	1.00136	0.6903
220	0.02560	792.59	2.040	30.02	0.0045632	0.06915	0.368	0.74682	1.00124	0.6926
240	0.02346	898.93	1.935	30.03	0.0041784	0.07552	0.388	0.85702	1.00113	0.6940
260	0.02165	998.80	1.871	30.03	0.0038539	0.08057	0.404	0.96671	1.00105	0.6947
280	0.02010	1090.27	1.837	30.04	0.0035765	0.08445	0.418	1.07740	1.00097	0.6949
300	0.01876	1173.60	1.826	30.04	0.0033365	0.08741	0.431	1.18984	1.00091	0.6947
320	0.01759	1249.30	1.831	30.04	0.0031268	0.08962	0.442	1.30451	1.00085	0.6942
340	0.01655	1318.86	1.847	30.04	0.0029421	0.09132	0.453	1.42176	1.00080	0.6936
360	0.01563	1383.67	1.870	30.04	0.0027780	0.09264	0.464	1.54163	1.00075	0.6928
380	0.01481	1444.91	1.897	30.04	0.0026313	0.09372	0.474	1.66433	1.00071	0.6920
400	0.01407	1504.27	1.925	30.04	0.0024994	0.09468	0.484	1.78988	1.00068	0.6912
420	0.01340	1562.39	1.954	30.04	0.0023801	0.09559	0.493	1.91834	1.00065	0.6905
440	0.01279	1620.14	1.981	30.04	0.0022717	0.09649	0.502	2.04966	1.00062	0.6898
460	0.01224	1678.26	2.006	30.04	0.0021728	0.09743	0.511	2.18386	1.00059	0.6891
480	0.01173	1736.82	2.029	30.04	0.0020821	0.09842	0.520	2.32102	1.00057	0.6885
500	0.01126	1796.28	2.049	30.04	0.0019988	0.09947	0.529	2.46116	1.00054	0.6880
520	0.01082	1856.67	2.066	30.04	0.0019218	0.10058	0.538	2.60426	1.00052	0.6875
540	0.01042	1917.80	2.081	30.04	0.0018506	0.10174	0.547	2.75010	1.00050	0.6871
560	0.01005	1980.42	2.093	30.04	0.0017845	0.10299	0.556	2.89906	1.00049	0.6868
580	0.00971	2043.71	2.104	30.03	0.0017229	0.10427	0.565	3.05105	1.00047	0.6865
600	0.00938	2107.91	2.112	30.03	0.0016654	0.10560	0.573	3.20600	1.00045	0.6862
650	0.00856	2271.46	2.127	30.03	0.0015373	0.10908	0.595	3.60649	1.00042	0.6857
700	0.00804	2438.59	2.136	30.03	0.0014275	0.11272	0.616	4.02607	1.00039	0.6853
800	0.00704	2780.72	2.142	30.03	0.0012491	0.12032	0.659	4.92158	1.00034	0.6847
1000	0.00553	3476.30	2.141	30.02	0.0009993	0.13571	0.742	6.93695	1.00027	0.6841
2000	0.00282	7262.36	2.014	30.01	0.0004998	0.27727	1.129	27.11860	1.00014	0.5321
3000	0.00188	11777.80	1.812	30.01	0.0003333	0.39555	1.473	53.66014	1.00009	0.5262
4000	0.00141	19175.41	1.418	29.94	0.0002505	0.64056	1.789	94.87555	1.00007	0.4831
5000	0.00110	46176.44	0.691	29.23	0.0002053	1.85745	2.110	178.49359	1.00005	0.3876

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

35 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 24.987	0.20763	2735.67	74.6162	-132.865	-131.520	1.18824	1.120	1.526	4156
25	0.20767	2743.43	74.6061	-132.837	-131.491	1.18940	1.120	1.525	4160
26	0.20888	2589.09	74.6124	-131.284	-129.930	1.25060	1.148	1.599	4088
28	0.21146	2375.50	72.9438	-128.002	-126.631	1.37284	1.201	1.720	3971
30	0.21434	2207.46	71.5102	-124.453	-123.064	1.49593	1.251	1.842	3881
32	0.21749	2044.48	70.1871	-120.648	-119.238	1.61939	1.296	1.972	3796
34	0.22092	1871.71	68.8218	-116.577	-115.145	1.74346	1.337	2.114	3703
36	0.22468	1710.99	67.2891	-112.234	-110.778	1.86825	1.372	2.262	3616
38	0.22889	1541.47	65.5668	-107.572	-106.089	1.99498	1.402	2.430	3519
40	0.23363	1368.71	63.5786	-102.561	-101.047	2.12427	1.426	2.620	3413
42	0.23914	1185.87	61.1452	-97.117	-95.567	2.25792	1.446	2.848	3290
* 42.475	0.24055	1147.15	60.5021	-95.765	-94.206	2.29015	1.450	2.902	3262
* 42.475	5.37081	150.50	1.0854	52.057	86.865	6.55595	1.605	3.381	1212
44	5.68236	164.17	1.0148	55.079	91.907	6.67258	1.577	3.227	1248
46	6.07313	180.88	0.9397	58.852	98.213	6.81275	1.553	3.087	1291
48	6.45027	196.62	0.8780	62.479	104.284	6.94196	1.539	2.989	1330
50	6.81724	211.62	0.8258	66.002	110.185	7.06242	1.529	2.916	1367
52	7.17630	226.07	0.7806	69.448	115.958	7.17563	1.522	2.859	1402
54	7.52902	240.08	0.7410	72.834	121.630	7.28266	1.517	2.814	1436
56	7.87652	253.72	0.7059	76.171	127.219	7.38431	1.513	2.777	1469
58	8.21969	267.06	0.6744	79.469	132.741	7.48120	1.510	2.746	1500
60	8.55918	280.14	0.6459	82.735	138.207	7.57385	1.507	2.719	1530
62	8.89551	293.01	0.6200	85.970	143.623	7.66263	1.504	2.696	1560
64	9.22913	305.69	0.5964	89.181	148.995	7.74792	1.502	2.677	1589
66	9.56038	318.20	0.5747	92.370	154.331	7.83002	1.500	2.660	1617
68	9.88957	330.57	0.5547	95.541	159.636	7.90921	1.499	2.645	1644
70	10.21693	342.82	0.5361	98.697	164.914	7.98570	1.498	2.632	1671
75	11.02858	372.98	0.4952	106.533	178.010	8.16641	1.497	2.607	1735
80	11.83239	402.59	0.4604	114.313	190.999	8.33407	1.498	2.590	1796
85	12.63006	431.79	0.4304	122.060	203.916	8.49069	1.501	2.578	1854
90	13.42283	460.64	0.4043	129.796	216.790	8.63786	1.507	2.572	1909
95	14.21160	489.22	0.3813	137.542	229.648	8.77690	1.516	2.572	1961
100	14.99707	517.57	0.3608	145.319	242.516	8.90891	1.529	2.576	2010
105	15.77978	545.73	0.3425	153.150	255.420	9.03482	1.545	2.586	2057
110	16.56017	573.73	0.3261	161.058	268.385	9.15545	1.566	2.601	2101
115	17.33859	601.60	0.3112	169.067	281.439	9.27149	1.591	2.621	2143
120	18.11532	629.34	0.2976	177.199	294.606	9.38357	1.620	2.646	2182
125	18.89058	656.99	0.2852	185.480	307.911	9.49219	1.654	2.676	2219
130	19.66456	684.54	0.2738	193.932	321.379	9.59783	1.692	2.711	2254
140	21.20931	739.43	0.2536	211.430	348.888	9.80166	1.779	2.793	2319
150	22.75056	794.07	0.2362	229.844	377.292	9.99758	1.879	2.889	2378
160	24.28902	848.53	0.2211	249.289	406.707	10.18738	1.988	2.995	2434
170	25.82524	902.82	0.2078	269.839	437.213	10.37229	2.102	3.107	2486
180	27.35962	956.99	0.1961	291.526	468.845	10.55306	2.217	3.219	2537
190	28.89233	1011.04	0.1856	314.322	501.575	10.72964	2.330	3.330	2587
200	30.42378	1065.00	0.1761	338.229	535.407	10.90303	2.437	3.435	2637
220	33.48353	1172.71	0.1599	389.002	606.011	11.23938	2.622	3.618	2738
240	36.54000	1280.18	0.1465	443.043	679.861	11.56039	2.763	3.757	2840
260	39.59400	1387.49	0.1351	499.398	756.009	11.86527	2.858	3.850	2943
280	42.64608	1494.66	0.1254	557.222	833.613	12.15271	2.909	3.900	3047
300	45.69664	1601.73	0.1170	615.660	911.822	12.42262	2.926	3.917	3152
320	48.74600	1708.71	0.1096	674.166	990.092	12.67529	2.917	3.907	3256
340	51.79436	1815.62	0.1031	732.310	1067.992	12.91107	2.891	3.881	3360
360	54.84192	1922.48	0.0974	789.819	1145.253	13.13195	2.855	3.844	3463
380	57.88879	2029.29	0.0922	846.547	1221.727	13.33870	2.814	3.803	3564
400	60.93510	2136.06	0.0876	902.430	1297.353	13.53274	2.772	3.760	3664
420	63.98092	2242.79	0.0834	957.475	1372.139	13.71517	2.731	3.719	3762
440	67.02633	2349.50	0.0796	1011.737	1446.138	13.88733	2.693	3.681	3857
460	70.07139	2456.18	0.0762	1065.273	1519.410	14.05020	2.659	3.647	3950
480	73.11613	2562.85	0.0730	1118.171	1592.040	14.20454	2.629	3.617	4041
500	76.16061	2669.49	0.0701	1170.507	1664.108	14.35179	2.603	3.591	4130
520	79.20485	2776.11	0.0674	1222.362	1735.693	14.49230	2.581	3.568	4217
540	82.24335	2882.56	0.0649	1273.839	1806.862	14.62662	2.562	3.549	4301
560	85.28589	2989.14	0.0625	1324.860	1877.609	14.75478	2.547	3.534	4383
580	88.33026	3095.71	0.0604	1375.670	1948.143	14.87839	2.535	3.521	4464
600	91.37350	3202.28	0.0584	1426.285	2018.482	14.99769	2.524	3.511	4542
650	98.98110	3468.65	0.0539	1551.963	2193.464	15.27809	2.506	3.492	4732
700	106.58812	3734.98	0.0500	1676.986	2367.789	15.53672	2.495	3.481	4914
800	121.80093	4267.57	0.0438	1925.899	2715.297	16.00106	2.487	3.473	5254
1000	152.22362	5332.53	0.0350	2423.237	3409.806	16.77542	2.488	3.474	5873
2000	304.32020	10656.16	0.0175	4969.859	6942.174	19.21613	2.644	3.630	8232
3000	456.42702	15979.39	0.0117	7758.132	10716.259	20.73278	2.937	3.924	9945
4000	609.75789	21302.57	0.0088	10998.481	14950.354	22.14130	3.716	4.754	11235
5000	779.20905	26625.72	0.0070	16340.984	21391.079	24.39600	7.569	9.097	12166

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

35 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 24.987	4.81629	269.41	13.836	13175.75	0.0056631	0.04255	1.722	0.00579	1.25204	2.2226
25	4.81531	270.07	13.831	13210.45	0.0056475	0.04259	1.719	0.00580	1.25199	2.2159
26	4.78741	265.71	13.579	12395.03	0.0060195	0.04564	1.596	0.00596	1.25042	2.0141
28	4.72902	264.86	12.848	11233.79	0.0064933	0.05025	1.396	0.00618	1.24713	1.7197
30	4.66542	265.26	12.256	10298.72	0.0069436	0.05322	1.236	0.00619	1.24356	1.5404
32	4.59795	264.08	11.775	9400.42	0.0074664	0.05516	1.108	0.00608	1.23978	1.4264
34	4.52644	260.30	11.373	8472.20	0.0081232	0.05628	1.003	0.00588	1.23578	1.3571
36	4.45073	256.04	11.021	7615.17	0.0088362	0.05716	0.915	0.00568	1.23155	1.3043
38	4.36893	249.55	10.708	6734.56	0.0097359	0.05816	0.839	0.00548	1.22699	1.2624
40	4.28019	241.45	10.414	5858.34	0.0108527	0.05860	0.772	0.00523	1.22206	1.2433
42	4.18169	230.97	10.114	4958.93	0.0123303	0.05852	0.711	0.00491	1.21661	1.2463
* 42.475	4.15706	228.74	10.039	4768.76	0.0126872	0.05843	0.698	0.00484	1.21525	1.2476
* 42.475	0.18619	87.29	3.632	28.02	0.0387341	0.01226	0.090	0.01948	1.00902	0.8971
44	0.17598	91.88	3.657	28.89	0.0351255	0.01247	0.093	0.02196	1.00852	0.8677
46	0.16466	97.85	3.674	29.78	0.0315514	0.01280	0.097	0.02519	1.00797	0.8398
48	0.15503	103.76	3.680	30.48	0.0288045	0.01318	0.100	0.02844	1.00750	0.8193
50	0.14669	109.61	3.681	31.04	0.0266013	0.01358	0.104	0.03175	1.00710	0.8034
52	0.13935	115.38	3.680	31.50	0.0247797	0.01399	0.107	0.03513	1.00674	0.7906
54	0.13282	121.08	3.677	31.89	0.0232391	0.01442	0.111	0.03858	1.00642	0.7799
56	0.12696	126.72	3.674	32.21	0.0219131	0.01484	0.115	0.04209	1.00614	0.7714
58	0.12156	132.29	3.671	32.49	0.0207559	0.01526	0.118	0.04569	1.00588	0.7642
60	0.11683	137.80	3.668	32.73	0.0197334	0.01568	0.121	0.04936	1.00565	0.7578
62	0.11242	143.24	3.666	32.94	0.0188238	0.01611	0.125	0.05315	1.00544	0.7520
64	0.10835	148.65	3.665	33.12	0.0180067	0.01654	0.128	0.05702	1.00524	0.7468
66	0.10460	154.03	3.662	33.28	0.0172675	0.01697	0.131	0.06099	1.00506	0.7421
68	0.10112	159.40	3.660	33.43	0.0165946	0.01740	0.135	0.06505	1.00489	0.7377
70	0.09788	164.74	3.657	33.55	0.0159785	0.01783	0.138	0.06921	1.00473	0.7337
75	0.09067	178.07	3.648	33.82	0.0146414	0.01892	0.146	0.08001	1.00438	0.7249
80	0.08451	191.39	3.637	34.02	0.0135303	0.02000	0.154	0.09139	1.00408	0.7175
85	0.07918	204.78	3.622	34.19	0.0125893	0.02109	0.162	0.10333	1.00383	0.7111
90	0.07450	218.35	3.601	34.32	0.0117801	0.02219	0.169	0.11578	1.00360	0.7058
95	0.07037	232.19	3.574	34.42	0.0110754	0.02328	0.176	0.12867	1.00340	0.7016
100	0.06668	246.40	3.540	34.51	0.0104551	0.02438	0.184	0.14195	1.00322	0.6985
105	0.06337	261.09	3.498	34.58	0.0099046	0.02549	0.191	0.15552	1.00306	0.6966
110	0.06039	276.34	3.449	34.65	0.0094121	0.02668	0.198	0.16985	1.00292	0.6936
115	0.05767	292.25	3.392	34.70	0.0089685	0.02791	0.204	0.18459	1.00279	0.6912
120	0.05520	308.91	3.328	34.74	0.0085666	0.02913	0.211	0.19944	1.00267	0.6903
125	0.05294	326.37	3.258	34.78	0.0082005	0.03037	0.218	0.21433	1.00256	0.6907
130	0.05085	344.68	3.183	34.81	0.0078657	0.03160	0.224	0.22918	1.00246	0.6923
140	0.04715	383.99	3.024	34.86	0.0072742	0.03404	0.237	0.25849	1.00228	0.6993
150	0.04395	426.91	2.860	34.90	0.0067677	0.03695	0.249	0.29099	1.00212	0.7009
160	0.04117	473.24	2.701	34.93	0.0063288	0.04013	0.261	0.32542	1.00199	0.7012
170	0.03872	522.59	2.553	34.96	0.0059445	0.04330	0.273	0.35996	1.00187	0.7041
180	0.03655	574.39	2.419	34.98	0.0056050	0.04645	0.307	0.44025	1.00177	0.6876
190	0.03451	628.05	2.301	34.99	0.0053025	0.05678	0.326	0.49260	1.00167	0.6892
200	0.03267	682.71	2.199	35.01	0.0050316	0.06131	0.342	0.54297	1.00159	0.6907
220	0.02987	792.45	2.042	35.02	0.0045662	0.06915	0.368	0.63989	1.00144	0.6929
240	0.02737	898.84	1.937	35.04	0.0041804	0.07552	0.388	0.73440	1.00132	0.6942
260	0.02526	998.76	1.872	35.04	0.0038552	0.08057	0.404	0.82849	1.00122	0.6949
280	0.02345	1090.29	1.838	35.05	0.0035773	0.08445	0.418	0.92342	1.00113	0.6951
300	0.02188	1173.66	1.827	35.05	0.0033370	0.08741	0.431	1.01986	1.00106	0.6949
320	0.02051	1249.41	1.832	35.05	0.0031271	0.08963	0.442	1.11820	1.00099	0.6944
340	0.01931	1319.01	1.848	35.05	0.0029422	0.09132	0.453	1.21875	1.00093	0.6937
360	0.01823	1383.85	1.870	35.05	0.0027761	0.09264	0.464	1.32155	1.00088	0.6929
380	0.01727	1445.12	1.898	35.05	0.0026313	0.09372	0.474	1.42676	1.00083	0.6921
400	0.01641	1504.50	1.926	35.05	0.0024993	0.09469	0.484	1.53442	1.00079	0.6913
420	0.01563	1562.64	1.954	35.05	0.0023800	0.09560	0.493	1.64458	1.00075	0.6905
440	0.01492	1620.41	1.982	35.05	0.0022716	0.09650	0.502	1.75718	1.00072	0.6898
460	0.01427	1678.54	2.007	35.05	0.0021726	0.09744	0.511	1.87225	1.00069	0.6892
480	0.01368	1737.12	2.029	35.05	0.0020820	0.09843	0.521	1.98985	1.00066	0.6886
500	0.01313	1796.59	2.049	35.05	0.0019986	0.09948	0.530	2.11002	1.00063	0.6880
520	0.01263	1856.99	2.067	35.05	0.0019216	0.10059	0.538	2.23271	1.00061	0.6876
540	0.01216	1918.14	2.082	35.05	0.0018504	0.10175	0.547	2.35776	1.00059	0.6871
560	0.01173	1980.77	2.094	35.05	0.0017842	0.10299	0.556	2.48548	1.00057	0.6868
580	0.01132	2044.06	2.104	35.05	0.0017227	0.10428	0.565	2.61580	1.00055	0.6865
600	0.01094	2108.27	2.113	35.05	0.0016652	0.10561	0.573	2.74865	1.00053	0.6862
650	0.01010	2271.83	2.128	35.04	0.0015371	0.10909	0.595	3.09202	1.00049	0.6857
700	0.00938	2438.98	2.137	35.04	0.0014273	0.11274	0.616	3.45175	1.00045	0.6853
800	0.00821	2781.12	2.143	35.04	0.0012489	0.12033	0.659	4.21952	1.00040	0.6847
1000	0.00657	3476.73	2.142	35.03	0.0009992	0.13573	0.742	5.94737	1.00032	0.6841
2000	0.00329	7262.84	2.014	35.02	0.0004998	0.27727	1.129	23.24601	1.00016	0.5322
3000	0.00219	11774.00	1.813	35.01	0.0003332	0.39532	1.473	45.98670	1.00011	0.5264
4000	0.00164	18981.00	1.436	34.94	0.0002505	0.63054	1.790	80.87540	1.00008	0.4857
5000	0.00128	44404.34	0.721	34.17	0.0002049	1.76775	2.108	151.42496	1.00006	0.3906

* TWO-PHASE BOUNDRY

40 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.008	0.20758	2740.77	74.6486	-132.860	-131.323	1.18844	1.120	1.526	4159
26	0.20880	2500.65	74.6458	-131.313	-129.767	1.24946	1.148	1.597	4095
28	0.21137	2383.98	73.0353	-128.036	-126.470	1.37161	1.200	1.719	3977
30	0.21424	2215.63	71.5982	-124.493	-122.906	1.49459	1.250	1.840	3887
32	0.21737	2052.63	70.2751	-120.695	-119.085	1.61790	1.296	1.970	3802
34	0.22080	1879.50	68.9126	-116.631	-114.996	1.74182	1.336	2.112	3709
36	0.22454	1719.06	67.3797	-112.298	-110.634	1.86645	1.371	2.259	3622
38	0.22872	1549.89	65.6623	-107.649	-105.955	1.99294	1.401	2.425	3525
40	0.23344	1377.84	63.6817	-102.653	-100.924	2.12194	1.426	2.614	3421
42	0.23890	1195.48	61.2672	-97.231	-95.461	2.25518	1.445	2.839	3298
* 43.536	0.24368	1057.64	59.0715	-92.757	-90.952	2.36061	1.458	3.037	3195
* 43.536	4.72852	147.49	1.2439	52.276	87.300	6.45761	1.615	3.506	1218
44	4.81663	151.99	1.2163	53.248	88.924	6.49472	1.604	3.444	1230
46	5.17749	170.21	1.1165	57.249	95.598	6.64308	1.572	3.244	1276
48	5.52194	187.08	1.0367	61.043	101.944	6.77814	1.552	3.109	1318
50	5.85458	202.99	0.9706	64.696	108.061	6.90300	1.540	3.012	1356
52	6.17827	218.19	0.9143	68.247	114.009	7.01966	1.531	2.939	1393
54	6.49492	232.82	0.8654	71.721	119.828	7.12947	1.525	2.882	1428
56	6.80590	247.00	0.8224	75.133	125.543	7.23340	1.520	2.835	1461
58	7.11218	260.80	0.7842	78.495	131.174	7.33220	1.516	2.797	1493
60	7.41455	274.30	0.7499	81.817	136.736	7.42648	1.512	2.764	1524
62	7.71356	287.53	0.7188	85.102	142.236	7.51665	1.508	2.736	1554
64	8.00972	300.54	0.6906	88.356	147.684	7.60313	1.506	2.712	1584
66	8.30341	313.35	0.6648	91.585	153.088	7.68627	1.503	2.692	1612
68	8.59495	326.00	0.6411	94.792	158.454	7.76637	1.502	2.674	1640
70	8.88460	338.49	0.6191	97.980	163.787	7.84367	1.500	2.659	1667
75	9.60175	369.19	0.5709	105.885	177.004	8.02605	1.499	2.629	1732
80	10.31087	399.26	0.5301	113.721	190.093	8.19501	1.499	2.608	1794
85	11.01374	428.84	0.4951	121.516	203.094	8.35265	1.502	2.594	1852
90	11.71161	458.02	0.4646	129.293	216.040	8.50064	1.508	2.586	1907
95	12.40544	486.89	0.4379	137.074	228.960	8.64035	1.517	2.583	1960
100	13.09592	515.49	0.4142	144.883	241.883	8.77292	1.530	2.586	2010
105	13.78363	543.88	0.3930	152.741	254.835	8.89930	1.546	2.595	2057
110	14.46899	572.08	0.3740	160.672	267.843	9.02033	1.566	2.609	2101
115	15.15237	600.12	0.3568	168.702	280.935	9.13671	1.591	2.628	2143
120	15.83405	628.02	0.3411	176.854	294.136	9.24907	1.621	2.653	2182
125	16.51426	655.81	0.3268	185.152	307.472	9.35795	1.654	2.682	2220
130	17.19318	683.50	0.3137	193.619	320.968	9.46381	1.692	2.717	2255
140	18.54780	738.63	0.2904	211.145	348.527	9.66801	1.779	2.798	2320
150	19.89891	793.47	0.2704	229.582	376.972	9.86421	1.879	2.893	2379
160	21.24724	848.09	0.2531	249.047	406.423	10.05425	1.988	2.998	2434
170	22.59331	902.54	0.2378	269.613	436.960	10.23935	2.102	3.109	2487
180	23.93755	956.83	0.2243	291.315	468.619	10.42027	2.218	3.222	2538
190	25.28012	1011.00	0.2123	314.127	501.374	10.59699	2.330	3.333	2588
200	26.62143	1065.06	0.2015	338.046	535.228	10.77049	2.437	3.437	2638
220	29.30090	1172.94	0.1829	388.839	605.869	11.10701	2.623	3.620	2739
240	31.97710	1280.56	0.1675	442.897	679.748	11.42815	2.763	3.759	2841
260	34.65082	1387.98	0.1545	499.266	755.921	11.73313	2.858	3.852	2944
280	37.32264	1495.25	0.1434	557.101	833.547	12.02065	2.909	3.901	3048
300	39.99294	1602.40	0.1337	615.550	911.774	12.29062	2.926	3.917	3153
320	42.66203	1709.46	0.1253	674.065	990.059	12.54335	2.917	3.908	3257
340	45.33013	1816.43	0.1179	732.217	1067.973	12.77916	2.891	3.881	3361
360	47.99743	1923.34	0.1113	789.733	1145.246	13.00008	2.855	3.845	3464
380	50.66404	2030.20	0.1054	846.466	1221.731	13.20686	2.814	3.803	3565
400	53.33009	2137.01	0.1001	902.355	1297.366	13.40093	2.772	3.761	3665
420	55.99566	2243.79	0.0954	957.405	1372.161	13.58337	2.731	3.719	3763
440	58.66081	2350.53	0.0910	1011.672	1446.168	13.75555	2.693	3.681	3858
460	61.32561	2457.24	0.0870	1065.212	1519.446	13.91844	2.659	3.647	3951
480	63.99010	2563.93	0.0834	1118.113	1592.082	14.07279	2.629	3.617	4042
500	66.65433	2670.59	0.0801	1170.453	1664.156	14.22005	2.603	3.591	4131
520	69.31831	2777.24	0.0770	1222.311	1735.746	14.36057	2.581	3.569	4217
540	71.97734	2883.71	0.0741	1273.793	1806.923	14.49491	2.562	3.549	4302
560	74.64065	2990.31	0.0715	1324.817	1877.674	14.62308	2.547	3.534	4384
580	77.30380	3096.90	0.0690	1375.629	1948.212	14.74670	2.535	3.521	4465
600	79.96681	3203.48	0.0667	1426.247	2018.554	14.86600	2.524	3.511	4543
650	86.62384	3469.88	0.0616	1551.929	2193.544	15.14641	2.506	3.492	4733
700	93.28030	3736.24	0.0572	1676.956	2367.876	15.40505	2.495	3.481	4915
800	106.59199	4268.86	0.0500	1925.875	2715.393	15.86940	2.487	3.474	5255
1000	133.21244	5333.87	0.0400	2423.221	3409.914	16.64378	2.488	3.474	5874
2000	266.29784	10657.57	0.0200	4969.854	6942.300	19.08450	2.644	3.630	8233
3000	399.39061	15980.82	0.0133	7757.920	10716.173	20.60108	2.936	3.922	9946
4000	533.48514	21304.00	0.0100	10986.049	14937.528	22.00617	3.680	4.714	11244
5000	680.77514	26627.16	0.0080	16194.145	21236.590	24.23034	7.300	8.789	12178

* TWO-PHASE BOUNDRY

40 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.008	4.81751	269.88	13.833	13203.72	0.0056536	0.04264	1.723	0.00580	1.25211	2.2204
25	4.78930	266.52	13.581	12455.31	0.0059931	0.04566	1.600	0.00597	1.25052	2.0154
28	4.73105	265.39	12.862	11278.74	0.0064755	0.05028	1.399	0.00618	1.24725	1.7216
30	4.66763	265.80	12.269	10341.75	0.0069232	0.05326	1.239	0.00620	1.24368	1.5416
32	4.60038	264.65	11.787	9442.88	0.0074421	0.05520	1.111	0.00609	1.23991	1.4271
34	4.52907	260.88	11.385	8512.38	0.0080956	0.05633	1.006	0.00589	1.23592	1.3575
36	4.45359	256.68	11.032	7655.99	0.0088009	0.05722	0.918	0.00569	1.23171	1.3042
38	4.37215	250.27	10.719	6776.37	0.0096899	0.05823	0.842	0.00549	1.22717	1.2617
40	4.28381	242.28	10.425	5902.40	0.0107891	0.05868	0.774	0.00524	1.22226	1.2419
42	4.18592	231.89	10.126	5004.17	0.0122432	0.05861	0.713	0.00493	1.21684	1.2441
* 43.536	4.10380	223.18	9.872	4340.35	0.0136099	0.05823	0.670	0.00467	1.21230	1.2583
* 43.536	0.21148	87.91	3.643	31.19	0.0398786	0.01278	0.093	0.01724	1.01024	0.9198
44	0.20751	89.35	3.652	31.56	0.0385457	0.01282	0.094	0.01793	1.01006	0.9084
46	0.19314	95.52	3.678	32.67	0.0339616	0.01309	0.097	0.02089	1.00935	0.8700
48	0.18110	101.61	3.688	33.88	0.0306006	0.01342	0.101	0.02383	1.00877	0.8430
50	0.17081	107.61	3.691	34.67	0.0279928	0.01378	0.105	0.02679	1.00827	0.8227
52	0.16186	113.53	3.690	35.32	0.0258889	0.01417	0.108	0.02980	1.00783	0.8069
54	0.15397	119.35	3.687	35.85	0.0241428	0.01458	0.112	0.03286	1.00745	0.7939
56	0.14693	125.10	3.683	36.29	0.0226622	0.01499	0.115	0.03599	1.00711	0.7833
58	0.14060	130.77	3.680	36.67	0.0213858	0.01540	0.118	0.03917	1.00680	0.7744
60	0.13487	136.36	3.677	37.00	0.0202690	0.01582	0.122	0.04243	1.00652	0.7668
62	0.12964	141.88	3.676	37.28	0.0192843	0.01624	0.125	0.04578	1.00627	0.7599
64	0.12485	147.36	3.674	37.52	0.0184063	0.01666	0.129	0.04920	1.00604	0.7538
66	0.12043	152.81	3.672	37.74	0.0176169	0.01709	0.132	0.05270	1.00582	0.7483
68	0.11635	158.23	3.669	37.93	0.0169021	0.01751	0.135	0.05628	1.00563	0.7434
70	0.11255	163.63	3.666	38.10	0.0162508	0.01794	0.138	0.05994	1.00544	0.7388
75	0.10415	177.08	3.657	38.45	0.0148466	0.01902	0.146	0.06945	1.00504	0.7290
80	0.09698	190.50	3.645	38.72	0.0136889	0.02009	0.154	0.07945	1.00469	0.7208
85	0.09080	203.99	3.629	38.94	0.0127144	0.02118	0.162	0.08994	1.00439	0.7139
90	0.08539	217.63	3.608	39.11	0.0118803	0.02227	0.169	0.10087	1.00413	0.7081
95	0.08061	231.54	3.581	39.25	0.0111569	0.02336	0.177	0.11219	1.00390	0.7036
100	0.07636	245.80	3.546	39.36	0.0105222	0.02446	0.184	0.12384	1.00369	0.7002
105	0.07255	260.53	3.504	39.46	0.0099603	0.02556	0.191	0.13575	1.00351	0.6980
110	0.06911	275.82	3.454	39.54	0.0094588	0.02674	0.198	0.14832	1.00334	0.6949
115	0.06600	291.77	3.397	39.61	0.0090080	0.02797	0.205	0.16125	1.00319	0.6924
120	0.06316	308.46	3.333	39.66	0.0086002	0.02920	0.211	0.17427	1.00305	0.6913
125	0.06055	325.94	3.262	39.71	0.0082294	0.03043	0.218	0.18733	1.00293	0.6915
130	0.05816	344.28	3.187	39.75	0.0078905	0.03166	0.224	0.20035	1.00281	0.6931
140	0.05391	383.62	3.027	39.82	0.0072929	0.03409	0.237	0.22603	1.00260	0.7000
150	0.05025	426.57	2.864	39.87	0.0067821	0.03700	0.249	0.25452	1.00243	0.7014
160	0.04706	472.93	2.704	39.92	0.0063400	0.04017	0.261	0.28469	1.00227	0.7016
170	0.04426	522.30	2.556	39.95	0.0059533	0.04335	0.273	0.31495	1.00214	0.7044
180	0.04178	574.13	2.421	39.97	0.0056120	0.05181	0.307	0.38495	1.00202	0.6881
190	0.03956	627.62	2.303	39.99	0.0053080	0.05678	0.326	0.43075	1.00191	0.6896
200	0.03756	682.51	2.201	40.01	0.0050361	0.06131	0.342	0.47484	1.00181	0.6910
220	0.03413	792.30	2.044	40.03	0.0045691	0.06915	0.368	0.55969	1.00165	0.6932
240	0.03127	898.75	1.938	40.05	0.0041823	0.07552	0.388	0.64244	1.00151	0.6945
260	0.02886	998.73	1.873	40.06	0.0038565	0.08057	0.404	0.72482	1.00139	0.6952
280	0.02679	1090.31	1.839	40.06	0.0035781	0.08445	0.418	0.80794	1.00129	0.6953
300	0.02500	1173.73	1.828	40.07	0.0033375	0.08741	0.431	0.89238	1.00121	0.6950
320	0.02344	1249.52	1.833	40.07	0.0031275	0.08963	0.442	0.97847	1.00113	0.6945
340	0.02206	1319.16	1.848	40.07	0.0029424	0.09132	0.453	1.06650	1.00107	0.6938
360	0.02083	1384.03	1.871	40.07	0.0027781	0.09264	0.464	1.15649	1.00101	0.6930
380	0.01974	1445.32	1.898	40.07	0.0026313	0.09372	0.474	1.24859	1.00095	0.6922
400	0.01875	1504.73	1.927	40.07	0.0024992	0.09469	0.484	1.34283	1.00091	0.6914
420	0.01786	1562.90	1.955	40.07	0.0023799	0.09560	0.493	1.43926	1.00086	0.6906
440	0.01705	1620.68	1.982	40.07	0.0022714	0.09651	0.502	1.53782	1.00082	0.6899
460	0.01631	1678.83	2.007	40.07	0.0021725	0.09745	0.512	1.63855	1.00079	0.6892
480	0.01563	1737.42	2.030	40.07	0.0020818	0.09843	0.521	1.74148	1.00075	0.6886
500	0.01500	1796.90	2.050	40.07	0.0019984	0.09949	0.530	1.84666	1.00072	0.6881
520	0.01443	1857.32	2.067	40.07	0.0019214	0.10060	0.538	1.95405	1.00070	0.6876
540	0.01389	1918.48	2.082	40.06	0.0018502	0.10176	0.547	2.06351	1.00067	0.6872
560	0.01340	1981.11	2.094	40.06	0.0017840	0.10300	0.556	2.17530	1.00065	0.6868
580	0.01294	2044.41	2.105	40.06	0.0017225	0.10429	0.565	2.28936	1.00062	0.6865
600	0.01251	2108.63	2.113	40.06	0.0016650	0.10562	0.573	2.40564	1.00060	0.6862
650	0.01154	2272.21	2.128	40.06	0.0015369	0.10910	0.595	2.70616	1.00056	0.6857
700	0.01072	2439.36	2.137	40.05	0.0014271	0.11275	0.616	3.02101	1.00052	0.6853
800	0.00938	2781.53	2.143	40.05	0.0012488	0.12034	0.659	3.69297	1.00045	0.6847
1000	0.00751	3477.15	2.142	40.04	0.0009991	0.13575	0.743	5.20519	1.00036	0.6841
2000	0.00376	7263.32	2.014	40.02	0.0004997	0.27727	1.129	20.34157	1.00018	0.5322
3000	0.00250	11771.03	1.814	40.01	0.0003332	0.39513	1.474	40.23327	1.00012	0.5266
4000	0.00187	16824.36	1.450	39.93	0.0002504	0.62246	1.790	70.44546	1.00009	0.4880
5000	0.00147	42970.51	0.746	39.11	0.0002045	1.69516	2.107	131.30273	1.00007	0.3933

* TWO-PHASE BOUNDRY

45 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.029	0.20752	2745.89	74.6809	-132.855	-131.125	1.18863	1.121	1.526	4162
26	0.20872	2612.19	74.6791	-131.342	-129.603	1.24833	1.147	1.595	4102
28	0.21128	2392.44	73.1264	-128.069	-126.309	1.37039	1.200	1.717	3983
30	0.21414	2223.77	71.6858	-124.532	-122.748	1.49325	1.250	1.839	3893
32	0.21726	2060.75	70.3627	-120.741	-118.931	1.61641	1.296	1.968	3808
34	0.22065	1897.25	69.0142	-116.693	-114.855	1.73996	1.336	2.105	3722
36	0.22439	1727.09	67.4699	-112.361	-110.491	1.86465	1.371	2.256	3628
38	0.22955	1558.28	65.7572	-107.725	-105.820	1.99090	1.401	2.421	3532
40	0.23324	1386.91	63.7840	-102.744	-100.800	2.11963	1.426	2.608	3428
42	0.23866	1205.00	61.3881	-97.343	-95.354	2.25247	1.445	2.830	3307
44	0.24495	1019.62	58.4882	-91.483	-89.442	2.38994	1.461	3.102	3166
* 44.508	0.24674	989.71	57.6451	-89.903	-87.846	2.42600	1.465	3.150	3140
* 44.508	4.22020	144.18	1.4059	52.365	87.531	6.36894	1.624	3.636	1223
46	4.47374	158.95	1.3101	55.533	92.811	6.48565	1.593	3.434	1260
48	4.79496	177.15	1.2077	59.528	99.483	6.62765	1.567	3.250	1304
50	5.10226	194.08	1.1247	63.332	105.848	6.75758	1.551	3.122	1345
52	5.39935	210.10	1.0552	67.003	111.994	6.87811	1.540	3.028	1383
54	5.68860	225.41	0.9957	70.573	117.975	6.99098	1.532	2.956	1419
56	5.97161	240.16	0.9439	74.067	123.827	7.09739	1.526	2.898	1453
58	6.24954	254.46	0.8981	77.498	129.574	7.19824	1.521	2.851	1486
60	6.52329	268.39	0.8573	80.882	135.239	7.29426	1.517	2.811	1518
62	6.79347	282.01	0.8206	84.219	140.827	7.38588	1.513	2.778	1549
64	7.06064	295.35	0.7874	87.519	146.354	7.47362	1.509	2.750	1579
66	7.32524	308.48	0.7572	90.789	151.829	7.55785	1.507	2.725	1608
68	7.58760	321.40	0.7294	94.033	157.259	7.63890	1.505	2.705	1636
70	7.84799	334.15	0.7039	97.254	162.650	7.71704	1.503	2.687	1663
75	8.49179	365.40	0.6479	105.231	175.991	7.90114	1.501	2.651	1729
80	9.12736	395.93	0.6008	113.126	189.182	8.07141	1.501	2.626	1791
85	9.75654	425.89	0.5606	120.970	202.269	8.23009	1.504	2.609	1850
90	10.38065	455.41	0.5257	128.788	215.288	8.37892	1.509	2.599	1906
95	11.00066	484.57	0.4951	136.605	228.271	8.51931	1.518	2.595	1959
100	11.61728	513.42	0.4680	144.445	241.249	8.65245	1.531	2.597	2009
105	12.23110	542.03	0.4439	152.330	254.249	8.77930	1.547	2.604	2056
110	12.84257	570.43	0.4222	160.286	267.300	8.90072	1.567	2.617	2101
115	13.45203	598.65	0.4026	168.337	280.430	9.01745	1.592	2.636	2143
120	14.05979	626.71	0.3849	176.509	293.666	9.13011	1.621	2.659	2182
125	14.66606	654.65	0.3686	184.824	307.033	9.23924	1.655	2.688	2220
130	15.27105	682.47	0.3537	193.307	320.557	9.34532	1.693	2.722	2255
140	16.47779	737.83	0.3274	210.860	348.166	9.54988	1.780	2.802	2320
150	17.68102	792.87	0.3048	229.320	376.652	9.74638	1.880	2.897	2379
160	18.88145	847.66	0.2851	248.804	406.139	9.93664	1.989	3.002	2435
170	20.07964	902.26	0.2679	269.388	436.707	10.12193	2.103	3.112	2487
180	21.27598	956.68	0.2527	291.105	468.393	10.30300	2.218	3.225	2539
190	22.47066	1010.96	0.2391	313.931	501.174	10.47986	2.331	3.335	2589
200	23.66408	1065.13	0.2269	337.862	535.050	10.65348	2.437	3.439	2639
220	26.04778	1173.18	0.2059	388.676	605.727	10.99017	2.623	3.622	2740
240	28.42820	1280.94	0.1885	442.751	679.636	11.31144	2.764	3.760	2842
260	30.80616	1388.48	0.1739	499.134	755.834	11.61652	2.858	3.853	2945
280	33.18220	1495.85	0.1613	556.981	833.481	11.90412	2.909	3.902	3049
300	35.55674	1603.08	0.1505	615.440	911.726	12.17416	2.926	3.918	3154
320	37.93007	1710.21	0.1410	673.964	990.027	12.42693	2.917	3.909	3258
340	40.30241	1817.25	0.1327	732.123	1067.954	12.66279	2.891	3.882	3362
360	42.67394	1924.21	0.1253	789.646	1145.239	12.88374	2.856	3.846	3465
380	45.04480	2031.12	0.1186	846.386	1221.734	13.09055	2.814	3.804	3566
400	47.41510	2137.97	0.1127	902.280	1297.379	13.28464	2.772	3.761	3666
420	49.78491	2244.78	0.1073	957.336	1372.182	13.46710	2.731	3.720	3764
440	52.15430	2351.55	0.1024	1011.606	1446.197	13.63930	2.693	3.682	3859
460	54.52335	2458.30	0.0979	1065.151	1519.482	13.80220	2.659	3.648	3952
480	56.89208	2565.01	0.0938	1118.055	1592.125	13.95656	2.629	3.617	4043
500	59.26055	2671.70	0.0901	1170.398	1664.204	14.10384	2.604	3.591	4132
520	61.62878	2778.37	0.0866	1222.260	1735.799	14.24437	2.581	3.569	4218
540	63.99687	2884.87	0.0834	1273.747	1806.984	14.37873	2.562	3.550	4303
560	66.36024	2991.49	0.0804	1324.774	1877.739	14.50690	2.547	3.535	4385
580	68.72766	3098.09	0.0776	1375.588	1948.281	14.63053	2.535	3.522	4466
600	71.09494	3204.68	0.0750	1426.208	2018.627	14.74983	2.524	3.511	4544
650	77.01265	3471.12	0.0693	1551.895	2193.624	15.03025	2.506	3.492	4734
700	82.92978	3737.50	0.0643	1676.926	2367.962	15.28890	2.495	3.481	4915
800	94.76262	4270.16	0.0563	1925.851	2715.489	15.75327	2.487	3.474	5256
1000	118.42597	5335.21	0.0450	2423.204	3410.022	16.52766	2.488	3.474	5875
2000	236.72489	10658.98	0.0225	4969.849	6942.426	18.96840	2.644	3.630	8234
3000	355.02909	15982.25	0.0150	7757.745	10716.124	20.48491	2.935	3.921	9947
4000	474.17272	21305.44	0.0113	10975.750	14926.928	21.88717	3.649	4.681	11251
5000	604.37575	26628.59	0.0090	16072.504	21108.634	24.08603	7.076	8.534	12189

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

45 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.029	4.81874	270.36	13.831	13231.72	0.0056441	0.04272	1.725	0.00581	1.25218	2.2181
26	4.79118	267.34	13.584	12515.46	0.0059670	0.04568	1.604	0.00598	1.25063	2.0168
28	4.73307	265.92	12.876	11323.60	0.0064579	0.05030	1.402	0.00619	1.24736	1.7234
30	4.66983	266.34	12.281	10384.66	0.0069030	0.05329	1.242	0.00621	1.24381	1.5428
32	4.60280	265.23	11.800	9485.21	0.0074182	0.05525	1.114	0.00610	1.24005	1.4278
34	4.53206	262.32	11.398	8598.47	0.0080263	0.05639	1.008	0.00591	1.23609	1.3556
36	4.45645	257.32	11.043	7696.68	0.0087661	0.05728	0.920	0.00570	1.23187	1.3041
38	4.37534	250.98	10.730	6817.99	0.0096447	0.05830	0.844	0.00550	1.22735	1.2611
40	4.28740	243.10	10.435	5946.24	0.0107268	0.05876	0.776	0.00526	1.22246	1.2405
42	4.19011	232.80	10.138	5049.09	0.0121582	0.05870	0.716	0.00495	1.21707	1.2420
44	4.08245	220.73	9.803	4162.56	0.0140510	0.05817	0.660	0.00459	1.21113	1.2660
* 44.508	4.05281	219.16	9.709	4011.09	0.0143714	0.05795	0.646	0.00454	1.20949	1.2635
* 44.508	0.23696	88.36	3.654	34.17	0.0411492	0.01328	0.096	0.01541	1.01148	0.9434
46	0.22353	93.13	3.679	35.53	0.0368742	0.01341	0.098	0.01747	1.01083	0.9060
48	0.20855	99.42	3.695	36.94	0.0326882	0.01368	0.102	0.02018	1.01010	0.8702
50	0.19599	105.59	3.699	38.04	0.0295663	0.01401	0.105	0.02289	1.00949	0.8444
52	0.18521	111.66	3.699	38.91	0.0271179	0.01437	0.109	0.02562	1.00897	0.8248
54	0.17579	117.62	3.696	39.62	0.0251285	0.01475	0.112	0.02839	1.00851	0.8091
56	0.16746	123.48	3.693	40.22	0.0234693	0.01515	0.116	0.03122	1.00811	0.7961
58	0.16001	129.25	3.690	40.72	0.0220576	0.01555	0.119	0.03409	1.00774	0.7854
60	0.15330	134.94	3.687	41.14	0.0208356	0.01596	0.122	0.03703	1.00742	0.7763
62	0.14720	140.52	3.685	41.51	0.0197681	0.01637	0.126	0.04004	1.00712	0.7682
64	0.14163	146.07	3.684	41.83	0.0188237	0.01679	0.129	0.04311	1.00685	0.7611
66	0.13651	151.58	3.681	42.11	0.0179801	0.01721	0.132	0.04625	1.00660	0.7548
68	0.13179	157.06	3.678	42.36	0.0172205	0.01763	0.136	0.04945	1.00638	0.7492
70	0.12742	162.52	3.675	42.58	0.0165317	0.01805	0.139	0.05273	1.00616	0.7441
75	0.11776	176.09	3.666	43.03	0.0150568	0.01912	0.147	0.06123	1.00569	0.7332
80	0.10956	189.62	3.653	43.38	0.0138506	0.02019	0.155	0.07016	1.00530	0.7242
85	0.10250	203.20	3.637	43.65	0.0128414	0.02127	0.162	0.07952	1.00496	0.7167
90	0.09633	216.91	3.615	43.87	0.0119818	0.02235	0.170	0.08928	1.00466	0.7105
95	0.09090	230.88	3.587	44.05	0.0112392	0.02344	0.177	0.09937	1.00439	0.7056
100	0.08608	245.21	3.552	44.19	0.0105897	0.02453	0.184	0.10976	1.00416	0.7019
105	0.08176	259.98	3.510	44.32	0.0100164	0.02563	0.191	0.12037	1.00395	0.6995
110	0.07787	275.31	3.460	44.42	0.0095057	0.02681	0.198	0.13157	1.00376	0.6962
115	0.07434	291.30	3.402	44.50	0.0090476	0.02804	0.205	0.14310	1.00359	0.6935
120	0.07112	308.01	3.338	44.57	0.0086339	0.02926	0.212	0.15469	1.00344	0.6923
125	0.06818	325.52	3.267	44.64	0.0082583	0.03049	0.218	0.16633	1.00329	0.6924
130	0.06548	343.88	3.192	44.69	0.0079154	0.03171	0.225	0.17793	1.00316	0.6939
140	0.06069	383.26	3.031	44.78	0.0073117	0.03415	0.237	0.20079	1.00293	0.7007
150	0.05656	426.23	2.867	44.84	0.0067965	0.03705	0.249	0.22615	1.00273	0.7020
160	0.05296	472.62	2.707	44.89	0.0063512	0.04022	0.261	0.25301	1.00256	0.7021
170	0.04980	522.02	2.558	44.93	0.0059621	0.04339	0.273	0.27995	1.00241	0.7048
180	0.04700	573.87	2.424	44.97	0.0056190	0.05182	0.307	0.34194	1.00227	0.6885
190	0.04450	627.60	2.305	44.99	0.0053136	0.05679	0.326	0.38265	1.00215	0.6900
200	0.04226	682.31	2.203	45.01	0.0050405	0.06131	0.342	0.42165	1.00204	0.6914
220	0.03839	792.16	2.045	45.04	0.0045720	0.06915	0.368	0.49731	1.00185	0.6934
240	0.03518	898.66	1.939	45.06	0.0041842	0.07552	0.388	0.57092	1.00170	0.6947
260	0.03246	998.70	1.874	45.07	0.0038577	0.08056	0.404	0.64419	1.00157	0.6954
280	0.03014	1090.33	1.840	45.08	0.0035789	0.08445	0.418	0.71813	1.00146	0.6955
300	0.02812	1173.80	1.829	45.09	0.0033380	0.08741	0.431	0.79322	1.00136	0.6952
320	0.02636	1249.63	1.834	45.09	0.0031278	0.08963	0.442	0.86979	1.00127	0.6946
340	0.02481	1319.30	1.849	45.09	0.0029425	0.09132	0.453	0.94808	1.00120	0.6939
360	0.02343	1384.21	1.872	45.09	0.0027781	0.09265	0.464	1.02811	1.00113	0.6931
380	0.02220	1445.53	1.899	45.09	0.0026312	0.09373	0.474	1.11001	1.00107	0.6923
400	0.02109	1504.97	1.927	45.09	0.0024992	0.09470	0.484	1.19382	1.00102	0.6915
420	0.02009	1563.15	1.956	45.09	0.0023797	0.09561	0.493	1.27956	1.00097	0.6907
440	0.01917	1620.95	1.983	45.09	0.0022713	0.09651	0.502	1.36721	1.00093	0.6899
460	0.01834	1679.12	2.008	45.09	0.0021723	0.09746	0.512	1.45677	1.00089	0.6893
480	0.01758	1737.72	2.031	45.09	0.0020816	0.09844	0.521	1.54830	1.00085	0.6887
500	0.01687	1797.22	2.051	45.08	0.0019982	0.09949	0.530	1.64183	1.00081	0.6881
520	0.01623	1857.64	2.068	45.08	0.0019212	0.10061	0.538	1.73731	1.00078	0.6877
540	0.01563	1918.82	2.083	45.08	0.0018499	0.10177	0.547	1.83465	1.00075	0.6872
560	0.01507	1981.46	2.095	45.08	0.0017838	0.10301	0.556	1.93405	1.00073	0.6869
580	0.01455	2044.77	2.105	45.08	0.0017223	0.10430	0.565	2.03546	1.00070	0.6865
600	0.01407	2108.99	2.114	45.08	0.0016648	0.10563	0.573	2.13885	1.00068	0.6863
650	0.01298	2272.58	2.129	45.07	0.0015367	0.10911	0.595	2.40606	1.00063	0.6857
700	0.01206	2439.75	2.138	45.07	0.0014270	0.11276	0.617	2.68599	1.00058	0.6853
800	0.01055	2781.93	2.144	45.06	0.0012486	0.12036	0.659	3.28344	1.00051	0.6848
1000	0.00844	3477.58	2.142	45.05	0.0009990	0.13577	0.743	4.62794	1.00041	0.6841
2000	0.00422	7263.79	2.015	45.03	0.0004997	0.27727	1.130	18.08256	1.00020	0.5323
3000	0.00282	11768.66	1.815	45.02	0.0003332	0.39498	1.474	35.75942	1.00014	0.5268
4000	0.00211	18694.68	1.462	44.93	0.0002504	0.61577	1.790	62.37883	1.00010	0.4898
5000	0.00165	41779.25	0.769	44.06	0.0002043	1.63484	2.106	115.77629	1.00008	0.3958

* TWO-PHASE BOUNDRY

50 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.049	0.20747	2751.00	74.7131	-132.849	-130.928	1.18883	1.121	1.526	4165
26	0.20864	2623.69	74.7124	-131.371	-129.439	1.24720	1.147	1.593	4108
28	0.21119	2400.87	73.2173	-128.102	-126.147	1.36917	1.200	1.716	3989
30	0.21404	2231.89	71.7731	-124.571	-122.589	1.49191	1.250	1.837	3899
32	0.21715	2068.83	70.4500	-120.788	-118.777	1.61493	1.295	1.965	3814
34	0.22052	1905.70	69.1018	-116.748	-114.706	1.73833	1.336	2.103	3728
36	0.22425	1735.09	67.5598	-112.424	-110.348	1.86287	1.371	2.252	3635
38	0.22839	1566.61	65.8617	-107.800	-105.686	1.98888	1.400	2.416	3539
40	0.23305	1395.92	63.8857	-102.834	-100.676	2.11734	1.425	2.601	3436
42	0.23842	1214.44	61.5079	-97.454	-95.246	2.24977	1.445	2.822	3315
44	0.24466	1029.61	58.6339	-91.619	-89.354	2.38680	1.461	3.090	3176
* 45.406	0.24978	907.42	56.2130	-87.172	-84.860	2.48734	1.471	3.298	3070
* 45.406	3.80695	140.64	1.5719	52.345	87.593	6.28776	1.633	3.773	1227
46	3.90295	146.98	1.5246	53.680	89.816	6.33641	1.618	3.670	1243
48	4.20819	166.76	1.3930	57.921	96.883	6.48684	1.585	3.416	1291
50	4.49677	184.86	1.2894	61.903	103.537	6.62267	1.564	3.247	1334
52	4.77357	201.79	1.2043	65.709	109.906	6.74758	1.550	3.127	1373
54	5.04154	217.84	1.1324	69.388	116.066	6.86383	1.541	3.037	1410
56	5.30265	233.21	1.0705	72.971	122.066	6.97295	1.533	2.966	1446
58	5.55825	248.03	1.0164	76.478	127.940	7.07601	1.527	2.909	1479
60	5.80935	262.42	0.9683	79.927	133.714	7.17388	1.522	2.862	1512
62	6.05665	276.43	0.9255	83.320	139.397	7.26705	1.517	2.822	1543
64	6.30079	290.13	0.8869	86.670	145.006	7.35611	1.513	2.789	1574
66	6.54222	303.57	0.8518	89.982	150.555	7.44147	1.510	2.760	1603
68	6.78133	316.78	0.8198	93.265	156.051	7.52351	1.508	2.736	1632
70	7.01839	329.79	0.7904	96.521	161.502	7.60252	1.506	2.715	1660
75	7.60364	361.60	0.7263	104.571	174.971	7.78838	1.503	2.674	1726
80	8.18045	392.60	0.6726	112.526	188.266	7.96000	1.503	2.645	1789
85	8.75074	422.95	0.6269	120.420	201.440	8.11974	1.505	2.625	1849
90	9.31587	452.81	0.5874	128.281	214.533	8.26942	1.511	2.613	1905
95	9.87685	482.25	0.5528	136.134	227.580	8.41050	1.519	2.607	1958
100	10.43440	511.36	0.5223	144.005	240.614	8.54421	1.532	2.607	2008
105	10.98912	540.19	0.4951	151.918	253.663	8.67154	1.548	2.613	2056
110	11.54147	568.79	0.4708	159.899	266.757	8.79336	1.568	2.625	2100
115	12.09181	597.18	0.4488	167.972	279.925	8.91043	1.593	2.643	2143
120	12.64043	625.41	0.4289	176.162	293.196	9.02338	1.622	2.666	2182
125	13.18756	653.50	0.4107	184.495	306.594	9.13277	1.655	2.694	2220
130	13.73340	681.45	0.3940	192.994	320.147	9.23907	1.693	2.727	2255
140	14.82184	737.04	0.3645	210.575	347.805	9.44400	1.780	2.807	2320
150	15.90675	792.28	0.3392	229.058	376.333	9.64078	1.880	2.901	2380
160	16.98887	847.24	0.3173	248.562	405.856	9.83128	1.989	3.005	2435
170	18.06874	901.98	0.2981	269.163	436.455	10.01675	2.103	3.115	2488
180	19.14677	956.54	0.2811	290.894	468.168	10.19799	2.218	3.227	2539
190	20.22313	1010.93	0.2659	313.735	500.974	10.37498	2.331	3.337	2589
200	21.29824	1065.20	0.2523	337.679	534.871	10.54871	2.437	3.441	2640
220	23.44531	1173.43	0.2290	388.513	605.585	10.88558	2.623	3.623	2740
240	25.58911	1281.33	0.2096	442.604	679.525	11.20698	2.764	3.762	2842
260	27.73044	1388.98	0.1933	499.001	755.748	11.51216	2.858	3.854	2946
280	29.86987	1496.45	0.1793	556.861	833.415	11.79984	2.909	3.903	3050
300	32.00779	1603.77	0.1673	615.330	911.678	12.06993	2.926	3.919	3155
320	34.14451	1710.96	0.1567	673.863	989.995	12.32275	2.917	3.909	3259
340	36.28024	1818.06	0.1475	732.030	1067.936	12.55865	2.892	3.883	3363
360	38.41517	1925.08	0.1392	789.560	1145.232	12.77964	2.856	3.846	3466
380	40.54942	2032.03	0.1319	846.306	1221.738	12.98648	2.814	3.804	3567
400	42.68310	2138.93	0.1252	902.205	1297.393	13.18059	2.772	3.762	3667
420	44.81631	2245.78	0.1192	957.266	1372.204	13.36308	2.731	3.720	3765
440	46.94910	2352.58	0.1138	1011.541	1446.226	13.53529	2.693	3.682	3860
460	49.08154	2459.35	0.1088	1065.089	1519.518	13.69821	2.659	3.648	3953
480	51.21367	2566.09	0.1043	1117.998	1592.167	13.85259	2.629	3.617	4044
500	53.34554	2672.81	0.1001	1170.344	1664.252	13.99987	2.604	3.591	4133
520	55.47717	2779.50	0.0962	1222.209	1735.852	14.14041	2.582	3.569	4219
540	57.60493	2886.02	0.0927	1273.701	1807.045	14.27479	2.563	3.550	4304
560	59.73592	2992.66	0.0894	1324.731	1877.805	14.40296	2.548	3.535	4386
580	61.86575	3099.28	0.0863	1375.547	1948.350	14.52660	2.535	3.522	4467
600	63.99745	3205.89	0.0834	1426.169	2018.699	14.64591	2.524	3.511	4545
650	69.32370	3472.35	0.0770	1551.861	2193.705	14.92635	2.506	3.492	4735
700	74.64937	3738.76	0.0715	1676.896	2368.048	15.18500	2.495	3.482	4916
800	85.29948	4271.46	0.0625	1925.827	2715.585	15.64939	2.487	3.474	5257
1000	106.59679	5336.56	0.0500	2423.188	3410.130	16.42379	2.488	3.474	5875
2000	213.06653	10660.39	0.0250	4969.844	6942.552	18.86454	2.644	3.630	8234
3000	319.53997	15983.68	0.0167	7757.596	10716.103	20.38100	2.934	3.921	9947
4000	426.73003	21306.87	0.0125	10967.038	14917.980	21.78086	3.624	4.653	11258
5000	543.36348	26630.03	0.0100	15969.590	21000.400	23.95832	6.886	8.319	12199

* TWO-PHASE BOUNDRY

50 PSIA ISOBAR

	TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
*	25.049	4.81997	270.84	13.828	13259.73	0.0056346	0.04280	1.726	0.00582	1.25225	2.2159
	26	4.79306	268.15	13.587	12575.49	0.0059411	0.04570	1.608	0.00598	1.25074	2.0182
	28	4.73509	266.44	12.889	11368.35	0.0064405	0.05033	1.406	0.00619	1.24747	1.7253
	30	4.67203	266.88	12.294	10427.45	0.0068831	0.05333	1.245	0.00621	1.24393	1.5440
	32	4.60520	265.80	11.812	9527.39	0.0073945	0.05529	1.116	0.00611	1.24018	1.4286
	34	4.53468	262.96	11.410	8641.72	0.0079963	0.05644	1.011	0.00592	1.23624	1.3558
	36	4.45929	257.96	11.054	7737.26	0.0087317	0.05734	0.922	0.00571	1.23203	1.3040
	38	4.37852	251.69	10.740	6859.44	0.0096001	0.05836	0.846	0.00552	1.22753	1.2605
	40	4.29038	243.91	10.446	5989.87	0.0106656	0.05884	0.779	0.00527	1.22266	1.2392
	42	4.19427	233.71	10.150	5093.70	0.0120753	0.05880	0.718	0.00497	1.21730	1.2400
	44	4.08728	221.75	9.818	4208.29	0.0139330	0.05828	0.662	0.00461	1.21139	1.2628
*	45.406	4.00355	213.12	9.545	3632.89	0.0154734	0.05761	0.624	0.00436	1.20678	1.2860
*	45.406	0.26268	88.69	3.665	36.94	0.0425479	0.01377	0.098	0.01389	1.01274	0.9684
	46	0.25622	90.66	3.677	37.66	0.0404840	0.01379	0.099	0.01467	1.01242	0.9497
	48	0.23763	97.18	3.699	39.63	0.0351521	0.01398	0.103	0.01722	1.01152	0.9021
	50	0.22238	103.54	3.707	41.11	0.0313634	0.01425	0.106	0.01974	1.01077	0.8690
	52	0.20949	109.77	3.708	42.27	0.0284888	0.01458	0.109	0.02225	1.01015	0.8447
	54	0.19835	115.87	3.706	43.21	0.0262087	0.01493	0.113	0.02479	1.00961	0.8257
	56	0.18858	121.85	3.702	43.98	0.0243418	0.01532	0.116	0.02738	1.00913	0.8099
	58	0.17991	127.73	3.699	44.62	0.0227760	0.01571	0.120	0.03001	1.00871	0.7971
	60	0.17214	133.51	3.696	45.17	0.0214360	0.01610	0.123	0.03269	1.00833	0.7863
	62	0.16511	139.17	3.695	45.64	0.0202772	0.01651	0.126	0.03543	1.00799	0.7769
	64	0.15871	144.78	3.693	46.05	0.0192603	0.01692	0.130	0.03823	1.00768	0.7687
	66	0.15285	150.36	3.691	46.40	0.0183581	0.01733	0.133	0.04108	1.00740	0.7616
	68	0.14746	155.90	3.688	46.71	0.0175504	0.01775	0.136	0.04399	1.00714	0.7553
	70	0.14248	161.42	3.685	46.99	0.0168217	0.01817	0.139	0.04696	1.00689	0.7495
	75	0.13152	175.11	3.674	47.56	0.0152723	0.01922	0.147	0.05465	1.00636	0.7375
	80	0.12224	188.74	3.661	47.99	0.0140154	0.02029	0.155	0.06273	1.00591	0.7277
	85	0.11428	202.41	3.644	48.33	0.0129703	0.02136	0.163	0.07119	1.00553	0.7196
	90	0.10734	216.20	3.622	48.61	0.0120846	0.02244	0.170	0.08000	1.00519	0.7129
	95	0.10125	230.24	3.594	48.83	0.0113223	0.02352	0.177	0.08911	1.00489	0.7077
	100	0.09584	244.62	3.558	49.01	0.0106577	0.02461	0.184	0.09849	1.00463	0.7037
	105	0.09100	259.44	3.516	49.16	0.0100727	0.02570	0.192	0.10807	1.00440	0.7011
	110	0.08654	274.81	3.465	49.28	0.0095529	0.02688	0.198	0.11818	1.00419	0.6975
	115	0.08270	290.82	3.407	49.39	0.0090874	0.02810	0.205	0.12857	1.00400	0.6946
	120	0.07911	307.57	3.342	49.48	0.0086677	0.02932	0.212	0.13903	1.00382	0.6933
	125	0.07583	325.10	3.272	49.55	0.0082872	0.03055	0.218	0.14953	1.00366	0.6933
	130	0.07282	343.48	3.196	49.62	0.0079403	0.03177	0.225	0.15999	1.00352	0.6947
	140	0.06747	382.90	3.035	49.73	0.0073304	0.03420	0.237	0.18059	1.00326	0.7014
	150	0.06287	425.90	2.870	49.81	0.0068108	0.03710	0.250	0.20346	1.00304	0.7025
	160	0.05886	472.31	2.710	49.87	0.0063623	0.04027	0.262	0.22767	1.00284	0.7025
	170	0.05534	521.74	2.561	49.92	0.0059708	0.04344	0.273	0.25194	1.00267	0.7051
	180	0.05223	573.61	2.426	49.96	0.0056259	0.05183	0.307	0.30754	1.00252	0.6889
	190	0.04945	627.38	2.307	49.99	0.0053191	0.05679	0.326	0.34417	1.00239	0.6904
	200	0.04695	682.12	2.205	50.01	0.0050450	0.06131	0.342	0.37946	1.00227	0.6917
	220	0.04265	792.02	2.047	50.05	0.0045749	0.06915	0.368	0.44741	1.00206	0.6937
	240	0.03908	898.58	1.941	50.07	0.0041861	0.07551	0.388	0.51370	1.00189	0.6950
	260	0.03606	998.67	1.875	50.09	0.0038590	0.08056	0.404	0.57969	1.00174	0.6956
	280	0.03348	1090.36	1.842	50.10	0.0035798	0.08445	0.418	0.64627	1.00162	0.6956
	300	0.03124	1173.87	1.830	50.11	0.0033386	0.08741	0.431	0.71390	1.00151	0.6953
	320	0.02929	1249.75	1.835	50.11	0.0031281	0.08963	0.442	0.78285	1.00141	0.6948
	340	0.02756	1319.45	1.850	50.11	0.0029427	0.09133	0.453	0.85334	1.00133	0.6940
	360	0.02603	1384.39	1.873	50.11	0.0027782	0.09265	0.464	0.92540	1.00126	0.6932
	380	0.02466	1445.74	1.900	50.11	0.0026312	0.09373	0.474	0.99915	1.00119	0.6924
	400	0.02343	1505.20	1.928	50.11	0.0024991	0.09470	0.484	1.07461	1.00113	0.6915
	420	0.02231	1563.40	1.957	50.11	0.0023796	0.09561	0.493	1.15181	1.00108	0.6907
	440	0.02130	1621.22	1.984	50.11	0.0022711	0.09652	0.502	1.23072	1.00103	0.6900
	460	0.02037	1679.40	2.009	50.11	0.0021721	0.09746	0.512	1.31136	1.00098	0.6893
	480	0.01953	1738.02	2.031	50.11	0.0020814	0.09845	0.521	1.39376	1.00094	0.6887
	500	0.01875	1797.53	2.051	50.10	0.0019980	0.09950	0.530	1.47796	1.00090	0.6882
	520	0.01803	1857.97	2.068	50.10	0.0019210	0.10062	0.539	1.56392	1.00087	0.6877
	540	0.01736	1919.16	2.083	50.10	0.0018497	0.10178	0.547	1.65156	1.00084	0.6872
	560	0.01674	1981.81	2.095	50.10	0.0017836	0.10302	0.556	1.74105	1.00081	0.6869
	580	0.01616	2045.12	2.106	50.10	0.0017221	0.10431	0.565	1.83234	1.00078	0.6866
	600	0.01563	2109.35	2.114	50.09	0.0016646	0.10564	0.574	1.92542	1.00075	0.6863
	650	0.01443	2272.96	2.129	50.09	0.0015365	0.10912	0.595	2.16597	1.00070	0.6857
	700	0.01340	2440.13	2.138	50.08	0.0014268	0.11277	0.617	2.41797	1.00065	0.6853
	800	0.01172	2782.33	2.144	50.08	0.0012485	0.12037	0.659	2.95581	1.00057	0.6848
	1000	0.00938	3478.00	2.142	50.06	0.0009989	0.13578	0.743	4.16614	1.00045	0.6841
	2000	0.00469	7264.27	2.015	50.03	0.0004997	0.27727	1.130	16.27535	1.00023	0.5324
	3000	0.00313	11766.74	1.815	50.02	0.0003332	0.39485	1.474	32.18104	1.00015	0.5269
	4000	0.00234	18585.04	1.472	49.93	0.0002503	0.61011	1.790	55.95656	1.00011	0.4915
	5000	0.00184	40768.97	0.789	49.01	0.0002040	1.58368	2.105	103.44468	1.00009	0.3981

* TWO-PHASE BOUNDRY

100 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.255	0.20695	2819.91	75.0327	-132.792	-128.960	1.19080	1.125	1.525	4208
26	0.20783	2737.02	75.0397	-131.649	-127.800	1.23607	1.145	1.573	4173
28	0.21031	2483.82	74.1117	-128.427	-124.532	1.35713	1.197	1.704	4047
30	0.21306	2311.53	72.6300	-124.951	-121.006	1.47878	1.246	1.822	3956
32	0.21604	2147.83	71.3028	-121.235	-117.235	1.60046	1.291	1.946	3872
34	0.21929	1988.15	69.9569	-117.271	-113.211	1.72242	1.332	2.077	3790
36	0.22284	1822.96	68.4633	-113.044	-108.918	1.84509	1.367	2.218	3702
38	0.22677	1656.48	66.7803	-108.531	-104.331	1.96907	1.397	2.371	3609
40	0.23119	1483.02	64.8685	-103.695	-99.414	2.09517	1.422	2.545	3507
42	0.23618	1310.65	62.6459	-98.503	-94.130	2.22405	1.442	2.741	3397
44	0.24193	1133.85	59.9841	-92.901	-88.421	2.35680	1.459	2.972	3271
46	0.24868	954.05	56.8168	-86.810	-82.205	2.49493	1.473	3.255	3125
48	0.25683	768.20	53.0055	-80.106	-75.350	2.64077	1.487	3.631	2948
50	0.26714	587.12	48.5446	-72.558	-67.611	2.79866	1.505	4.157	2741
52	0.28129	399.94	43.2173	-63.666	-58.457	2.97807	1.529	5.087	2483
* 52.072	0.28190	387.55	43.0049	-63.312	-58.092	2.98510	1.530	5.187	2467
* 52.072	1.82826	97.30	3.5615	47.919	81.774	5.67245	1.736	5.938	1242
54	2.04310	128.17	3.0920	54.212	92.045	5.86629	1.676	4.789	1303
56	2.23222	154.30	2.7703	59.652	100.987	6.02894	1.638	4.208	1355
58	2.40376	177.19	2.5319	64.515	109.027	6.17004	1.612	3.857	1401
60	2.56397	197.97	2.3430	69.030	116.508	6.29687	1.591	3.617	1444
62	2.71598	217.22	2.1902	73.265	123.557	6.41245	1.571	3.442	1485
64	2.86201	235.36	2.0619	77.307	130.304	6.51956	1.557	3.311	1523
66	3.00339	252.64	1.9518	81.206	136.820	6.61983	1.547	3.209	1558
68	3.14103	269.22	1.8557	84.992	143.155	6.71439	1.539	3.128	1592
70	3.27561	285.23	1.7707	88.688	149.343	6.80408	1.533	3.062	1624
75	3.60163	323.31	1.5942	97.636	164.329	7.01090	1.524	2.940	1700
80	3.91653	359.32	1.4545	106.289	178.813	7.19789	1.520	2.858	1769
85	4.22339	393.80	1.3403	114.747	192.952	7.36935	1.520	2.801	1833
90	4.52414	427.13	1.2445	123.075	206.850	7.52822	1.523	2.760	1894
95	4.82013	459.56	1.1628	131.323	220.579	7.67669	1.531	2.733	1950
100	5.11229	491.24	1.0920	139.538	234.204	7.81647	1.541	2.716	2003
105	5.40135	522.32	1.0301	147.745	247.763	7.94878	1.556	2.709	2052
110	5.68785	552.92	0.9754	155.982	261.306	8.07478	1.576	2.709	2099
115	5.97221	583.10	0.9266	164.283	274.872	8.19538	1.599	2.718	2143
120	6.25477	612.92	0.8828	172.676	288.497	8.31136	1.628	2.733	2183
125	6.53578	642.45	0.8431	181.190	302.215	8.42335	1.661	2.755	2222
130	6.81546	671.72	0.8071	189.852	316.056	8.53191	1.698	2.782	2258
140	7.37148	729.61	0.7439	207.715	344.215	8.74056	1.784	2.853	2325
150	7.92392	786.79	0.6903	226.435	373.164	8.94026	1.883	2.939	2385
160	8.47354	843.43	0.6442	246.139	403.046	9.13307	1.992	3.038	2441
170	9.02090	899.62	0.6040	266.912	433.955	9.32042	2.105	3.144	2495
180	9.56643	955.45	0.5687	288.793	465.937	9.50320	2.220	3.252	2547
190	10.11026	1010.95	0.5372	311.785	499.000	9.68159	2.333	3.360	2597
200	10.65287	1066.21	0.5092	335.850	533.112	9.85641	2.439	3.462	2648
220	11.73497	1176.11	0.4613	386.890	604.190	10.19502	2.625	3.640	2749
240	12.81385	1285.38	0.4218	441.149	678.427	10.51771	2.765	3.775	2851
260	13.89030	1394.17	0.3885	497.686	754.897	10.82389	2.859	3.865	2955
280	14.96487	1502.59	0.3602	555.664	832.773	11.11234	2.910	3.913	3059
300	16.03796	1610.71	0.3358	614.235	911.215	11.38305	2.927	3.927	3164
320	17.10987	1718.61	0.3145	672.856	989.685	11.63637	2.918	3.916	3269
340	18.18081	1826.31	0.2957	731.101	1067.760	11.87268	2.892	3.889	3373
360	19.25095	1933.86	0.2791	788.700	1145.175	12.09400	2.856	3.852	3476
380	20.32043	2041.27	0.2643	845.506	1221.786	12.30112	2.815	3.809	3577
400	21.38935	2148.58	0.2509	901.460	1297.533	12.49547	2.773	3.766	3677
420	22.45780	2255.79	0.2389	956.570	1372.428	12.67817	2.732	3.724	3774
440	23.52585	2362.92	0.2279	1010.890	1446.525	12.85055	2.694	3.686	3870
460	24.59355	2469.98	0.2180	1064.479	1519.885	13.01362	2.660	3.651	3963
480	25.66094	2576.98	0.2088	1117.425	1592.596	13.16813	2.630	3.620	4054
500	26.72807	2683.93	0.2004	1169.805	1664.737	13.31553	2.604	3.594	4143
520	27.79497	2790.84	0.1927	1221.702	1736.389	13.45617	2.582	3.572	4229
540	28.86022	2897.64	0.1855	1273.246	1807.659	13.59069	2.563	3.552	4313
560	29.92657	3004.44	0.1788	1324.301	1878.460	13.71895	2.548	3.537	4395
580	30.99276	3111.21	0.1727	1375.142	1949.044	13.84265	2.535	3.524	4476
600	32.05881	3217.96	0.1669	1425.785	2019.428	13.96202	2.525	3.513	4555
650	34.72346	3484.72	0.1540	1551.524	2194.509	14.24258	2.506	3.494	4744
700	37.38754	3751.38	0.1430	1676.599	2368.914	14.50133	2.495	3.483	4925
800	42.71448	4284.44	0.1251	1925.589	2716.546	14.96584	2.488	3.474	5265
1000	53.36548	5350.00	0.1000	2423.026	3411.210	15.74037	2.488	3.475	5883
2000	106.60386	10674.51	0.0500	4969.796	6943.810	18.18126	2.644	3.630	8240
3000	159.83999	15997.95	0.0333	7756.780	10716.583	19.69745	2.930	3.916	9953
4000	213.32905	21321.19	0.0250	10919.856	14870.132	21.08431	3.485	4.501	11295
5000	270.15881	26644.38	0.0200	15412.223	20414.833	23.14586	5.856	7.150	12269

* TWO-PHASE BOUNDRY

100 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)/V_P$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.255	4.83213	276.90	13.804	13626.18	0.0055065	0.04362	1.741	0.00592	1.25294	2.1907
26	4.81157	276.11	13.616	13169.37	0.0056980	0.04588	1.647	0.00606	1.25178	2.0333
28	4.75497	271.59	13.019	11810.50	0.0062751	0.05060	1.439	0.00624	1.24859	1.7447
30	4.69356	272.13	12.416	10849.29	0.0066944	0.05368	1.274	0.00628	1.24514	1.5569
32	4.62872	271.34	11.928	9941.71	0.0071721	0.05572	1.143	0.00619	1.24150	1.4367
34	4.56023	269.17	11.520	9066.40	0.0077161	0.05695	1.035	0.00601	1.23767	1.3588
36	4.48753	265.00	11.164	8180.59	0.0083690	0.05792	0.945	0.00582	1.23360	1.3019
38	4.40968	259.32	10.844	7304.52	0.0091423	0.05904	0.867	0.00565	1.22926	1.2534
40	4.32550	251.71	10.545	6414.79	0.0101123	0.05960	0.799	0.00541	1.22458	1.2281
42	4.23401	242.83	10.259	5549.29	0.0112890	0.05968	0.738	0.00514	1.21950	1.2201
44	4.13344	232.23	9.946	4686.68	0.0127988	0.05931	0.682	0.00483	1.21394	1.2307
46	4.02129	219.80	9.593	3836.52	0.0148094	0.05847	0.630	0.00447	1.20776	1.2626
48	3.89365	204.90	9.156	2991.11	0.0177210	0.05715	0.580	0.00404	1.20074	1.3266
50	3.74335	188.19	8.618	2197.79	0.0220879	0.05527	0.530	0.00355	1.19252	1.4356
52	3.55511	167.36	7.950	1421.81	0.0303959	0.05262	0.478	0.00291	1.18227	1.6635
* 52.072	3.54733	165.81	7.922	1374.77	0.0312815	0.05250	0.476	0.00285	1.18185	1.6928
* 52.072	0.54697	88.73	3.751	53.22	0.0669217	0.01903	0.120	0.00586	1.02665	1.3461
54	0.48945	97.17	3.770	62.73	0.0492883	0.01807	0.121	0.00771	1.02382	1.1592
56	0.44798	105.00	3.775	69.13	0.0400758	0.01785	0.124	0.00947	1.02179	1.0508
58	0.41601	112.29	3.776	73.71	0.0343474	0.01788	0.126	0.01114	1.02022	0.9820
60	0.39002	119.19	3.775	77.21	0.0303448	0.01802	0.129	0.01278	1.01895	0.9337
62	0.36819	125.68	3.785	79.98	0.0273842	0.01824	0.132	0.01440	1.01788	0.8975
64	0.34940	132.04	3.789	82.24	0.0250727	0.01851	0.135	0.01600	1.01697	0.8699
66	0.33296	138.31	3.790	84.12	0.0232033	0.01881	0.138	0.01760	1.01616	0.8480
68	0.31837	144.48	3.787	85.71	0.0216508	0.01913	0.141	0.01921	1.01545	0.8302
70	0.30529	150.58	3.783	87.08	0.0203346	0.01947	0.144	0.02083	1.01481	0.8153
75	0.27765	165.57	3.767	89.77	0.0177593	0.02036	0.152	0.02496	1.01346	0.7869
80	0.25533	180.28	3.747	91.74	0.0158545	0.02133	0.159	0.02923	1.01238	0.7665
85	0.23678	194.85	3.724	93.24	0.0143737	0.02232	0.166	0.03366	1.01147	0.7509
90	0.22104	209.41	3.696	94.41	0.0131816	0.02333	0.173	0.03824	1.01071	0.7387
95	0.20746	224.09	3.662	95.34	0.0121965	0.02435	0.181	0.04295	1.01005	0.7293
100	0.19561	239.01	3.622	96.09	0.0113646	0.02539	0.187	0.04779	1.00947	0.7219
105	0.18514	254.28	3.575	96.70	0.0106527	0.02644	0.194	0.05273	1.00896	0.7167
110	0.17581	270.03	3.521	97.21	0.0100341	0.02759	0.201	0.05791	1.00851	0.7110
115	0.16744	286.37	3.460	97.63	0.0094907	0.02878	0.208	0.06323	1.00810	0.7063
120	0.15988	303.39	3.392	97.99	0.0090086	0.02997	0.214	0.06859	1.00774	0.7034
125	0.15300	321.17	3.318	98.30	0.0085774	0.03117	0.221	0.07395	1.00740	0.7022
130	0.14673	339.75	3.240	98.56	0.0081891	0.03237	0.227	0.07930	1.00710	0.7025
140	0.13566	379.52	3.074	98.98	0.0075163	0.03472	0.239	0.08973	1.00656	0.7082
150	0.12620	422.80	2.905	99.29	0.0069524	0.03760	0.252	0.10137	1.00610	0.7079
160	0.11801	469.45	2.741	99.54	0.0064718	0.04075	0.263	0.11365	1.00571	0.7068
170	0.11085	519.11	2.588	99.73	0.0060566	0.04390	0.275	0.12595	1.00536	0.7086
180	0.10453	571.20	2.451	99.88	0.0056939	0.05194	0.308	0.15276	1.00505	0.6933
190	0.09891	625.35	2.328	99.99	0.0053727	0.05685	0.326	0.17107	1.00478	0.6944
200	0.09387	680.34	2.224	100.09	0.0050880	0.06134	0.342	0.18876	1.00454	0.6952
220	0.08522	790.77	2.063	100.22	0.0046029	0.06914	0.368	0.22291	1.00412	0.6966
240	0.07804	897.87	1.954	100.31	0.0042045	0.07550	0.387	0.25627	1.00377	0.6974
260	0.07199	998.49	1.887	100.37	0.0038710	0.08055	0.404	0.28948	1.00348	0.6976
280	0.06682	1090.68	1.852	100.41	0.0035875	0.08445	0.418	0.32297	1.00323	0.6974
300	0.06235	1174.66	1.840	100.43	0.0033434	0.08742	0.431	0.35698	1.00301	0.6969
320	0.05845	1250.94	1.844	100.45	0.0031308	0.08965	0.443	0.39164	1.00282	0.6961
340	0.05500	1321.01	1.859	100.45	0.0029440	0.09135	0.454	0.42706	1.00266	0.6952
360	0.05195	1386.26	1.881	100.46	0.0027784	0.09269	0.464	0.46326	1.00251	0.6942
380	0.04921	1447.88	1.908	100.45	0.0026307	0.09378	0.474	0.50030	1.00238	0.6933
400	0.04675	1507.57	1.936	100.45	0.0024981	0.09476	0.484	0.53818	1.00226	0.6923
420	0.04453	1565.97	1.964	100.45	0.0023782	0.09568	0.493	0.57693	1.00215	0.6914
440	0.04251	1623.96	1.991	100.44	0.0022695	0.09659	0.503	0.61654	1.00205	0.6906
460	0.04066	1682.30	2.015	100.43	0.0021703	0.09754	0.512	0.65700	1.00196	0.6898
480	0.03897	1741.05	2.038	100.42	0.0020795	0.09853	0.521	0.69834	1.00188	0.6892
500	0.03741	1800.68	2.057	100.42	0.0019960	0.09958	0.530	0.74057	1.00181	0.6886
520	0.03598	1861.23	2.074	100.41	0.0019190	0.10070	0.539	0.78369	1.00174	0.6881
540	0.03465	1922.57	2.089	100.40	0.0018476	0.10187	0.548	0.82767	1.00167	0.6875
560	0.03342	1985.30	2.101	100.39	0.0017815	0.10312	0.557	0.87255	1.00161	0.6872
580	0.03227	2048.68	2.111	100.39	0.0017200	0.10441	0.565	0.91833	1.00156	0.6868
600	0.03119	2112.97	2.119	100.38	0.0016626	0.10574	0.574	0.96499	1.00151	0.6865
650	0.02880	2276.71	2.134	100.36	0.0015346	0.10923	0.596	1.08559	1.00139	0.6859
700	0.02675	2444.00	2.142	100.34	0.0014250	0.11289	0.617	1.21191	1.00129	0.6854
800	0.02341	2786.37	2.148	100.30	0.0012470	0.12051	0.660	1.48148	1.00113	0.6848
1000	0.01874	3482.26	2.145	100.25	0.0009978	0.13595	0.744	2.08804	1.00090	0.6841
2000	0.00938	7269.03	2.016	100.13	0.0004994	0.27727	1.131	8.14291	1.00045	0.5332
3000	0.00626	11758.71	1.819	100.09	0.0003330	0.39415	1.477	16.08715	1.00030	0.5281
4000	0.00469	17993.65	1.530	99.95	0.0002501	0.57943	1.793	27.46301	1.00023	0.5014
5000	0.00370	35260.25	0.923	98.62	0.0002028	1.30452	2.103	49.28779	1.00018	0.4149

* TWO-PHASE BOUNDRY

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TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.460	0.20544	2873.16	75.3473	-132.731	-126.997	1.19274	1.129	1.526	4242
26	0.20706	2847.44	75.3586	-131.912	-126.161	1.22526	1.144	1.555	4236
28	0.20946	2564.43	74.9807	-128.736	-122.918	1.34538	1.195	1.694	4103
30	0.21212	2388.57	73.4590	-125.311	-119.419	1.46605	1.243	1.808	4011
32	0.21499	2223.78	72.1226	-121.657	-115.685	1.58651	1.288	1.929	3928
34	0.21811	2067.26	70.7774	-117.763	-111.705	1.70714	1.328	2.054	3848
36	0.22152	1902.38	69.3201	-113.618	-107.465	1.82830	1.363	2.189	3762
38	0.22528	1739.95	67.6699	-109.204	-102.947	1.95042	1.393	2.333	3674
40	0.22944	1572.31	65.8183	-104.499	-98.126	2.07405	1.419	2.493	3578
42	0.23414	1398.88	63.6938	-99.458	-92.954	2.20019	1.440	2.676	3471
44	0.23948	1230.14	61.2102	-94.055	-87.403	2.32929	1.457	2.880	3356
46	0.24563	1055.29	58.3039	-88.231	-81.408	2.46251	1.471	3.127	3223
48	0.25290	882.29	54.8858	-81.896	-74.872	2.60157	1.484	3.425	3072
50	0.26173	706.34	50.9154	-74.922	-67.652	2.74889	1.499	3.827	2890
52	0.27297	535.29	46.3872	-67.061	-59.479	2.90912	1.516	4.401	2683
54	0.28858	360.91	41.0116	-57.753	-49.737	3.09286	1.541	5.421	2426
56	0.31454	180.99	33.9801	-45.473	-36.736	3.32900	1.585	8.130	2074
* 56.645	0.32917	117.02	30.8309	-39.908	-30.765	3.43500	1.615	10.847	1908
* 56.645	1.05663	43.88	6.7246	36.018	65.367	5.13285	1.910	13.979	1220
58	1.23480	81.39	5.5375	45.126	79.424	5.37837	1.806	7.976	1290
60	1.41189	119.30	4.6508	53.588	92.804	5.60534	1.721	5.737	1357
62	1.55532	149.00	4.1195	60.060	103.261	5.77685	1.659	4.822	1417
64	1.68238	174.62	3.7422	65.621	112.351	5.92119	1.620	4.310	1467
66	1.79934	197.67	3.4524	70.642	120.620	6.04845	1.594	3.980	1512
68	1.90933	218.95	3.2187	75.303	128.337	6.16364	1.577	3.749	1553
70	2.01419	238.89	3.0240	79.709	135.655	6.26972	1.564	3.577	1591
75	2.26063	284.64	2.6480	89.977	152.768	6.50597	1.546	3.294	1676
80	2.49190	326.36	2.3714	99.563	168.778	6.71267	1.537	3.122	1752
85	2.71305	365.36	2.1558	108.729	184.086	6.89832	1.534	3.008	1822
90	2.92696	402.37	1.9814	117.619	198.918	7.06789	1.536	2.929	1885
95	3.13541	437.88	1.8365	126.328	213.418	7.22469	1.542	2.874	1945
100	3.33958	472.18	1.7134	134.937	227.696	7.37118	1.551	2.835	2000
105	3.54037	505.53	1.6079	143.471	241.808	7.50889	1.565	2.811	2051
110	3.73843	538.11	1.5159	151.991	255.829	7.63934	1.583	2.799	2099
115	3.93423	570.04	1.4348	160.537	269.814	7.76367	1.606	2.796	2144
120	4.12814	601.44	1.3627	169.147	283.810	7.88280	1.634	2.803	2186
125	4.32044	632.37	1.2981	177.853	297.857	7.99749	1.666	2.817	2226
130	4.51137	662.92	1.2397	186.687	311.995	8.10838	1.703	2.839	2263
140	4.88984	723.03	1.1384	204.845	340.665	8.32082	1.788	2.899	2331
150	5.26467	782.09	1.0533	223.809	370.040	8.52345	1.886	2.979	2392
160	5.63668	840.34	0.9807	243.718	400.282	8.71860	1.994	3.072	2449
170	6.00642	897.92	0.9178	264.666	431.500	8.90782	2.107	3.173	2503
180	6.37433	954.98	0.8628	286.699	463.752	9.09214	2.222	3.277	2555
190	6.74053	1011.51	0.8139	309.845	497.070	9.27191	2.336	3.382	2605
200	7.10554	1067.72	0.7707	334.031	531.394	9.44783	2.442	3.482	2656
220	7.83248	1179.22	0.6970	385.277	602.832	9.78815	2.627	3.656	2758
240	8.55624	1289.80	0.6364	439.704	677.362	10.11213	2.767	3.788	2860
260	9.27760	1399.67	0.5857	496.381	754.075	10.41927	2.861	3.876	2964
280	9.99712	1509.00	0.5426	554.477	832.157	10.70848	2.911	3.922	3069
300	10.71518	1617.90	0.5055	613.149	910.773	10.97980	2.928	3.935	3174
320	11.43208	1726.46	0.4732	671.858	989.395	11.23361	2.919	3.924	3279
340	12.14803	1834.75	0.4448	730.180	1067.603	11.47032	2.893	3.895	3383
360	12.86320	1942.80	0.4196	787.846	1145.134	11.69198	2.857	3.857	3486
380	13.57771	2050.66	0.3972	844.714	1221.847	11.89937	2.816	3.814	3587
400	14.29168	2158.35	0.3771	900.722	1297.687	12.09396	2.774	3.770	3687
420	15.00518	2265.92	0.3589	955.881	1372.664	12.27686	2.733	3.728	3784
440	15.71828	2373.36	0.3424	1010.245	1446.835	12.44941	2.695	3.689	3880
460	16.43104	2480.70	0.3274	1063.874	1520.262	12.61263	2.661	3.654	3973
480	17.14350	2587.96	0.3136	1116.856	1593.033	12.76727	2.631	3.623	4064
500	17.85571	2695.13	0.3010	1169.271	1665.230	12.91478	2.605	3.597	4152
520	18.56768	2802.25	0.2893	1221.198	1736.933	13.05552	2.583	3.574	4239
540	19.27878	2909.33	0.2785	1272.794	1808.281	13.19019	2.564	3.554	4323
560	19.99023	3016.30	0.2685	1323.875	1879.123	13.31852	2.548	3.539	4405
580	20.70153	3123.22	0.2592	1374.739	1949.743	13.44228	2.536	3.525	4485
600	21.41269	3230.09	0.2505	1425.404	2020.162	13.56171	2.525	3.515	4564
650	23.19012	3497.15	0.2311	1551.190	2195.317	13.84239	2.506	3.495	4753
700	24.96698	3764.03	0.2146	1676.303	2369.784	14.10123	2.496	3.484	4934
800	28.51951	4297.45	0.1877	1925.353	2717.509	14.56586	2.488	3.475	5274
1000	35.62171	5363.45	0.1501	2422.865	3412.291	15.34054	2.488	3.475	5891
2000	71.11624	10588.61	0.0750	4969.749	6945.069	17.78156	2.644	3.630	8245
3000	106.60710	16012.18	0.0500	7756.406	10717.518	19.29763	2.928	3.914	9958
4000	142.23530	21335.48	0.0375	10898.947	14849.665	20.67874	3.423	4.434	11315
5000	179.68284	26658.70	0.0300	15165.240	20156.099	22.68893	5.398	6.633	12312

* TWO-PHASE BOUNDRY

PSIA ISOBAR

DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
[illegible]	281.82	13.780	13917.91	0.0054137	0.04442	1.755	0.00601	1.25361	2.1703
[illegible]	283.82	13.644	13751.99	0.0054738	0.04606	1.687	0.00613	1.25279	2.0503
[illegible]	276.58	13.140	12243.31	0.0061242	0.05087	1.473	0.00629	1.24968	1.7654
[illegible]	277.18	12.531	11260.66	0.0065235	0.05402	1.304	0.00634	1.24631	1.5709
[illegible]	276.62	12.037	10343.53	0.0069727	0.05614	1.169	0.00626	1.24277	1.4459
[illegible]	275.06	11.623	9477.87	0.0074677	0.05743	1.059	0.00610	1.23904	1.3632
[illegible]	271.24	11.265	8587.72	0.0080720	0.05848	0.967	0.00592	1.23509	1.3028
[illegible]	266.28	10.942	7723.62	0.0087614	0.05967	0.888	0.00576	1.23090	1.2494
[illegible]	259.61	10.641	6852.78	0.0096046	0.06034	0.819	0.00555	1.22641	1.2183
[illegible]	251.05	10.357	5974.47	0.0106610	0.06052	0.757	0.00529	1.22155	1.2060
[illegible]	241.72	10.059	5136.78	0.0119161	0.06027	0.702	0.00501	1.21628	1.2074
[illegible]	230.40	9.735	4296.20	0.0135710	0.05959	0.650	0.00468	1.21050	1.2283
[illegible]	217.70	9.354	3488.63	0.0157328	0.05848	0.602	0.00432	1.20406	1.2682
[illegible]	202.82	8.892	2698.69	0.0188657	0.05692	0.554	0.00389	1.19675	1.3412
[illegible]	186.03	8.350	1960.98	0.0236551	0.05483	0.507	0.00340	1.18816	1.4643
[illegible]	165.32	7.682	1250.66	0.0327919	0.05196	0.456	0.00277	1.17741	1.7144
[illegible]	137.68	6.741	575.42	0.0590527	0.04953	0.397	0.00192	1.16199	2.3437
[illegible]	125.07	6.285	355.49	0.0867283	0.05026	0.371	0.00153	1.15443	2.8851
[illegible]	86.33	3.720	41.53	0.1619336	0.03060	0.148	0.00231	1.04643	2.4339
[illegible]	94.94	3.786	65.91	0.0840159	0.02428	0.142	0.00376	1.03964	1.6850
[illegible]	104.23	3.814	84.50	0.0550405	0.02203	0.141	0.00542	1.03461	1.3232
[illegible]	112.13	3.863	95.80	0.0430009	0.02127	0.142	0.00686	1.03138	1.1578
[illegible]	119.54	3.887	103.79	0.0360555	0.02100	0.143	0.00820	1.02899	1.0601
[illegible]	126.65	3.897	109.86	0.0314259	0.02095	0.146	0.00947	1.02708	0.9950
[illegible]	133.55	3.898	114.67	0.0280691	0.02103	0.148	0.01071	1.02551	0.9482
[illegible]	140.29	3.894	118.60	0.0254968	0.02120	0.150	0.01193	1.02417	0.9127
[illegible]	156.63	3.873	125.91	0.0210310	0.02180	0.157	0.01496	1.02151	0.8527
[illegible]	172.44	3.844	130.97	0.0181064	0.02256	0.163	0.01800	1.01950	0.8146
[illegible]	187.91	3.812	134.67	0.0160083	0.02341	0.170	0.02111	1.01790	0.7879
[illegible]	203.22	3.776	137.47	0.0144131	0.02432	0.177	0.02430	1.01659	0.7682
[illegible]	218.53	3.735	139.66	0.0131505	0.02526	0.184	0.02756	1.01548	0.7533
[illegible]	233.97	3.689	141.39	0.0121185	0.02624	0.191	0.03090	1.01453	0.7418
[illegible]	249.66	3.637	142.79	0.0112604	0.02723	0.197	0.03430	1.01370	0.7334
[illegible]	265.76	3.580	143.94	0.0105313	0.02833	0.204	0.03785	1.01297	0.7252
[illegible]	282.40	3.515	144.89	0.0099024	0.02949	0.210	0.04148	1.01232	0.7184
[illegible]	299.68	3.443	145.69	0.0093532	0.03065	0.217	0.04513	1.01174	0.7139
[illegible]	317.67	3.366	146.37	0.0088684	0.03182	0.223	0.04879	1.01122	0.7114
[illegible]	336.45	3.285	146.94	0.0084367	0.03299	0.229	0.05243	1.01074	0.7105
[illegible]	376.53	3.114	147.86	0.0076993	0.03526	0.242	0.05948	1.00990	0.7151
[illegible]	420.07	2.940	148.55	0.0070906	0.03812	0.254	0.06737	1.00920	0.7133
[illegible]	466.94	2.772	149.08	0.0065779	0.04124	0.265	0.07568	1.00859	0.7111
[illegible]	516.80	2.616	149.49	0.0061393	0.04437	0.277	0.08399	1.00806	0.7120
[illegible]	569.11	2.475	149.82	0.0057590	0.05205	0.308	0.10124	1.00759	0.6976
[illegible]	623.62	2.349	150.06	0.0054239	0.05692	0.326	0.11343	1.00718	0.6983
[illegible]	578.84	2.243	150.27	0.0051288	0.06138	0.342	0.12526	1.00681	0.6988
[illegible]	789.76	2.078	150.56	0.0046292	0.06915	0.367	0.14814	1.00618	0.6995
[illegible]	897.37	1.968	150.74	0.0042217	0.07549	0.387	0.17051	1.00565	0.6998
[illegible]	998.50	1.899	150.87	0.0038822	0.08055	0.404	0.19278	1.00521	0.6997
[illegible]	1091.17	1.863	150.94	0.0035946	0.08445	0.418	0.21525	1.00484	0.6992
[illegible]	1175.59	1.850	150.99	0.0033477	0.08743	0.431	0.23804	1.00451	0.6984
[illegible]	1252.27	1.853	151.02	0.0031331	0.08967	0.443	0.26127	1.00423	0.6974
[illegible]	1322.68	1.867	151.03	0.0029450	0.09138	0.454	0.28500	1.00398	0.6964
[illegible]	1388.22	1.889	151.04	0.0027785	0.09273	0.464	0.30924	1.00376	0.6953
[illegible]	1450.10	1.915	151.03	0.0026300	0.09383	0.474	0.33404	1.00356	0.6941
[illegible]	1510.01	1.943	151.02	0.0024969	0.09481	0.484	0.35940	1.00338	0.6931
[illegible]	1568.61	1.971	151.01	0.0023767	0.09574	0.494	0.38533	1.00322	0.6921
[illegible]	1626.76	1.997	150.99	0.0022677	0.09666	0.503	0.41183	1.00307	0.6912
[illegible]	1685.25	2.022	150.98	0.0021684	0.09761	0.512	0.43889	1.00294	0.6904
[illegible]	1744.12	2.044	150.96	0.0020775	0.09861	0.521	0.46654	1.00282	0.6896
[illegible]	1803.87	2.063	150.94	0.0019939	0.09967	0.530	0.49479	1.00271	0.6890
[illegible]	1864.52	2.080	150.92	0.0019169	0.10079	0.539	0.52362	1.00260	0.6884
[illegible]	1926.03	2.094	150.91	0.0018454	0.10196	0.548	0.55305	1.00251	0.6879
[illegible]	1988.83	2.106	150.89	0.0017793	0.10321	0.557	0.58306	1.00242	0.6874
[illegible]	2052.27	2.116	150.87	0.0017178	0.10451	0.566	0.61366	1.00233	0.6870
[illegible]	2116.62	2.124	150.85	0.0016605	0.10585	0.574	0.64486	1.00226	0.6867
[illegible]	2280.49	2.138	150.80	0.0015327	0.10934	0.596	0.72547	1.00208	0.6860
[illegible]	2447.88	2.147	150.76	0.0014232	0.11301	0.618	0.80990	1.00193	0.6855
[illegible]	2790.42	2.151	150.68	0.0012454	0.12064	0.660	0.99005	1.00169	0.6849
[illegible]	3486.52	2.148	150.57	0.0009967	0.13612	0.744	1.39534	1.00136	0.6841
[illegible]	7273.79	2.017	150.30	0.0004990	0.27727	1.133	5.43210	1.00068	0.5340
[illegible]	11758.05	1.821	150.20	0.0003329	0.39384	1.479	10.72639	1.00045	0.5292
[illegible]	17734.63	1.558	150.00	0.0002500	0.56583	1.796	18.15212	1.00034	0.5066
[illegible]	32801.27	0.999	148.37	0.0002022	1.17970	2.104	31.95922	1.00027	0.4258

[illegible] BOUNDARY

187.510 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.612	0.20606	2912.75	75.4731	-132.682	-125.528	1.19418	1.132	1.525	4265
26	0.20649	2928.46	75.5926	-132.100	-124.930	1.21735	1.142	1.543	4281
28	0.20885	2656.77	75.4522	-128.955	-121.703	1.33688	1.194	1.679	4160
30	0.21140	2464.04	74.0620	-125.581	-118.240	1.45631	1.242	1.794	4062
32	0.21421	2293.67	72.7235	-121.970	-114.532	1.57596	1.286	1.913	3976
34	0.21725	2130.35	71.3780	-118.121	-110.578	1.69582	1.326	2.037	3894
36	0.22058	1967.25	69.9373	-114.026	-106.367	1.81614	1.361	2.167	3810
38	0.22421	1800.01	68.3101	-109.681	-101.896	1.93701	1.391	2.308	3720
40	0.22822	1634.09	66.4992	-105.058	-97.134	2.05912	1.417	2.461	3626
42	0.23271	1468.57	64.4426	-100.128	-92.047	2.18318	1.438	2.629	3527
44	0.23779	1297.09	62.0642	-94.851	-86.594	2.31000	1.456	2.824	3414
46	0.24358	1131.08	59.3103	-89.193	-80.736	2.44019	1.470	3.042	3293
48	0.25034	962.85	56.1157	-83.082	-74.390	2.57520	1.483	3.304	3153
50	0.25835	792.51	52.4536	-76.434	-67.463	2.71654	1.496	3.641	2989
52	0.26823	625.67	48.3255	-69.074	-59.760	2.86757	1.511	4.097	2803
54	0.28114	459.17	43.5809	-60.666	-50.905	3.03461	1.530	4.799	2583
56	0.29956	297.86	37.9517	-50.589	-40.188	3.22936	1.557	6.057	2317
58	0.33264	131.71	30.4176	-36.705	-25.155	3.49277	1.613	9.961	1941
* 59.357	0.50744	-0.23	15.3550	-1.517	16.102	4.19171	2.374	-2910.678	1141
* 59.357	0.51218	-0.23	15.2313	-0.992	16.792	4.20374	2.334	-2902.489	1152
60	0.81313	35.25	9.1389	29.494	57.727	4.89164	2.003	19.410	1258
62	1.03452	86.81	6.7351	45.076	80.997	5.27402	1.781	8.201	1361
64	1.17924	123.12	5.6777	53.930	94.875	5.49451	1.691	6.006	1423
66	1.29793	153.13	5.0400	60.770	105.837	5.66324	1.641	5.057	1478
68	1.40332	179.35	4.5825	66.639	115.365	5.80550	1.610	4.514	1526
70	1.50030	203.12	4.2290	71.922	124.016	5.93090	1.590	4.159	1569
75	1.72017	255.70	3.5987	83.643	143.370	6.19816	1.562	3.643	1662
80	1.92035	302.16	3.1674	94.149	160.827	6.42358	1.549	3.363	1743
85	2.10844	344.73	2.8458	103.968	177.176	6.62187	1.545	3.189	1816
90	2.28827	384.60	2.5932	113.355	192.808	6.80059	1.545	3.071	1882
95	2.46209	422.45	2.3879	122.459	207.947	6.96432	1.550	2.989	1943
100	2.63126	458.70	2.2161	131.398	222.759	7.11629	1.559	2.931	1999
105	2.79686	493.73	2.0710	140.201	237.313	7.25831	1.571	2.893	2052
110	2.95958	527.77	1.9459	148.950	251.712	7.39228	1.589	2.869	2101
115	3.11997	560.99	1.8367	157.693	266.024	7.51952	1.611	2.858	2147
120	3.27840	593.53	1.7402	166.474	280.306	7.64109	1.638	2.857	2190
125	3.43520	625.49	1.6544	175.332	294.608	7.75785	1.670	2.865	2230
130	3.59060	656.96	1.5773	184.300	308.972	7.87052	1.706	2.881	2267
140	3.89796	718.68	1.4444	202.687	338.031	8.08585	1.791	2.934	2336
150	4.20167	779.10	1.3335	221.838	367.727	8.29070	1.889	3.008	2398
160	4.50253	838.50	1.2394	241.904	398.240	8.48759	1.996	3.096	2455
170	4.80114	897.08	1.1583	262.986	429.690	8.67822	2.109	3.194	2509
180	5.09793	955.02	1.0876	285.133	462.142	8.86368	2.223	3.296	2561
190	5.39299	1012.30	1.0250	308.397	495.651	9.04450	2.337	3.399	2612
200	5.68689	1069.18	0.9697	332.675	530.133	9.22123	2.443	3.497	2663
220	6.27164	1181.83	0.8759	384.075	601.838	9.56282	2.628	3.668	2764
240	6.85324	1293.35	0.7990	438.628	676.585	9.88774	2.768	3.798	2867
260	7.43248	1404.00	0.7348	495.409	753.478	10.19561	2.862	3.885	2971
280	8.00990	1513.99	0.6803	553.593	831.711	10.48538	2.912	3.929	3076
300	8.58588	1623.45	0.6335	612.341	910.457	10.75715	2.929	3.941	3181
320	9.16071	1732.49	0.5928	671.115	989.191	11.01132	2.920	3.929	3286
340	9.73460	1841.19	0.5571	729.494	1067.497	11.24832	2.894	3.900	3390
360	10.30772	1949.61	0.5255	787.211	1145.113	11.47023	2.858	3.861	3493
380	10.88020	2057.79	0.4973	844.123	1221.903	11.67783	2.816	3.817	3595
400	11.45213	2165.78	0.4720	900.172	1297.810	11.87259	2.774	3.774	3694
420	12.02361	2273.59	0.4492	955.367	1372.848	12.05563	2.733	3.731	3792
440	12.59469	2381.26	0.4285	1009.764	1447.074	12.22832	2.695	3.692	3887
460	13.16543	2488.81	0.4096	1063.423	1520.550	12.39165	2.661	3.657	3980
480	13.73588	2596.25	0.3924	1116.433	1593.367	12.54638	2.631	3.626	4071
500	14.30607	2703.59	0.3765	1168.872	1665.604	12.69398	2.605	3.599	4160
520	14.87603	2810.85	0.3619	1220.823	1737.345	12.83479	2.583	3.576	4246
540	15.44545	2918.16	0.3483	1272.458	1808.751	12.96956	2.564	3.556	4330
560	16.01491	3025.24	0.3358	1323.558	1879.623	13.09794	2.549	3.540	4412
580	16.58421	3132.26	0.3241	1374.439	1950.272	13.22176	2.536	3.527	4492
600	17.15338	3239.24	0.3133	1425.120	2020.716	13.34123	2.525	3.516	4571
650	18.57583	3506.50	0.2890	1550.941	2195.927	13.62200	2.507	3.496	4760
700	19.99772	3773.56	0.2683	1676.083	2370.440	13.88091	2.496	3.485	4940
800	22.84032	4307.24	0.2346	1925.178	2718.234	14.34563	2.488	3.476	5280
1000	28.52267	5373.55	0.1876	2422.746	3413.104	15.12041	2.488	3.475	5896
2000	56.91813	10599.18	0.0938	4969.715	6946.013	17.56153	2.644	3.630	8249
3000	85.30945	16022.85	0.0625	7756.225	10718.321	19.07756	2.927	3.913	9962
4000	113.79882	21346.19	0.0469	10889.119	14840.416	20.45596	3.394	4.402	11325
5000	143.59035	26669.42	0.0375	15049.181	20034.893	22.44202	5.182	6.389	12337

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

187.510 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.612	4.85300	285.70	13.743	14135.56	0.0053392	0.04501	1.766	0.00608	1.25411	2.1544
26	4.84284	289.47	13.664	14182.05	0.0053302	0.04619	1.716	0.00618	1.25354	2.0641
28	4.78824	283.01	13.198	12721.25	0.0059312	0.05106	1.498	0.00635	1.25046	1.7726
30	4.73030	282.37	12.610	11655.64	0.0063542	0.05428	1.327	0.00640	1.24720	1.5788
32	4.66841	281.65	12.114	10707.79	0.0067916	0.05645	1.189	0.00632	1.24373	1.4509
34	4.60290	279.77	11.696	9805.77	0.0072792	0.05779	1.077	0.00617	1.24005	1.3663
36	4.53349	276.37	11.337	8918.50	0.0078418	0.05888	0.983	0.00599	1.23617	1.3025
38	4.46010	271.24	11.011	8028.22	0.0085087	0.06014	0.903	0.00584	1.23207	1.2478
40	4.38168	264.99	10.710	7160.05	0.0092875	0.06086	0.834	0.00564	1.22770	1.2136
42	4.29722	257.47	10.427	6310.75	0.0102116	0.06112	0.772	0.00541	1.22301	1.1955
44	4.20544	248.21	10.136	5454.81	0.0113779	0.06095	0.716	0.00513	1.21792	1.1945
46	4.10535	238.17	9.826	4643.47	0.0127729	0.06037	0.665	0.00483	1.21239	1.2059
48	3.99459	226.48	9.475	3846.20	0.0145899	0.05939	0.617	0.00450	1.20629	1.2350
50	3.87056	212.95	9.059	3067.52	0.0170996	0.05802	0.571	0.00412	1.19948	1.2892
52	3.72816	197.76	8.578	2332.60	0.0207174	0.05620	0.525	0.00368	1.19169	1.3786
54	3.55697	179.83	8.011	1633.25	0.0266836	0.05379	0.479	0.00315	1.18238	1.5378
56	3.33828	158.69	7.301	994.33	0.0381681	0.05034	0.429	0.00249	1.17055	1.8573
58	3.00629	129.67	6.271	395.96	0.0768191	0.04969	0.367	0.00166	1.15274	2.6491
* 59.357	1.97068	85.57	3.282	-0.45	-34.0148424	-2.80600	0.239	0.00049	1.09840	8.9213
* 59.357	1.95244	85.68	3.343	-0.45	-33.8775689	-2.79823	0.237	0.00049	1.09746	8.8575
60	1.22981	92.07	3.709	43.35	0.2108330	0.03913	0.175	0.00164	1.06063	3.1203
62	0.96663	102.18	3.913	83.91	0.0802650	0.02681	0.159	0.00338	1.04744	1.7485
64	0.84801	110.45	3.959	104.41	0.0543788	0.02439	0.155	0.00479	1.04153	1.3761
66	0.77045	118.37	3.985	117.98	0.0427195	0.02347	0.155	0.00602	1.03769	1.2000
68	0.71260	125.89	3.993	127.81	0.0358545	0.02307	0.155	0.00717	1.03482	1.0947
70	0.66653	133.14	3.991	135.38	0.0312370	0.02292	0.157	0.00827	1.03254	1.0241
75	0.58134	150.48	3.964	148.65	0.0242093	0.02309	0.162	0.01090	1.02834	0.9184
80	0.52074	167.08	3.926	157.35	0.0201304	0.02362	0.168	0.01349	1.02536	0.8590
85	0.47428	183.20	3.884	163.50	0.0174051	0.02433	0.174	0.01609	1.02308	0.8204
90	0.43701	199.04	3.840	168.07	0.0154290	0.02513	0.180	0.01873	1.02125	0.7931
95	0.40616	214.79	3.793	171.58	0.0139172	0.02600	0.187	0.02142	1.01974	0.7731
100	0.38005	230.59	3.741	174.33	0.0127121	0.02692	0.193	0.02416	1.01846	0.7579
105	0.35754	246.57	3.686	176.53	0.0117316	0.02786	0.200	0.02694	1.01736	0.7467
110	0.33789	262.91	3.625	178.33	0.0109120	0.02892	0.206	0.02984	1.01640	0.7363
115	0.32052	279.75	3.557	179.81	0.0102146	0.03004	0.213	0.03280	1.01556	0.7279
120	0.30503	297.21	3.482	181.04	0.0096123	0.03117	0.219	0.03577	1.01480	0.7220
125	0.29110	315.35	3.403	182.08	0.0090857	0.03232	0.225	0.03874	1.01412	0.7183
130	0.27851	334.25	3.319	182.97	0.0086206	0.03347	0.231	0.04170	1.01351	0.7166
140	0.25654	374.54	3.144	184.37	0.0078339	0.03568	0.243	0.04740	1.01244	0.7202
150	0.23800	418.26	2.967	185.43	0.0071915	0.03851	0.255	0.05379	1.01153	0.7173
160	0.22210	465.28	2.795	186.23	0.0066550	0.04161	0.267	0.06051	1.01076	0.7142
170	0.20828	515.29	2.637	186.85	0.0061991	0.04472	0.278	0.06722	1.01009	0.7146
180	0.19616	567.73	2.494	187.33	0.0058059	0.05215	0.308	0.08065	1.00950	0.7008
190	0.18543	622.52	2.365	187.71	0.0054605	0.05698	0.327	0.09040	1.00898	0.7012
200	0.17584	677.91	2.257	188.01	0.0051579	0.06141	0.342	0.09989	1.00851	0.7014
220	0.15945	789.17	2.090	188.44	0.0046479	0.06916	0.367	0.11825	1.00772	0.7016
240	0.14592	897.15	1.978	188.72	0.0042337	0.07550	0.387	0.13622	1.00706	0.7016
260	0.13454	998.64	1.908	188.90	0.0038899	0.08055	0.404	0.15412	1.00651	0.7012
280	0.12485	1091.65	1.871	189.01	0.0035994	0.08446	0.418	0.17217	1.00604	0.7005
300	0.11647	1176.38	1.857	189.08	0.0033505	0.08744	0.431	0.19048	1.00563	0.6996
320	0.10916	1253.34	1.860	189.12	0.0031346	0.08969	0.443	0.20913	1.00528	0.6984
340	0.10273	1324.00	1.874	189.14	0.0029455	0.09141	0.454	0.22818	1.00497	0.6972
360	0.09701	1389.76	1.895	189.14	0.0027783	0.09276	0.464	0.24763	1.00469	0.6960
380	0.09191	1451.82	1.921	189.13	0.0026294	0.09387	0.475	0.26753	1.00444	0.6948
400	0.08732	1511.89	1.949	189.12	0.0024959	0.09486	0.484	0.28788	1.00422	0.6937
420	0.08317	1570.62	1.976	189.09	0.0023755	0.09579	0.494	0.30868	1.00402	0.6926
440	0.07940	1628.90	2.002	189.07	0.0022664	0.09671	0.503	0.32993	1.00384	0.6916
460	0.07596	1687.48	2.027	189.04	0.0021669	0.09767	0.512	0.35164	1.00367	0.6908
480	0.07280	1746.46	2.048	189.01	0.0020759	0.09867	0.522	0.37382	1.00352	0.6900
500	0.06990	1806.29	2.068	188.98	0.0019923	0.09973	0.531	0.39646	1.00338	0.6893
520	0.06722	1867.01	2.084	188.95	0.0019153	0.10086	0.540	0.41958	1.00325	0.6887
540	0.06474	1928.64	2.098	188.93	0.0018437	0.10203	0.548	0.44319	1.00313	0.6881
560	0.06244	1991.49	2.110	188.90	0.0017776	0.10329	0.557	0.46724	1.00302	0.6876
580	0.06030	2054.99	2.120	188.87	0.0017162	0.10458	0.566	0.49178	1.00291	0.6872
600	0.05830	2119.38	2.128	188.84	0.0016589	0.10592	0.575	0.51679	1.00282	0.6869
650	0.05383	2283.34	2.142	188.77	0.0015312	0.10943	0.597	0.58140	1.00260	0.6862
700	0.05001	2450.81	2.150	188.70	0.0014218	0.11310	0.618	0.64907	1.00242	0.6856
800	0.04378	2793.46	2.154	188.58	0.0012443	0.12075	0.661	0.79343	1.00211	0.6849
1000	0.03506	3489.72	2.151	188.40	0.0009959	0.13625	0.745	1.11820	1.00169	0.6841
2000	0.01757	7277.36	2.018	187.97	0.0004988	0.27727	1.134	4.34754	1.00085	0.5347
3000	0.01172	11759.20	1.822	187.82	0.0003328	0.39369	1.481	8.58232	1.00057	0.5299
4000	0.00879	17614.47	1.572	187.58	0.0002499	0.55943	1.798	14.46202	1.00042	0.5094
5000	0.00696	31643.09	1.039	185.73	0.0002019	1.12081	2.105	25.18893	1.00034	0.4320

* TWO-PHASE BOUNDRY

200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.662	0.20593	2925.82	75.5107	-132.666	-125.039	1.19467	1.133	1.525	4273
26	0.20635	2903.11	75.6397	-132.146	-124.504	1.21538	1.142	1.546	4267
28	0.20864	2680.41	75.5380	-129.027	-121.300	1.33405	1.194	1.674	4173
30	0.21118	2484.42	74.2465	-125.664	-117.843	1.45326	1.241	1.791	4075
32	0.21396	2313.25	72.9098	-122.067	-114.143	1.57265	1.285	1.909	3989
34	0.21698	2149.73	71.5682	-118.235	-110.199	1.69220	1.325	2.031	3907
36	0.22027	1987.41	70.1338	-114.158	-106.001	1.81217	1.360	2.161	3824
38	0.22387	1819.56	68.5185	-109.834	-101.543	1.93264	1.390	2.300	3735
40	0.22783	1654.13	66.7202	-105.238	-96.800	2.05428	1.416	2.451	3642
42	0.23225	1489.85	64.6824	-100.340	-91.738	2.17774	1.438	2.616	3544
44	0.23725	1318.59	62.3385	-95.104	-86.317	2.30381	1.456	2.807	3432
46	0.24294	1154.66	59.6270	-89.498	-80.500	2.43307	1.470	3.018	3314
48	0.24954	987.70	56.5029	-83.455	-74.213	2.56684	1.482	3.271	3178
50	0.25733	818.55	52.9300	-76.898	-67.368	2.70652	1.495	3.594	3019
52	0.26685	653.33	48.8994	-69.671	-59.789	2.85512	1.510	4.019	2839
54	0.27908	488.19	44.3207	-61.497	-51.161	3.01787	1.527	4.661	2627
56	0.29603	330.93	38.9874	-51.868	-40.905	3.20426	1.551	5.725	2379
58	0.32384	174.80	32.2223	-39.348	-27.355	3.44176	1.596	8.285	2051
60	0.43499	12.98	18.3735	-10.863	5.247	3.99175	2.032	56.726	1296
62	0.88263	63.67	8.1652	37.609	70.297	5.06569	1.844	11.210	1339
64	1.04401	104.93	6.6105	48.974	87.638	5.34130	1.722	7.102	1416
66	1.16762	137.61	5.7137	56.901	100.144	5.53382	1.661	5.614	1468
68	1.27390	165.86	5.1325	63.380	110.559	5.68933	1.623	4.869	1518
70	1.37002	191.10	4.6994	69.068	119.806	5.82339	1.599	4.411	1563
75	1.58449	246.16	3.9527	81.403	140.084	6.10343	1.567	3.780	1659
80	1.77738	294.26	3.4563	92.269	158.093	6.33601	1.553	3.453	1741
85	1.95744	338.05	3.0921	102.333	174.826	6.53895	1.548	3.254	1814
90	2.12887	378.87	2.8091	111.902	190.744	6.72095	1.548	3.121	1881
95	2.29410	417.49	2.5808	121.147	206.108	6.88711	1.553	3.030	1943
100	2.45456	454.39	2.3907	130.203	221.107	7.04100	1.561	2.965	1999
105	2.61138	489.97	2.2311	139.101	235.812	7.18450	1.574	2.921	2053
110	2.76529	524.49	2.0939	147.929	250.340	7.31967	1.591	2.893	2102
115	2.91683	558.13	1.9745	156.740	264.764	7.44790	1.613	2.878	2148
120	3.06641	591.04	1.8693	165.580	279.143	7.57030	1.640	2.875	2191
125	3.21433	623.33	1.7759	174.489	293.531	7.68776	1.671	2.881	2231
130	3.36085	655.10	1.6922	183.503	307.971	7.80103	1.707	2.896	2269
140	3.65044	717.34	1.5481	201.968	337.160	8.01732	1.792	2.946	2338
150	3.93636	778.20	1.4282	221.182	366.964	8.22291	1.889	3.018	2400
160	4.21945	837.97	1.3267	241.301	397.567	8.42039	1.997	3.105	2457
170	4.50028	896.89	1.2393	262.427	429.093	8.61149	2.110	3.201	2511
180	4.77930	955.11	1.1633	284.612	461.612	8.79733	2.224	3.302	2563
190	5.05658	1012.63	1.0959	307.916	495.185	8.97849	2.338	3.405	2614
200	5.33271	1069.73	1.0365	332.224	529.719	9.15548	2.444	3.502	2665
220	5.88193	1182.76	0.9358	383.676	601.511	9.49750	2.628	3.672	2767
240	6.42802	1294.57	0.8534	438.271	676.330	9.82273	2.768	3.802	2870
260	6.97175	1405.48	0.7847	495.087	753.283	10.13084	2.862	3.887	2974
280	7.51367	1515.68	0.7264	553.300	831.566	10.42080	2.913	3.932	3079
300	8.05416	1625.32	0.6763	612.073	910.355	10.69271	2.929	3.943	3184
320	8.59351	1734.52	0.6328	670.869	989.126	10.94700	2.920	3.930	3289
340	9.13192	1843.36	0.5946	729.267	1067.463	11.18410	2.894	3.901	3393
360	9.66956	1951.90	0.5608	787.000	1145.108	11.40609	2.858	3.862	3496
380	10.20656	2060.19	0.5307	843.927	1221.923	11.61376	2.817	3.819	3597
400	10.74302	2168.26	0.5037	899.989	1297.853	11.80858	2.774	3.775	3697
420	11.27903	2276.16	0.4793	955.196	1372.910	11.99167	2.733	3.732	3794
440	11.81464	2383.90	0.4572	1009.604	1447.155	12.16440	2.695	3.693	3890
460	12.34991	2491.52	0.4371	1063.274	1520.647	12.32776	2.661	3.657	3983
480	12.88489	2599.02	0.4186	1116.292	1593.479	12.48253	2.631	3.626	4074
500	13.41961	2706.41	0.4017	1168.740	1665.730	12.63015	2.605	3.599	4162
520	13.95411	2813.72	0.3861	1220.698	1737.483	12.77099	2.583	3.576	4248
540	14.48845	2921.11	0.3716	1272.346	1808.908	12.90579	2.564	3.556	4332
560	15.02214	3028.22	0.3582	1323.452	1879.791	13.03419	2.549	3.541	4414
580	15.55599	3135.28	0.3458	1374.339	1950.449	13.15803	2.536	3.527	4495
600	16.08970	3242.29	0.3342	1425.026	2020.901	13.27751	2.526	3.516	4573
650	17.42350	3509.62	0.3083	1550.859	2196.131	13.55831	2.507	3.497	4762
700	18.75674	3776.73	0.2862	1676.010	2370.658	13.81724	2.496	3.485	4943
800	21.42204	4310.50	0.2503	1925.120	2718.476	14.28200	2.488	3.476	5282
1000	26.74981	5376.92	0.2001	2422.706	3413.374	15.05680	2.489	3.476	5898
2000	53.37238	10702.70	0.1000	4969.703	6946.327	17.49796	2.644	3.630	8251
3000	79.99071	16026.40	0.0667	7756.176	10718.599	19.01397	2.927	3.913	9963
4000	106.69800	21349.75	0.0500	10886.478	14837.994	20.39165	3.386	4.394	11328
5000	134.58751	26672.99	0.0400	15017.990	20002.383	22.37123	5.124	6.324	12344

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.662	4.85594	286.99	13.730	14207.61	0.0053148	0.04521	1.770	0.00610	1.25428	2.1493
26	4.84614	287.56	13.667	14068.88	0.0053764	0.04622	1.724	0.00617	1.25373	2.0759
28	4.79288	284.71	13.204	12846.88	0.0058799	0.05112	1.506	0.00637	1.25073	1.7756
30	4.73528	283.75	12.634	11764.41	0.0063111	0.05436	1.334	0.00641	1.24748	1.5821
32	4.67378	283.03	12.137	10811.62	0.0067437	0.05655	1.196	0.00634	1.24403	1.4531
34	4.60870	281.21	11.719	9907.46	0.0072237	0.05791	1.083	0.00619	1.24038	1.3676
36	4.53981	277.95	11.359	9022.45	0.0077732	0.05902	0.988	0.00602	1.23652	1.3028
38	4.46697	272.84	11.034	8127.91	0.0084300	0.06029	0.908	0.00587	1.23246	1.2474
40	4.38923	266.72	10.732	7260.38	0.0091896	0.06104	0.839	0.00567	1.22812	1.2123
42	4.30564	259.42	10.449	6414.78	0.0100833	0.06132	0.777	0.00544	1.22348	1.1929
44	4.21497	250.27	10.161	5557.82	0.0112164	0.06117	0.721	0.00517	1.21845	1.1908
46	4.11627	240.56	9.855	4752.88	0.0125454	0.06063	0.670	0.00488	1.21299	1.1998
48	4.00744	229.16	9.512	3958.13	0.0142751	0.05968	0.622	0.00455	1.20699	1.2264
50	3.88611	215.97	9.109	3180.99	0.0166395	0.05836	0.576	0.00418	1.20033	1.2764
52	3.74748	201.24	8.642	2448.34	0.0199724	0.05661	0.531	0.00376	1.19275	1.3571
54	3.58319	183.95	8.101	1749.26	0.0253368	0.05433	0.486	0.00325	1.18380	1.4995
56	3.37801	164.17	7.439	1117.90	0.0348755	0.05110	0.437	0.00264	1.17269	1.7645
58	3.08798	138.80	6.540	539.79	0.0596938	0.04938	0.381	0.00193	1.15711	2.3029
60	2.29892	92.10	3.934	29.83	0.6159491	0.08621	0.273	0.00066	1.11543	6.4602
62	1.13298	99.03	3.909	72.13	0.1131964	0.03101	0.170	0.00244	1.05577	2.2174
64	0.95785	107.97	4.007	100.50	0.0657733	0.02626	0.162	0.00386	1.04700	1.5737
66	0.85644	115.79	4.017	117.85	0.0484820	0.02463	0.159	0.00512	1.04195	1.3058
68	0.78499	123.51	4.028	130.20	0.0394201	0.02393	0.159	0.00626	1.03841	1.1634
70	0.72992	130.92	4.026	139.48	0.0336912	0.02362	0.160	0.00734	1.03568	1.0729
75	0.63112	148.57	3.997	155.36	0.0254427	0.02358	0.164	0.00988	1.03060	0.9446
80	0.56263	165.42	3.955	165.56	0.0208770	0.02401	0.169	0.01236	1.02742	0.8758
85	0.51087	181.74	3.909	172.70	0.0179045	0.02466	0.175	0.01483	1.02488	0.8322
90	0.46973	197.74	3.863	177.97	0.0157847	0.02542	0.181	0.01734	1.02286	0.8020
95	0.43590	213.63	3.813	181.98	0.0141817	0.02626	0.188	0.01988	1.02120	0.7801
100	0.40740	229.55	3.759	185.12	0.0129144	0.02715	0.194	0.02248	1.01980	0.7635
105	0.38294	245.61	3.703	187.63	0.0118908	0.02808	0.201	0.02510	1.01861	0.7513
110	0.36163	262.03	3.640	189.67	0.0110399	0.02912	0.207	0.02784	1.01756	0.7401
115	0.34284	278.94	3.571	191.35	0.0103188	0.03023	0.213	0.03063	1.01665	0.7311
120	0.32611	296.44	3.496	192.75	0.0096984	0.03135	0.220	0.03344	1.01583	0.7247
125	0.31111	314.63	3.415	193.92	0.0091577	0.03249	0.226	0.03624	1.01510	0.7207
130	0.29754	333.58	3.331	194.92	0.0086813	0.03363	0.232	0.03903	1.01443	0.7187
140	0.27394	373.93	3.154	196.51	0.0078781	0.03582	0.244	0.04439	1.01328	0.7220
150	0.25404	417.70	2.975	197.69	0.0072245	0.03864	0.256	0.05040	1.01231	0.7187
160	0.23700	464.77	2.803	198.60	0.0066802	0.04174	0.267	0.05672	1.01149	0.7153
170	0.22221	514.82	2.644	199.30	0.0062185	0.04484	0.278	0.06304	1.01077	0.7154
180	0.20924	567.31	2.500	199.84	0.0058211	0.05218	0.308	0.07552	1.01013	0.7019
190	0.19776	622.19	2.370	200.26	0.0054724	0.05700	0.327	0.08466	1.00958	0.7022
200	0.18752	677.63	2.262	200.60	0.0051673	0.06143	0.342	0.09355	1.00908	0.7022
220	0.17001	789.00	2.094	201.08	0.0046539	0.06917	0.367	0.11079	1.00823	0.7023
240	0.15557	897.10	1.982	201.40	0.0042376	0.07550	0.387	0.12767	1.00753	0.7022
260	0.14344	998.70	1.911	201.60	0.0038924	0.08055	0.404	0.14447	1.00694	0.7017
280	0.13309	1091.83	1.874	201.72	0.0036010	0.08446	0.418	0.16141	1.00644	0.7010
300	0.12416	1176.66	1.860	201.80	0.0033514	0.08745	0.431	0.17860	1.00601	0.6999
320	0.11637	1253.71	1.862	201.84	0.0031351	0.08970	0.443	0.19611	1.00563	0.6988
340	0.10951	1324.45	1.876	201.86	0.0029456	0.09142	0.454	0.21399	1.00529	0.6975
360	0.10342	1390.28	1.897	201.86	0.0027782	0.09277	0.465	0.23225	1.00500	0.6963
380	0.09798	1452.40	1.923	201.85	0.0026292	0.09388	0.475	0.25093	1.00474	0.6950
400	0.09308	1512.52	1.950	201.83	0.0024956	0.09487	0.484	0.27002	1.00450	0.6938
420	0.08866	1571.30	1.978	201.80	0.0023751	0.09580	0.494	0.28954	1.00429	0.6928
440	0.08454	1629.61	2.004	201.78	0.0022659	0.09673	0.503	0.30948	1.00409	0.6918
460	0.08097	1588.23	2.028	201.74	0.0021664	0.09769	0.513	0.32985	1.00391	0.6909
480	0.07751	1747.24	2.050	201.71	0.0020754	0.09869	0.522	0.35066	1.00375	0.6901
500	0.07452	1807.10	2.069	201.68	0.0019918	0.09975	0.531	0.37191	1.00360	0.6894
520	0.07166	1867.84	2.086	201.64	0.0019148	0.10088	0.540	0.39360	1.00346	0.6888
540	0.06902	1929.51	2.100	201.62	0.0018431	0.10205	0.549	0.41575	1.00334	0.6882
560	0.06657	1992.38	2.111	201.58	0.0017771	0.10331	0.557	0.43832	1.00322	0.6877
580	0.06428	2055.89	2.121	201.55	0.0017157	0.10461	0.566	0.46134	1.00311	0.6873
600	0.06215	2120.30	2.129	201.51	0.0016584	0.10595	0.575	0.48480	1.00300	0.6869
650	0.05739	2284.29	2.143	201.43	0.0015307	0.10945	0.597	0.54542	1.00277	0.6862
700	0.05331	2451.79	2.151	201.35	0.0014214	0.11313	0.618	0.60890	1.00258	0.6857
800	0.04668	2794.48	2.155	201.22	0.0012439	0.12078	0.661	0.74433	1.00225	0.6850
1000	0.03738	3490.78	2.151	201.01	0.0009956	0.13629	0.745	1.04899	1.00181	0.6841
2000	0.01874	7276.55	2.019	200.53	0.0004987	0.27727	1.135	4.07669	1.00090	0.5349
3000	0.01250	11759.75	1.822	200.35	0.0003328	0.39365	1.481	8.04694	1.00060	0.5301
4000	0.00937	17582.45	1.575	200.10	0.0002499	0.55771	1.799	13.54410	1.00045	0.5102
5000	0.00743	31331.64	1.051	198.18	0.0002018	1.10496	2.105	23.51643	1.00036	0.4338

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

210 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.702	0.20583	2936.26	75.5412	-132.652	-124.648	1.19505	1.133	1.525	4279
26	0.20620	2919.46	75.6562	-132.194	-124.176	1.21331	1.142	1.543	4275
28	0.20848	2699.22	75.6063	-129.084	-120.976	1.33180	1.193	1.671	4184
30	0.21100	2500.62	74.3932	-125.730	-117.525	1.45083	1.241	1.788	4086
32	0.21376	2328.81	73.0578	-122.144	-113.832	1.57001	1.285	1.905	4000
34	0.21676	2165.12	71.7192	-118.324	-109.895	1.68932	1.325	2.027	3918
36	0.22003	2003.41	70.2897	-114.263	-105.707	1.80901	1.359	2.155	3836
38	0.22358	1840.72	68.6899	-109.959	-101.265	1.92906	1.390	2.291	3750
40	0.22752	1670.00	66.8951	-105.379	-96.532	2.05044	1.416	2.443	3654
42	0.23190	1506.67	64.8719	-100.507	-91.489	2.17344	1.437	2.605	3557
44	0.23682	1340.40	62.5545	-95.304	-86.095	2.29889	1.455	2.789	3450
46	0.24243	1173.20	59.8759	-89.736	-80.308	2.42748	1.470	3.000	3331
48	0.24891	1007.14	56.8059	-83.745	-74.066	2.56028	1.482	3.247	3197
50	0.25653	838.82	53.3007	-77.258	-67.283	2.69871	1.495	3.558	3041
52	0.26579	674.65	49.3418	-70.131	-59.795	2.84551	1.509	3.964	2865
54	0.27753	515.66	44.8885	-62.128	-51.336	3.00509	1.525	4.535	2665
56	0.29350	358.81	39.7520	-52.806	-41.393	3.18580	1.548	5.482	2426
58	0.31838	203.39	33.4391	-41.064	-28.684	3.40860	1.585	7.571	2121
60	0.37868	52.82	23.4358	-21.616	-6.890	3.77714	1.708	18.274	1618
62	0.75832	44.59	9.8163	29.562	59.050	4.85976	1.915	16.180	1321
64	0.94321	89.94	7.4711	44.409	81.087	5.21020	1.749	8.292	1405
66	1.07220	124.95	6.3572	53.503	95.197	5.42746	1.679	6.224	1465
68	1.18016	154.99	5.6182	60.600	106.492	5.59614	1.634	5.206	1512
70	1.27614	181.47	5.1067	66.671	116.295	5.73826	1.607	4.640	1558
75	1.48725	238.58	4.2515	79.557	137.391	6.02964	1.571	3.899	1656
80	1.67511	288.01	3.6970	90.735	155.873	6.26832	1.557	3.529	1739
85	1.84950	332.77	3.2957	101.006	172.926	6.47515	1.551	3.308	1813
90	2.01497	374.35	2.9866	110.726	189.061	6.65986	1.551	3.163	1881
95	2.17407	413.60	2.7388	120.089	204.630	6.82803	1.555	3.063	1943
100	2.32832	451.01	2.5333	129.241	219.781	6.98347	1.563	2.992	2000
105	2.47887	487.02	2.3614	138.216	234.610	7.12818	1.575	2.943	2053
110	2.62647	521.92	2.2142	147.108	249.242	7.26433	1.592	2.912	2103
115	2.77169	555.89	2.0863	155.975	263.756	7.39336	1.614	2.895	2149
120	2.91492	589.10	1.9739	164.863	278.213	7.51642	1.641	2.890	2192
125	3.05650	621.66	1.8742	173.814	292.670	7.63445	1.672	2.894	2233
130	3.19667	653.66	1.7851	182.865	307.172	7.74820	1.708	2.907	2270
140	3.47355	716.32	1.6319	201.392	336.465	7.96526	1.792	2.955	2339
150	3.74676	777.52	1.5047	220.657	366.354	8.17145	1.890	3.026	2401
160	4.01713	837.59	1.3970	240.818	397.030	8.36939	1.997	3.111	2459
170	4.28525	896.76	1.3046	261.980	428.618	8.56086	2.110	3.207	2513
180	4.55155	955.20	1.2242	284.196	461.189	8.74701	2.224	3.307	2565
190	4.81612	1012.92	1.1529	307.532	494.813	8.92845	2.338	3.409	2616
200	5.07954	1070.19	1.0902	331.864	529.389	9.10565	2.444	3.505	2667
220	5.60336	1183.51	0.9840	383.358	601.252	9.44801	2.629	3.675	2769
240	6.12405	1295.57	0.8971	437.986	676.128	9.77349	2.769	3.804	2872
260	6.64240	1406.68	0.8247	494.829	753.128	10.08178	2.862	3.889	2976
280	7.15894	1517.05	0.7633	553.066	831.451	10.37189	2.913	3.933	3081
300	7.67406	1626.84	0.7106	611.858	910.274	10.64392	2.930	3.945	3186
320	8.18803	1736.16	0.6648	670.672	989.074	10.89831	2.920	3.932	3291
340	8.70107	1845.11	0.6247	729.085	1067.438	11.13549	2.895	3.903	3395
360	9.21335	1953.74	0.5891	786.832	1145.105	11.35754	2.858	3.864	3498
380	9.72499	2062.11	0.5575	843.771	1221.940	11.56526	2.817	3.820	3599
400	10.23609	2170.26	0.5291	899.844	1297.887	11.76013	2.775	3.775	3699
420	10.74674	2278.22	0.5034	955.060	1372.961	11.94325	2.734	3.733	3796
440	11.25699	2386.03	0.4802	1009.477	1447.220	12.11602	2.695	3.693	3892
460	11.76691	2493.69	0.4590	1063.154	1520.726	12.27941	2.661	3.658	3985
480	12.27653	2601.24	0.4397	1116.180	1593.569	12.43420	2.631	3.627	4076
500	12.78590	2708.68	0.4219	1168.635	1665.831	12.58185	2.605	3.600	4164
520	13.29504	2816.03	0.4055	1220.599	1737.594	12.72271	2.583	3.577	4250
540	13.80379	2923.47	0.3903	1272.256	1809.035	12.85754	2.564	3.557	4334
560	14.31243	3030.62	0.3762	1323.368	1879.925	12.98595	2.549	3.541	4416
580	14.82092	3137.71	0.3631	1374.260	1950.591	13.10980	2.536	3.528	4497
600	15.32928	3244.74	0.3509	1424.951	2021.050	13.22929	2.526	3.517	4575
650	16.59970	3512.12	0.3238	1550.793	2196.294	13.51011	2.507	3.497	4764
700	17.86956	3779.28	0.3005	1675.952	2370.834	13.76906	2.496	3.485	4944
800	20.40812	4313.11	0.2628	1925.073	2718.670	14.23385	2.488	3.476	5284
1000	25.48240	5379.61	0.2101	2422.675	3413.591	15.00868	2.489	3.476	5900
2000	50.83754	10705.51	0.1050	4969.694	6946.579	17.44986	2.644	3.630	8252
3000	76.18838	16029.24	0.0700	7756.139	10718.824	18.96587	2.927	3.913	9964
4000	101.62183	21352.60	0.0525	10884.535	14836.233	20.34301	3.381	4.387	11330
5000	128.15418	26575.84	0.0420	14995.050	19978.493	22.31781	5.081	6.276	12349

* TWO-PHASE BOUNDRY

210 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.702	4.85829	288.02	13.720	14265.19	0.0052955	0.04536	1.772	0.00612	1.25441	2.1453
26	4.84952	288.76	13.665	14158.27	0.0053436	0.04625	1.732	0.00618	1.25392	2.0800
28	4.79658	286.07	13.209	12947.02	0.0058397	0.05117	1.513	0.00639	1.25093	1.7781
30	4.73924	284.83	12.653	11851.06	0.0062774	0.05443	1.340	0.00642	1.24771	1.5848
32	4.67804	284.12	12.156	10894.27	0.0067061	0.05663	1.201	0.00635	1.24427	1.4550
34	4.61332	282.35	11.737	9988.37	0.0071803	0.05800	1.088	0.00620	1.24064	1.3687
36	4.54482	279.20	11.376	9105.14	0.0077198	0.05912	0.993	0.00604	1.23680	1.3031
38	4.47259	274.62	11.052	8232.81	0.0083434	0.06041	0.912	0.00590	1.23277	1.2459
40	4.39521	268.09	10.749	7340.03	0.0091137	0.06117	0.842	0.00570	1.22846	1.2113
42	4.31230	260.95	10.467	6497.22	0.0099846	0.06147	0.780	0.00547	1.22385	1.1909
44	4.22254	252.37	10.180	5659.88	0.0110523	0.06135	0.725	0.00521	1.21887	1.1860
46	4.12486	242.43	9.877	4839.28	0.0123729	0.06082	0.673	0.00492	1.21347	1.1953
48	4.01749	231.24	9.540	4046.17	0.0140394	0.05991	0.625	0.00459	1.20755	1.2200
50	3.89814	218.30	9.147	3269.63	0.0163007	0.05863	0.580	0.00423	1.20099	1.2670
52	3.76238	203.90	8.691	2538.28	0.0194390	0.05693	0.535	0.00382	1.19356	1.3420
54	3.60317	187.70	8.169	1858.01	0.0241594	0.05474	0.491	0.00335	1.18488	1.4635
56	3.40717	168.58	7.539	1222.52	0.0325164	0.05166	0.444	0.00277	1.17426	1.6957
58	3.14090	144.63	6.716	638.81	0.0523455	0.04957	0.391	0.00208	1.15994	2.1493
60	2.64072	108.77	5.197	139.49	0.1680152	0.05329	0.314	0.00110	1.13335	3.8760
62	1.31871	96.93	3.888	58.81	0.1669217	0.03738	0.185	0.00175	1.06512	2.8876
64	1.06021	105.84	4.028	95.36	0.0783467	0.02821	0.168	0.00321	1.05212	1.7828
66	0.93266	114.09	4.059	116.54	0.0545495	0.02579	0.164	0.00444	1.04575	1.4206
68	0.84734	121.69	4.057	131.33	0.0427791	0.02472	0.162	0.00560	1.04150	1.2288
70	0.78361	129.21	4.056	142.20	0.0359120	0.02424	0.162	0.00667	1.03834	1.1178
75	0.67238	147.10	4.024	160.42	0.0265025	0.02400	0.165	0.00915	1.03283	0.9675
80	0.59698	164.13	3.978	171.93	0.0215026	0.02434	0.170	0.01155	1.02911	0.8901
85	0.54069	180.61	3.930	179.93	0.0183169	0.02493	0.176	0.01394	1.02634	0.8421
90	0.49629	196.75	3.881	185.78	0.0160756	0.02566	0.182	0.01635	1.02416	0.8094
95	0.45997	212.74	3.830	190.24	0.0143965	0.02647	0.189	0.01879	1.02238	0.7858
100	0.42949	228.75	3.773	193.70	0.0130780	0.02734	0.195	0.02128	1.02088	0.7680
105	0.40341	244.88	3.716	196.47	0.0120190	0.02825	0.201	0.02379	1.01961	0.7550
110	0.38074	261.35	3.652	198.71	0.0111425	0.02928	0.208	0.02641	1.01850	0.7432
115	0.36079	278.31	3.582	200.56	0.0104023	0.03038	0.214	0.02909	1.01752	0.7337
120	0.34306	295.85	3.507	202.10	0.0097673	0.03149	0.220	0.03177	1.01666	0.7269
125	0.32717	314.08	3.425	203.39	0.0092151	0.03262	0.226	0.03445	1.01588	0.7226
130	0.31283	333.05	3.340	204.48	0.0087297	0.03376	0.232	0.03712	1.01518	0.7203
140	0.28789	373.46	3.162	206.22	0.0079133	0.03593	0.244	0.04223	1.01396	0.7233
150	0.26690	417.27	2.983	207.52	0.0072507	0.03875	0.256	0.04798	1.01294	0.7197
160	0.24893	464.38	2.810	208.50	0.0067001	0.04184	0.267	0.05402	1.01207	0.7161
170	0.23336	514.46	2.649	209.27	0.0062339	0.04494	0.279	0.06005	1.01131	0.7161
180	0.21971	566.99	2.505	209.86	0.0058331	0.05221	0.308	0.07185	1.01064	0.7028
190	0.20764	621.93	2.375	210.32	0.0054817	0.05702	0.327	0.08055	1.01006	0.7030
200	0.19687	677.42	2.266	210.69	0.0051747	0.06144	0.342	0.08903	1.00953	0.7029
220	0.17846	788.88	2.097	211.22	0.0046587	0.06917	0.367	0.10546	1.00864	0.7029
240	0.16329	897.07	1.984	211.55	0.0042406	0.07550	0.387	0.12155	1.00790	0.7027
260	0.15055	998.77	1.914	211.77	0.0038943	0.08056	0.404	0.13757	1.00728	0.7021
280	0.13969	1091.98	1.876	211.91	0.0036022	0.08446	0.418	0.15373	1.00676	0.7013
300	0.13031	1176.89	1.861	211.99	0.0033521	0.08745	0.431	0.17011	1.00630	0.7002
320	0.12213	1254.01	1.864	212.04	0.0031354	0.08970	0.443	0.18680	1.00591	0.6990
340	0.11493	1324.82	1.878	212.05	0.0029457	0.09143	0.454	0.20385	1.00556	0.6977
360	0.10854	1390.70	1.899	212.06	0.0027781	0.09278	0.465	0.22125	1.00525	0.6965
380	0.10283	1452.87	1.925	212.04	0.0026290	0.09389	0.475	0.23905	1.00497	0.6952
400	0.09769	1513.03	1.952	212.02	0.0024953	0.09488	0.484	0.25725	1.00472	0.6940
420	0.09305	1571.84	1.979	211.99	0.0023748	0.09582	0.494	0.27586	1.00450	0.6929
440	0.08883	1630.19	2.005	211.96	0.0022655	0.09674	0.503	0.29487	1.00429	0.6919
460	0.08498	1688.84	2.029	211.92	0.0021660	0.09770	0.513	0.31428	1.00411	0.6910
480	0.08146	1747.86	2.051	211.89	0.0020750	0.09870	0.522	0.33411	1.00394	0.6902
500	0.07821	1807.74	2.070	211.85	0.0019914	0.09977	0.531	0.35436	1.00378	0.6895
520	0.07522	1868.51	2.087	211.81	0.0019143	0.10090	0.540	0.37502	1.00363	0.6889
540	0.07244	1930.21	2.101	211.79	0.0018427	0.10207	0.549	0.39614	1.00350	0.6882
560	0.06987	1993.10	2.112	211.75	0.0017766	0.10333	0.557	0.41765	1.00338	0.6877
580	0.06747	2056.62	2.122	211.71	0.0017152	0.10463	0.566	0.43958	1.00326	0.6873
600	0.06523	2121.04	2.130	211.67	0.0016579	0.10597	0.575	0.46194	1.00315	0.6870
650	0.06024	2285.05	2.144	211.58	0.0015303	0.10948	0.597	0.51970	1.00291	0.6862
700	0.05596	2452.57	2.152	211.49	0.0014210	0.11315	0.618	0.58019	1.00270	0.6857
800	0.04900	2795.29	2.156	211.34	0.0012436	0.12081	0.661	0.70923	1.00237	0.6850
1000	0.03924	3491.64	2.152	211.11	0.0009954	0.13633	0.745	0.99951	1.00190	0.6841
2000	0.01967	7279.50	2.019	210.58	0.0004987	0.27727	1.135	3.88306	1.00095	0.5350
3000	0.01313	11760.25	1.822	210.39	0.0003327	0.39362	1.482	7.66422	1.00063	0.5303
4000	0.00984	17558.98	1.578	210.12	0.0002499	0.55645	1.800	12.88883	1.00047	0.5108
5000	0.00780	31102.55	1.059	208.15	0.0002018	1.09329	2.106	22.32575	1.00038	0.4352

* TWO-PHASE BOUNDRY

220 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.742	0.20573	2946.68	75.5721	-132.638	-124.257	1.19543	1.134	1.525	4285
26	0.20506	2935.74	75.6726	-132.242	-123.848	1.21126	1.141	1.540	4284
28	0.20832	2717.93	75.6743	-129.140	-120.653	1.32956	1.193	1.667	4195
30	0.21083	2516.73	74.5391	-125.796	-117.207	1.44841	1.240	1.785	4097
32	0.21357	2344.26	73.2049	-122.220	-113.520	1.56739	1.284	1.902	4011
34	0.21655	2180.40	71.8691	-118.413	-109.591	1.68647	1.324	2.023	3929
36	0.21979	2019.29	70.4444	-114.366	-105.412	1.80588	1.359	2.150	3847
38	0.22331	1856.85	68.8544	-110.079	-100.982	1.92563	1.389	2.285	3762
40	0.22721	1685.72	67.0684	-105.519	-96.263	2.04664	1.415	2.436	3666
42	0.23154	1523.30	65.0592	-100.671	-91.238	2.16919	1.437	2.595	3570
44	0.23641	1358.04	62.7656	-95.500	-85.869	2.29407	1.455	2.776	3465
46	0.24194	1191.45	60.1210	-89.969	-80.113	2.42197	1.470	2.982	3347
48	0.24831	1027.33	57.1006	-84.027	-73.912	2.55391	1.482	3.221	3216
50	0.25577	862.99	53.6533	-77.607	-67.187	2.69113	1.494	3.515	3066
52	0.26474	699.69	49.7830	-70.588	-59.803	2.83591	1.508	3.899	2895
54	0.27608	538.75	45.4278	-62.725	-51.478	2.99295	1.523	4.443	2698
56	0.29120	383.60	40.4674	-53.671	-41.808	3.16871	1.544	5.298	2469
58	0.31381	233.38	34.5180	-42.550	-29.766	3.37985	1.577	6.977	2187
60	0.35933	89.34	26.3172	-26.208	-11.570	3.68778	1.654	12.775	1788
62	0.62310	27.85	12.3805	17.845	43.229	4.58392	2.019	26.552	1303
64	0.84592	75.31	8.5086	39.149	73.651	5.06812	1.782	9.954	1396
66	0.98434	113.20	7.0507	49.812	89.912	5.31854	1.702	6.903	1458
68	1.09380	144.10	6.1802	57.640	102.200	5.50207	1.646	5.639	1512
70	1.19015	171.87	5.5450	64.163	112.648	5.65355	1.615	4.899	1554
75	1.39866	231.07	4.5649	77.664	134.642	5.95738	1.576	4.026	1654
80	1.58209	281.83	3.9465	89.174	153.625	6.20254	1.560	3.609	1738
85	1.75139	327.57	3.5052	99.663	171.011	6.41341	1.553	3.364	1813
90	1.91147	369.91	3.1683	109.540	187.409	6.60092	1.553	3.205	1881
95	2.06502	409.77	2.8999	119.023	203.148	6.77113	1.557	3.096	1943
100	2.21361	447.68	2.6782	128.274	218.452	6.92816	1.565	3.019	2000
105	2.35847	484.13	2.4936	137.327	233.407	7.07409	1.577	2.966	2054
110	2.50034	519.40	2.3360	146.286	248.145	7.21122	1.594	2.932	2104
115	2.63981	553.70	2.1994	155.208	262.748	7.34105	1.615	2.912	2150
120	2.77728	587.20	2.0796	164.144	277.285	7.46479	1.642	2.904	2194
125	2.91308	620.02	1.9735	173.138	291.811	7.58338	1.673	2.907	2234
130	3.04748	652.26	1.8788	182.226	306.374	7.69761	1.709	2.919	2272
140	3.31279	715.33	1.7163	200.815	335.772	7.91545	1.793	2.965	2341
150	3.57444	776.87	1.5815	220.132	365.747	8.12223	1.891	3.033	2403
160	3.83325	837.24	1.4677	240.336	396.495	8.32064	1.998	3.118	2460
170	4.08980	896.66	1.3701	261.533	428.144	8.51248	2.111	3.213	2515
180	4.34455	955.33	1.2853	283.780	460.769	8.69893	2.224	3.312	2567
190	4.59755	1013.23	1.2101	307.148	494.443	8.88064	2.339	3.414	2617
200	4.84942	1070.67	1.1441	331.505	529.061	9.05806	2.445	3.509	2668
220	5.35014	1184.29	1.0323	383.040	600.994	9.40076	2.629	3.678	2771
240	5.84774	1296.59	0.9409	437.701	675.926	9.72648	2.769	3.807	2874
260	6.34301	1407.89	0.8648	494.572	752.974	10.03497	2.863	3.892	2978
280	6.83648	1518.43	0.8003	552.832	831.337	10.32522	2.913	3.935	3083
300	7.32852	1628.36	0.7450	611.644	910.194	10.59737	2.930	3.947	3188
320	7.81943	1737.81	0.6969	670.475	989.024	10.85185	2.921	3.933	3293
340	8.30941	1846.86	0.6547	728.904	1067.412	11.08911	2.895	3.904	3397
360	8.79862	1955.58	0.6175	786.664	1145.103	11.31122	2.859	3.865	3500
380	9.28721	2064.04	0.5842	843.615	1221.957	11.51900	2.817	3.821	3601
400	9.77525	2172.26	0.5544	899.698	1297.923	11.71391	2.775	3.776	3701
420	10.26284	2280.29	0.5276	954.924	1373.012	11.89708	2.734	3.734	3798
440	10.75004	2388.15	0.5032	1009.350	1447.285	12.06988	2.696	3.694	3894
460	11.23690	2495.87	0.4810	1063.035	1520.804	12.23330	2.662	3.659	3987
480	11.72348	2603.46	0.4607	1116.068	1593.660	12.38811	2.631	3.627	4077
500	12.20979	2710.95	0.4421	1168.529	1665.932	12.53578	2.606	3.600	4166
520	12.69589	2818.33	0.4249	1220.500	1737.705	12.67666	2.583	3.577	4252
540	13.18164	2925.64	0.4089	1272.167	1809.161	12.81152	2.564	3.557	4336
560	13.66723	3033.02	0.3942	1323.284	1880.060	12.93995	2.549	3.541	4418
580	14.15268	3140.13	0.3805	1374.180	1950.733	13.06381	2.536	3.528	4498
600	14.63799	3247.19	0.3677	1424.876	2021.199	13.18332	2.526	3.517	4577
650	15.85079	3514.63	0.3392	1550.727	2196.457	13.46416	2.507	3.497	4766
700	17.06304	3781.83	0.3149	1675.894	2371.009	13.72312	2.496	3.485	4946
800	19.48537	4315.72	0.2754	1925.027	2718.863	14.18793	2.488	3.476	5285
1000	24.33020	5382.31	0.2202	2422.643	3413.808	14.96279	2.489	3.476	5901
2000	48.53314	10708.33	0.1100	4969.686	6946.831	17.40400	2.644	3.630	8253
3000	72.73170	16032.07	0.0733	7756.105	10719.052	18.92000	2.927	3.913	9965
4000	97.00727	21355.44	0.0550	10882.726	14834.613	20.29665	3.375	4.382	11333
5000	122.30776	26678.69	0.0440	14973.692	19956.270	22.26701	5.041	6.231	12354

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

220 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.742	4.86063	289.05	13.710	14322.69	0.0052764	0.04552	1.775	0.00614	1.25454	2.1413
26	4.85307	289.95	13.662	14247.34	0.0053113	0.04629	1.740	0.00619	1.25412	2.0841
28	4.80026	287.42	13.214	13046.77	0.0058002	0.05122	1.520	0.00640	1.25114	1.7807
30	4.74318	285.92	12.671	11937.32	0.0062442	0.05449	1.346	0.00644	1.24793	1.5875
32	4.68228	285.21	12.174	10976.49	0.0066692	0.05671	1.206	0.00637	1.24451	1.4568
34	4.61789	283.48	11.754	10068.85	0.0071378	0.05809	1.092	0.00622	1.24089	1.3698
36	4.54979	280.44	11.394	9187.36	0.0076675	0.05923	0.997	0.00605	1.23708	1.3034
38	4.47799	275.94	11.069	8314.94	0.0082808	0.06053	0.917	0.00592	1.23307	1.2455
40	4.40114	269.44	10.767	7419.09	0.0090400	0.06131	0.846	0.00572	1.22879	1.2105
42	4.31887	262.45	10.484	6578.92	0.0098890	0.06162	0.784	0.00550	1.22421	1.1891
44	4.22996	254.06	10.198	5744.47	0.0109263	0.06152	0.728	0.00524	1.21928	1.1830
46	4.13332	244.27	9.898	4924.63	0.0122082	0.06102	0.677	0.00495	1.21393	1.1911
48	4.02727	233.40	9.568	4137.32	0.0138014	0.06013	0.629	0.00464	1.20809	1.2133
50	3.90981	221.04	9.182	3374.14	0.0159013	0.05889	0.584	0.00429	1.20163	1.2546
52	3.77723	206.97	8.739	2642.88	0.0188367	0.05725	0.540	0.00389	1.19437	1.3236
54	3.62211	190.85	8.233	1951.41	0.0232795	0.05513	0.496	0.00343	1.18591	1.4382
56	3.43408	172.47	7.630	1317.30	0.0307198	0.05219	0.450	0.00287	1.17572	1.6447
58	3.18663	150.32	6.868	743.66	0.0464149	0.04977	0.400	0.00224	1.16239	2.0162
60	2.78300	120.69	5.717	248.63	0.1058473	0.05000	0.334	0.00141	1.14087	3.0706
62	1.60488	95.85	3.821	44.69	0.2770098	0.05006	0.210	0.00117	1.07964	4.0077
64	1.18074	104.03	4.043	88.92	0.0956828	0.03079	0.177	0.00262	1.05816	2.0639
66	1.01591	112.58	4.077	115.00	0.0613120	0.02710	0.169	0.00386	1.04990	1.5482
68	0.91424	120.21	4.106	131.74	0.0469122	0.02565	0.166	0.00497	1.04483	1.3129
70	0.84023	127.59	4.087	144.41	0.0383972	0.02491	0.165	0.00605	1.04115	1.1688
75	0.71497	145.69	4.052	165.21	0.0276311	0.02443	0.167	0.00849	1.03494	0.9922
80	0.63208	162.90	4.003	178.14	0.0221537	0.02467	0.172	0.01082	1.03084	0.9051
85	0.57098	179.52	3.952	187.04	0.0187405	0.02520	0.177	0.01312	1.02783	0.8525
90	0.52316	195.78	3.900	193.52	0.0163718	0.02590	0.183	0.01544	1.02548	0.8170
95	0.48426	211.88	3.846	198.43	0.0146140	0.02668	0.190	0.01779	1.02357	0.7917
100	0.45175	227.97	3.788	202.24	0.0132427	0.02753	0.196	0.02019	1.02197	0.7727
105	0.42400	244.16	3.729	205.28	0.0121478	0.02843	0.202	0.02260	1.02061	0.7588
110	0.39995	260.70	3.665	207.73	0.0112452	0.02945	0.208	0.02512	1.01944	0.7463
115	0.37882	277.70	3.594	209.75	0.0104858	0.03054	0.214	0.02768	1.01840	0.7363
120	0.36006	295.29	3.517	211.43	0.0098360	0.03164	0.221	0.03025	1.01749	0.7292
125	0.34328	313.54	3.436	212.84	0.0092724	0.03276	0.227	0.03283	1.01667	0.7245
130	0.32814	332.55	3.350	214.03	0.0087779	0.03389	0.233	0.03538	1.01593	0.7219
140	0.30186	373.00	3.171	215.93	0.0079482	0.03605	0.245	0.04028	1.01465	0.7247
150	0.27976	416.85	2.990	217.34	0.0072768	0.03885	0.256	0.04578	1.01357	0.7208
160	0.26088	464.00	2.816	218.41	0.0067199	0.04194	0.268	0.05156	1.01265	0.7170
170	0.24451	514.12	2.655	219.24	0.0062492	0.04504	0.279	0.05733	1.01185	0.7168
180	0.23017	566.68	2.510	219.89	0.0058451	0.05224	0.308	0.06852	1.01115	0.7036
190	0.21751	621.69	2.379	220.38	0.0054910	0.05704	0.327	0.07682	1.01054	0.7037
200	0.20621	677.22	2.270	220.78	0.0051821	0.06145	0.342	0.08492	1.00999	0.7036
220	0.18691	788.77	2.101	221.36	0.0046633	0.06918	0.368	0.10062	1.00905	0.7035
240	0.17101	897.04	1.987	221.72	0.0042436	0.07551	0.387	0.11599	1.00828	0.7032
260	0.15765	998.83	1.916	221.96	0.0038962	0.08056	0.404	0.13130	1.00763	0.7025
280	0.14627	1092.14	1.878	222.11	0.0036033	0.08447	0.418	0.14674	1.00708	0.7017
300	0.13645	1177.13	1.863	222.19	0.0033528	0.08746	0.431	0.16240	1.00660	0.7005
320	0.12789	1254.32	1.866	222.24	0.0031357	0.08971	0.443	0.17834	1.00619	0.6993
340	0.12035	1325.19	1.879	222.26	0.0029458	0.09144	0.454	0.19463	1.00582	0.6980
360	0.11365	1391.12	1.901	222.26	0.0027781	0.09279	0.465	0.21126	1.00550	0.6967
380	0.10758	1453.34	1.926	222.25	0.0026288	0.09390	0.475	0.22826	1.00521	0.6954
400	0.10230	1513.54	1.953	222.22	0.0024950	0.09490	0.485	0.24565	1.00495	0.6942
420	0.09744	1572.39	1.981	222.19	0.0023744	0.09583	0.494	0.26342	1.00471	0.6930
440	0.09302	1630.77	2.007	222.15	0.0022651	0.09675	0.503	0.28158	1.00450	0.6920
460	0.08899	1689.44	2.031	222.11	0.0021656	0.09772	0.513	0.30012	1.00430	0.6911
480	0.08530	1748.49	2.053	222.07	0.0020746	0.09872	0.522	0.31906	1.00412	0.6903
500	0.08190	1808.39	2.072	222.03	0.0019910	0.09979	0.531	0.33840	1.00396	0.6896
520	0.07877	1869.18	2.088	221.99	0.0019139	0.10092	0.540	0.35814	1.00381	0.6889
540	0.07586	1930.91	2.102	221.96	0.0018422	0.10209	0.549	0.37831	1.00367	0.6883
560	0.07317	1993.81	2.113	221.92	0.0017762	0.10335	0.558	0.39885	1.00354	0.6878
580	0.07066	2057.35	2.123	221.88	0.0017148	0.10465	0.566	0.41980	1.00341	0.6874
600	0.06832	2121.78	2.131	221.83	0.0016575	0.10599	0.575	0.44115	1.00330	0.6870
650	0.06309	2285.82	2.145	221.73	0.0015299	0.10950	0.597	0.49632	1.00305	0.6863
700	0.05861	2453.35	2.153	221.64	0.0014206	0.11318	0.619	0.55408	1.00283	0.6857
800	0.05132	2796.11	2.157	221.47	0.0012433	0.12083	0.661	0.67732	1.00248	0.6850
1000	0.04110	3492.49	2.152	221.22	0.0009952	0.13636	0.746	0.95453	1.00198	0.6841
2000	0.02060	7280.45	2.019	220.64	0.0004986	0.27727	1.136	3.70703	1.00099	0.5352
3000	0.01375	11760.78	1.823	220.43	0.0003327	0.39360	1.482	7.31631	1.00066	0.5305
4000	0.01031	17537.21	1.581	220.14	0.0002498	0.55527	1.800	12.29383	1.00050	0.5114
5000	0.00818	30889.25	1.068	218.13	0.0002017	1.08242	2.106	21.24709	1.00039	0.4365

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

230 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.782	0.20564	2957.07	75.6033	-132.624	-123.866	1.19582	1.135	1.525	4291
26	0.20591	2951.94	75.6890	-132.289	-123.519	1.20921	1.141	1.537	4292
28	0.20816	2736.54	75.7418	-129.196	-120.330	1.32733	1.193	1.664	4205
30	0.21066	2532.75	74.6841	-125.861	-116.889	1.44601	1.240	1.783	4107
32	0.21338	2359.61	73.3510	-122.295	-113.208	1.56479	1.284	1.899	4021
34	0.21634	2195.57	72.0180	-118.500	-109.287	1.68363	1.323	2.020	3940
36	0.21955	2035.06	70.5980	-114.468	-105.117	1.80277	1.358	2.145	3859
38	0.22305	1872.83	69.0174	-110.197	-100.698	1.92223	1.389	2.279	3774
40	0.22690	1708.67	67.2452	-105.660	-95.997	2.04278	1.415	2.424	3683
42	0.23119	1539.73	65.2444	-100.833	-90.986	2.16499	1.436	2.586	3583
44	0.23600	1375.46	62.9739	-95.692	-85.640	2.28932	1.455	2.763	3479
46	0.24145	1209.42	60.3623	-90.199	-79.915	2.41654	1.469	2.965	3363
48	0.24771	1046.43	57.3841	-84.305	-73.755	2.54760	1.482	3.198	3235
50	0.25502	883.61	53.9973	-77.948	-67.087	2.68368	1.494	3.481	3088
52	0.26377	721.29	50.1992	-71.017	-59.783	2.82688	1.507	3.848	2921
54	0.27471	560.86	45.9443	-63.297	-51.597	2.98131	1.522	4.362	2729
56	0.28908	406.79	41.1367	-54.479	-42.167	3.15270	1.542	5.146	2508
58	0.30987	261.95	35.4890	-43.867	-30.670	3.35431	1.571	6.529	2246
60	0.34732	120.34	28.1594	-29.338	-14.545	3.62730	1.630	10.461	1892
62	0.49189	25.44	16.2648	2.067	23.017	4.24107	2.010	30.898	1346
64	0.75384	61.69	9.7887	32.965	65.071	4.91090	1.821	12.282	1388
66	0.90156	100.96	7.8389	45.742	84.139	5.20463	1.725	7.771	1452
68	1.01504	133.96	6.7854	54.496	97.726	5.40757	1.661	6.120	1512
70	1.11100	162.34	6.0328	61.533	108.850	5.56887	1.623	5.210	1554
75	1.31759	223.65	4.8940	75.720	131.836	5.88644	1.580	4.162	1652
80	1.49712	275.75	4.2051	87.586	151.348	6.13846	1.563	3.692	1737
85	1.66183	322.45	3.7206	98.303	169.080	6.35353	1.556	3.422	1813
90	1.81701	365.54	3.3543	108.343	185.729	6.54391	1.555	3.249	1881
95	1.96551	406.01	3.0642	117.950	201.660	6.71620	1.559	3.131	1943
100	2.10895	444.43	2.8257	127.302	217.122	6.87485	1.567	3.047	2001
105	2.24860	481.31	2.6279	136.436	232.203	7.02202	1.579	2.989	2055
110	2.38525	516.94	2.4594	145.460	247.048	7.16014	1.595	2.951	2105
115	2.51946	551.57	2.3138	154.439	261.743	7.29078	1.617	2.929	2152
120	2.65166	585.35	2.1864	163.425	276.358	7.41519	1.643	2.919	2195
125	2.78220	618.43	2.0738	172.461	290.954	7.53435	1.674	2.920	2235
130	2.91131	650.91	1.9733	181.586	305.578	7.64907	1.710	2.931	2273
140	3.16607	714.37	1.8012	200.239	335.081	7.86769	1.794	2.974	2342
150	3.41715	776.26	1.6589	219.607	365.142	8.07506	1.891	3.041	2405
160	3.66539	836.91	1.5388	239.853	395.962	8.27393	1.998	3.125	2462
170	3.91139	896.59	1.4359	261.087	427.672	8.46615	2.111	3.218	2517
180	4.15558	955.48	1.3466	283.365	460.350	8.65290	2.225	3.317	2569
190	4.39802	1013.56	1.2676	306.764	494.075	8.83489	2.339	3.418	2619
200	4.63934	1071.18	1.1982	331.146	528.734	9.01252	2.445	3.513	2670
220	5.11896	1185.08	1.0807	382.722	600.737	9.35555	2.629	3.681	2772
240	5.59548	1297.61	0.9848	437.416	675.727	9.68152	2.769	3.809	2876
260	6.06967	1409.11	0.9050	494.315	752.821	9.99019	2.863	3.894	2980
280	6.54206	1519.82	0.8374	552.599	831.224	10.28060	2.913	3.937	3085
300	7.01304	1629.89	0.7794	611.431	910.115	10.55286	2.930	3.948	3190
320	7.48289	1739.46	0.7290	670.279	988.974	10.80743	2.921	3.935	3295
340	7.95181	1848.62	0.6848	728.722	1067.388	11.04477	2.895	3.905	3399
360	8.41997	1957.43	0.6458	786.496	1145.101	11.26695	2.859	3.866	3502
380	8.88750	2065.97	0.6110	843.459	1221.975	11.47478	2.817	3.821	3603
400	9.35449	2174.27	0.5798	899.553	1297.958	11.66974	2.775	3.777	3703
420	9.82103	2282.36	0.5517	954.789	1373.064	11.85294	2.734	3.734	3800
440	10.28718	2390.28	0.5262	1009.223	1447.351	12.02577	2.696	3.695	3896
460	10.75299	2498.05	0.5030	1062.916	1520.883	12.18922	2.662	3.659	3989
480	11.21852	2605.69	0.4818	1115.956	1593.750	12.34407	2.632	3.628	4079
500	11.68379	2713.22	0.4622	1168.424	1666.034	12.49176	2.606	3.601	4168
520	12.14884	2820.64	0.4443	1220.400	1737.817	12.63266	2.583	3.578	4254
540	12.61359	2928.21	0.4276	1272.078	1809.288	12.76754	2.564	3.558	4338
560	13.07814	3035.42	0.4122	1323.200	1880.195	12.89598	2.549	3.542	4420
580	13.54255	3142.56	0.3978	1374.101	1950.875	13.01985	2.536	3.528	4500
600	14.00682	3249.64	0.3845	1424.801	2021.348	13.13937	2.526	3.517	4579
650	15.16701	3517.13	0.3547	1550.661	2196.621	13.42024	2.507	3.497	4768
700	16.32666	3784.38	0.3292	1675.836	2371.184	13.67922	2.496	3.486	4948
800	18.64477	4318.34	0.2879	1924.981	2719.057	14.14406	2.488	3.477	5287
1000	23.27820	5385.00	0.2302	2422.612	3414.025	14.91894	2.489	3.476	5903
2000	46.42912	10711.14	0.1150	4969.677	6947.082	17.36018	2.644	3.630	8254
3000	69.57561	16034.91	0.0767	7756.073	10719.282	18.87617	2.926	3.913	9966
4000	92.79410	21358.29	0.0575	10881.037	14833.116	20.25235	3.370	4.376	11335
5000	116.97147	26681.54	0.0460	14953.742	19935.530	22.21857	5.004	6.189	12359

* TWO-PHASE BOUNDRY

230 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDT NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 25.782	4.86296	290.07	13.700	14380.10	0.0052575	0.04567	1.778	0.00616	1.25468	2.137
26	4.85651	291.14	13.660	14336.10	0.0052796	0.04632	1.748	0.00621	1.25431	2.088
28	4.80392	288.76	13.219	13146.13	0.0057615	0.05127	1.527	0.00641	1.25135	1.783
30	4.74710	286.99	12.689	12023.22	0.0062117	0.05456	1.352	0.00645	1.24815	1.590
32	4.68649	286.28	12.192	11058.31	0.0066331	0.05679	1.212	0.00638	1.24474	1.458
34	4.62244	284.60	11.772	10148.90	0.0070961	0.05818	1.097	0.00623	1.24115	1.371
36	4.55472	281.67	11.411	9269.12	0.0076165	0.05933	1.002	0.00607	1.23736	1.303
38	4.48334	277.25	11.087	8396.53	0.0082198	0.06065	0.921	0.00594	1.23337	1.245
40	4.40717	271.46	10.784	7530.41	0.0089298	0.06144	0.850	0.00575	1.22912	1.207
42	4.32538	263.94	10.501	6659.91	0.0097966	0.06177	0.788	0.00552	1.22457	1.187
44	4.23728	255.72	10.217	5828.20	0.0108050	0.06169	0.732	0.00527	1.21968	1.180
46	4.14165	246.07	9.919	5008.99	0.0120508	0.06121	0.681	0.00498	1.21439	1.187
48	4.03695	235.42	9.593	4224.37	0.0135841	0.06036	0.633	0.00467	1.20862	1.207
50	3.92127	223.37	9.216	3464.88	0.0155842	0.05914	0.588	0.00433	1.20226	1.245
52	3.79121	209.61	8.784	2734.55	0.0183574	0.05756	0.544	0.00395	1.19513	1.309
54	3.64025	193.84	8.293	2041.67	0.0225033	0.05551	0.501	0.00350	1.18690	1.416
56	3.45926	176.05	7.714	1407.19	0.0292331	0.05268	0.456	0.00296	1.17708	1.603
58	3.22717	155.52	7.001	845.34	0.0419818	0.05003	0.407	0.00237	1.16457	1.913
60	2.87917	128.72	6.001	346.48	0.0812732	0.04921	0.348	0.00163	1.14597	2.665
62	2.03297	98.24	3.981	51.71	0.3145092	0.05874	0.248	0.00094	1.10162	4.699
64	1.32653	102.68	4.051	81.84	0.1196150	0.03429	0.189	0.00210	1.06551	2.438
66	1.10919	111.01	4.097	111.99	0.0699988	0.02869	0.175	0.00333	1.05457	1.709
68	0.98518	119.03	4.146	131.98	0.0514136	0.02666	0.170	0.00442	1.04837	1.406
70	0.90009	126.19	4.129	146.12	0.0412863	0.02567	0.168	0.00547	1.04413	1.230
75	0.75896	144.35	4.082	169.74	0.0288325	0.02490	0.169	0.00788	1.03712	1.019
80	0.66795	161.71	4.029	184.18	0.0228308	0.02502	0.173	0.01015	1.03261	0.921
85	0.60175	178.47	3.974	194.03	0.0191752	0.02549	0.179	0.01238	1.02935	0.863
90	0.55035	194.85	3.919	201.18	0.0166732	0.02614	0.184	0.01462	1.02682	0.824
95	0.50877	211.05	3.863	206.57	0.0148339	0.02690	0.190	0.01689	1.02477	0.797
100	0.47417	227.22	3.803	210.73	0.0134086	0.02773	0.197	0.01919	1.02307	0.777
105	0.44472	243.48	3.743	214.05	0.0122770	0.02861	0.203	0.02152	1.02163	0.762
110	0.41924	260.06	3.677	216.73	0.0113481	0.02962	0.209	0.02394	1.02038	0.749
115	0.39691	277.11	3.606	218.92	0.0105692	0.03069	0.215	0.02640	1.01929	0.738
120	0.37712	294.74	3.528	220.75	0.0099045	0.03179	0.221	0.02887	1.01832	0.731
125	0.35943	313.03	3.446	222.28	0.0093294	0.03290	0.227	0.03134	1.01746	0.726
130	0.34349	332.06	3.359	223.58	0.0088258	0.03402	0.233	0.03380	1.01668	0.723
140	0.31585	372.57	3.179	225.63	0.0079830	0.03616	0.245	0.03849	1.01533	0.726
150	0.29264	416.45	2.997	227.16	0.0073026	0.03896	0.257	0.04378	1.01420	0.721
160	0.27282	463.63	2.822	228.33	0.0067395	0.04204	0.268	0.04932	1.01323	0.717
170	0.25566	513.79	2.661	229.23	0.0062643	0.04513	0.279	0.05485	1.01239	0.717
180	0.24064	566.38	2.515	229.93	0.0058569	0.05227	0.308	0.06548	1.01166	0.704
190	0.22737	621.46	2.383	230.46	0.0055001	0.05706	0.327	0.07342	1.01102	0.704
200	0.21555	677.03	2.273	230.89	0.0051893	0.06147	0.342	0.08117	1.01044	0.704
220	0.19535	788.66	2.104	231.51	0.0046679	0.06918	0.368	0.09620	1.00946	0.704
240	0.17872	897.03	1.990	231.90	0.0042466	0.07551	0.387	0.11092	1.00865	0.703
260	0.16475	998.91	1.919	232.16	0.0038981	0.08056	0.404	0.12558	1.00797	0.703
280	0.15286	1092.30	1.880	232.31	0.0036045	0.08447	0.418	0.14036	1.00740	0.702
300	0.14259	1177.37	1.865	232.41	0.0033534	0.08746	0.431	0.15535	1.00690	0.700
320	0.13364	1254.63	1.868	232.46	0.0031361	0.08971	0.443	0.17062	1.00646	0.699
340	0.12576	1325.56	1.881	232.48	0.0029459	0.09144	0.454	0.18621	1.00608	0.698
360	0.11877	1391.55	1.902	232.48	0.0027780	0.09280	0.465	0.20213	1.00574	0.696
380	0.11252	1453.81	1.928	232.46	0.0026286	0.09391	0.475	0.21841	1.00544	0.695
400	0.10690	1514.05	1.955	232.43	0.0024947	0.09491	0.485	0.23505	1.00517	0.694
420	0.10182	1572.94	1.982	232.40	0.0023741	0.09584	0.494	0.25207	1.00492	0.693
440	0.09721	1631.34	2.008	232.36	0.0022648	0.09677	0.504	0.26944	1.00470	0.692
460	0.09300	1690.05	2.032	232.31	0.0021652	0.09773	0.513	0.28719	1.00450	0.691
480	0.08914	1749.12	2.054	232.27	0.0020741	0.09874	0.522	0.30532	1.00431	0.690
500	0.08559	1809.05	2.073	232.22	0.0019905	0.09980	0.531	0.32383	1.00414	0.689
520	0.08231	1869.85	2.089	232.17	0.0019135	0.10093	0.540	0.34272	1.00398	0.689
540	0.07928	1931.62	2.103	232.15	0.0018418	0.10211	0.549	0.36203	1.00383	0.688
560	0.07646	1994.53	2.114	232.10	0.0017758	0.10337	0.558	0.38169	1.00370	0.687
580	0.07384	2058.08	2.124	232.05	0.0017144	0.10467	0.566	0.40174	1.00357	0.687
600	0.07139	2122.52	2.132	232.00	0.0016571	0.10601	0.575	0.42217	1.00345	0.687
650	0.06593	2286.58	2.146	231.89	0.0015295	0.10952	0.597	0.47497	1.00319	0.686
700	0.06125	2454.13	2.153	231.79	0.0014203	0.11320	0.619	0.53025	1.00296	0.685
800	0.05363	2796.92	2.157	231.61	0.0012430	0.12086	0.661	0.64819	1.00259	0.685
1000	0.04296	3493.34	2.153	231.33	0.0009950	0.13639	0.746	0.91346	1.00207	0.684
2000	0.02154	7261.41	2.020	230.70	0.0004985	0.27727	1.136	3.54631	1.00104	0.535
3000	0.01437	11761.34	1.823	230.47	0.0003327	0.39357	1.483	6.99866	1.00069	0.530
4000	0.01078	17516.95	1.583	230.17	0.0002498	0.55417	1.801	11.75117	1.00052	0.511
5000	0.00855	30690.01	1.075	228.10	0.0002017	1.07227	2.107	20.26551	1.00041	0.437

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

240 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.822	0.20554	2967.43	75.6349	-132.610	-123.476	1.19620	1.136	1.525	4297
26	0.20576	2368.06	75.7052	-132.336	-123.191	1.20718	1.141	1.534	4301
28	0.20801	2755.06	75.8091	-129.251	-120.007	1.32512	1.192	1.660	4216
30	0.21048	2548.68	74.8283	-125.925	-116.571	1.44362	1.239	1.780	4118
32	0.21319	2374.87	73.4961	-122.370	-112.895	1.56220	1.283	1.896	4032
34	0.21612	2210.64	72.1658	-118.587	-108.982	1.68081	1.323	2.016	3950
36	0.21932	2050.70	70.7504	-114.569	-104.822	1.79968	1.358	2.140	3870
38	0.22278	1888.68	69.1791	-110.314	-100.413	1.91886	1.388	2.273	3785
40	0.22660	1725.28	67.4161	-105.796	-95.726	2.03905	1.414	2.416	3695
42	0.23085	1555.98	65.4275	-100.992	-90.733	2.16084	1.436	2.576	3596
44	0.23560	1392.65	63.1796	-95.881	-85.410	2.28463	1.454	2.751	3493
46	0.24097	1227.12	60.6001	-90.424	-79.715	2.41120	1.469	2.949	3378
48	0.24713	1065.18	57.6623	-84.577	-73.594	2.54141	1.482	3.176	3252
50	0.25429	903.76	54.3335	-78.281	-66.980	2.67639	1.494	3.450	3109
52	0.26283	742.27	50.6034	-71.433	-59.752	2.81809	1.507	3.801	2945
54	0.27340	586.31	46.4447	-63.844	-51.694	2.97012	1.521	4.270	2762
56	0.28709	433.57	41.7881	-55.248	-42.489	3.13743	1.539	4.981	2550
58	0.30542	286.96	36.3725	-45.048	-31.430	3.33136	1.565	6.214	2297
60	0.33865	150.29	29.6436	-31.744	-16.694	3.58091	1.613	9.063	1978
62	0.42436	42.34	19.8824	-8.878	9.981	4.01726	1.833	21.137	1504
64	0.66351	49.94	11.4051	25.590	55.078	4.73427	1.861	15.451	1386
66	0.82366	89.54	8.7429	41.253	77.858	5.08527	1.747	8.825	1448
68	0.94101	123.71	7.4357	51.098	92.917	5.31024	1.676	6.660	1509
70	1.03939	153.88	6.5654	58.806	104.998	5.48541	1.634	5.557	1557
75	1.24313	216.33	5.2399	73.723	128.969	5.81662	1.584	4.308	1651
80	1.41922	269.75	4.4732	85.970	149.042	6.07590	1.566	3.779	1737
85	1.57977	317.42	3.9424	96.927	167.134	6.29534	1.559	3.482	1813
90	1.73049	361.25	3.5446	107.135	184.040	6.48866	1.558	3.293	1881
95	1.87435	402.32	3.2318	116.870	200.169	6.66309	1.561	3.166	1944
100	2.01308	441.24	2.9756	126.325	215.790	6.82337	1.569	3.075	2001
105	2.14796	478.54	2.7640	135.540	230.999	6.97180	1.580	3.013	2056
110	2.27981	514.54	2.5845	144.633	245.951	7.11092	1.597	2.971	2106
115	2.40920	549.49	2.4296	153.669	260.738	7.24238	1.618	2.946	2153
120	2.53658	583.56	2.2943	162.704	275.433	7.36747	1.644	2.934	2196
125	2.66228	616.89	2.1749	171.783	290.098	7.48720	1.675	2.933	2237
130	2.78655	649.59	2.0686	180.946	304.785	7.60240	1.711	2.942	2275
140	3.03162	713.46	1.8868	199.663	334.393	7.82179	1.795	2.984	2344
150	3.27302	775.68	1.7367	219.082	364.540	8.02976	1.892	3.049	2406
160	3.51157	836.62	1.6103	239.371	395.431	8.22910	1.999	3.131	2464
170	3.74788	896.54	1.5021	260.641	427.203	8.42168	2.111	3.224	2518
180	3.98239	955.65	1.4083	282.950	459.933	8.60874	2.225	3.322	2571
190	4.21515	1013.92	1.3252	306.381	493.709	8.79100	2.340	3.423	2621
200	4.44679	1071.70	1.2524	330.787	528.410	8.96885	2.445	3.517	2672
220	4.90707	1185.89	1.1292	382.405	600.482	9.31221	2.630	3.685	2774
240	5.36426	1298.65	1.0288	437.133	675.528	9.63843	2.770	3.812	2878
260	5.81913	1410.35	0.9452	494.059	752.670	9.94729	2.863	3.896	2982
280	6.27220	1521.21	0.8745	552.366	831.112	10.23784	2.914	3.939	3087
300	6.72387	1631.43	0.8138	611.218	910.037	10.51022	2.930	3.950	3192
320	7.17440	1741.12	0.7611	670.083	988.924	10.76489	2.921	3.936	3297
340	7.62402	1850.38	0.7150	728.542	1067.364	11.00230	2.895	3.906	3401
360	8.07288	1959.29	0.6742	786.329	1145.099	11.22454	2.859	3.867	3504
380	8.52110	2067.91	0.6379	843.303	1221.994	11.43243	2.817	3.822	3605
400	8.96880	2176.28	0.6053	899.408	1297.994	11.62743	2.775	3.778	3705
420	9.41604	2284.44	0.5759	954.653	1373.116	11.81068	2.734	3.735	3802
440	9.86289	2392.41	0.5493	1009.096	1447.418	11.98354	2.696	3.695	3898
460	10.30941	2500.24	0.5250	1062.797	1520.962	12.14702	2.662	3.660	3991
480	10.75564	2607.92	0.5028	1115.844	1593.841	12.30188	2.632	3.628	4081
500	11.20162	2715.49	0.4824	1168.319	1666.136	12.44960	2.606	3.601	4170
520	11.64738	2822.96	0.4637	1220.301	1737.928	12.59051	2.584	3.578	4256
540	12.09289	2930.58	0.4462	1271.989	1809.415	12.72542	2.564	3.558	4340
560	12.53815	3037.82	0.4301	1323.116	1880.330	12.85368	2.549	3.542	4422
580	12.98326	3144.99	0.4152	1374.022	1951.017	12.97777	2.536	3.529	4502
600	13.42824	3252.09	0.4012	1424.726	2021.497	13.09730	2.526	3.518	4581
650	14.54021	3519.64	0.3701	1550.596	2196.785	13.37819	2.507	3.498	4769
700	15.65164	3786.93	0.3435	1675.778	2371.360	13.63719	2.496	3.486	4950
800	17.87331	4320.95	0.3004	1924.935	2719.251	14.10205	2.488	3.477	5289
1000	22.31386	5387.70	0.2402	2422.581	3414.242	14.87696	2.489	3.476	5904
2000	44.50043	10713.95	0.1200	4969.668	6347.334	17.31822	2.644	3.630	8255
3000	66.68253	16037.75	0.0800	7756.042	10719.514	18.83421	2.926	3.912	9967
4000	88.93212	21361.13	0.0600	10879.454	14831.730	20.20996	3.366	4.371	11337
5000	112.08137	26684.39	0.0480	14935.052	19916.116	22.17228	4.969	6.150	12364

* TWO-PHASE BOUNDRY

240 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.822	4.86529	291.10	13.690	14437.42	0.0052388	0.04583	1.781	0.00618	1.25481	2.1336
26	4.85993	292.32	13.657	14424.54	0.0052484	0.04636	1.756	0.00622	1.25451	2.0924
28	4.80756	290.09	13.225	13245.12	0.0057235	0.05132	1.533	0.00643	1.25155	1.7859
30	4.75099	288.06	12.707	12108.74	0.0061797	0.05462	1.358	0.00646	1.24837	1.5931
32	4.69067	287.35	12.210	11139.72	0.0065977	0.05687	1.217	0.00639	1.24498	1.4607
34	4.62695	285.71	11.789	10228.52	0.0070554	0.05827	1.102	0.00625	1.24140	1.3722
36	4.55962	282.89	11.428	9350.41	0.0075666	0.05943	1.006	0.00609	1.23763	1.3043
38	4.48864	278.54	11.104	8477.61	0.0081602	0.06077	0.925	0.00596	1.23366	1.2451
40	4.41297	272.89	10.801	7613.62	0.0088547	0.06158	0.854	0.00577	1.22945	1.2066
42	4.33181	265.41	10.518	6740.21	0.0097070	0.06192	0.792	0.00555	1.22493	1.1858
44	4.24450	257.35	10.235	5911.11	0.0106883	0.06186	0.736	0.00530	1.22008	1.1776
46	4.14985	247.84	9.940	5092.37	0.0119002	0.06140	0.684	0.00502	1.21485	1.1834
48	4.04644	237.41	9.618	4310.18	0.0133782	0.06057	0.637	0.00471	1.20914	1.2019
50	3.93248	225.64	9.249	3554.02	0.0152879	0.05940	0.592	0.00438	1.20287	1.2372
52	3.80480	212.16	8.827	2824.19	0.0179179	0.05785	0.548	0.00400	1.19588	1.2972
54	3.65767	197.19	8.350	2144.54	0.0216572	0.05588	0.505	0.00358	1.18785	1.3903
56	3.48323	180.02	7.795	1510.22	0.0276703	0.05316	0.461	0.00306	1.17838	1.5567
58	3.26350	160.00	7.120	936.49	0.0388392	0.05036	0.415	0.00248	1.16652	1.8416
60	2.95290	135.69	6.222	443.79	0.0667964	0.04900	0.360	0.00183	1.14990	2.3972
62	2.35652	106.06	4.603	99.76	0.1992943	0.05313	0.281	0.00107	1.11843	4.0314
64	1.50713	101.96	4.066	75.27	0.1515306	0.03901	0.204	0.00168	1.07466	2.9141
66	1.21409	109.73	4.123	108.71	0.0804210	0.03058	0.183	0.00285	1.05984	1.9032
68	1.06269	117.74	4.174	131.47	0.0565599	0.02781	0.175	0.00393	1.05224	1.5116
70	0.96210	125.30	4.176	148.05	0.0443455	0.02649	0.172	0.00496	1.04722	1.2994
75	0.80442	143.07	4.113	174.02	0.0301104	0.02538	0.172	0.00733	1.03937	1.0481
80	0.70461	160.57	4.055	190.07	0.0235341	0.02538	0.175	0.00953	1.03443	0.9379
85	0.63300	177.46	3.996	200.93	0.0196208	0.02578	0.180	0.01170	1.03089	0.8744
90	0.57787	193.95	3.938	208.76	0.0169796	0.02639	0.185	0.01387	1.02817	0.8329
95	0.53352	210.25	3.880	214.65	0.0150562	0.02712	0.191	0.01606	1.02599	0.8038
100	0.49675	226.50	3.818	219.19	0.0135756	0.02793	0.197	0.01828	1.02418	0.7822
105	0.46556	242.82	3.757	222.79	0.0124067	0.02879	0.203	0.02053	1.02265	0.7664
110	0.43863	259.45	3.690	225.69	0.0114511	0.02978	0.210	0.02285	1.02133	0.7526
115	0.41508	276.54	3.617	228.08	0.0106524	0.03085	0.216	0.02523	1.02018	0.7415
120	0.39423	294.21	3.539	230.06	0.0099729	0.03193	0.222	0.02761	1.01916	0.7336
125	0.37562	312.53	3.456	231.71	0.0093862	0.03304	0.228	0.02998	1.01825	0.7283
130	0.35887	331.59	3.369	233.12	0.0088735	0.03415	0.234	0.03235	1.01743	0.7252
140	0.32966	372.14	3.187	235.34	0.0080174	0.03627	0.246	0.03686	1.01601	0.7275
150	0.30553	416.07	3.004	236.99	0.0073282	0.03907	0.257	0.04194	1.01482	0.7229
160	0.28477	463.28	2.829	238.25	0.0067589	0.04214	0.269	0.04726	1.01381	0.7186
170	0.26682	513.47	2.666	239.21	0.0062792	0.04523	0.280	0.05258	1.01294	0.7181
180	0.25111	566.10	2.520	239.97	0.0058685	0.05230	0.308	0.06269	1.01217	0.7053
190	0.23724	621.25	2.387	240.54	0.0055092	0.05708	0.327	0.07030	1.01150	0.7053
200	0.22488	676.85	2.277	241.01	0.0051965	0.06148	0.342	0.07773	1.01090	0.7050
220	0.20379	788.57	2.107	241.67	0.0046725	0.06919	0.368	0.09215	1.00987	0.7046
240	0.18642	897.03	1.992	242.09	0.0042495	0.07552	0.387	0.10627	1.00903	0.7041
260	0.17185	998.99	1.921	242.36	0.0038999	0.08057	0.404	0.12033	1.00832	0.7034
280	0.15943	1092.47	1.882	242.53	0.0036056	0.08448	0.418	0.13451	1.00772	0.7023
300	0.14872	1177.62	1.867	242.63	0.0033541	0.08747	0.431	0.14890	1.00720	0.7011
320	0.13938	1254.95	1.869	242.68	0.0031364	0.08972	0.443	0.16354	1.00674	0.6998
340	0.13116	1325.94	1.883	242.70	0.0029459	0.09145	0.454	0.17850	1.00634	0.6984
360	0.12387	1391.98	1.904	242.70	0.0027779	0.09281	0.465	0.19377	1.00599	0.6970
380	0.11736	1454.29	1.929	242.68	0.0026284	0.09392	0.475	0.20938	1.00568	0.6957
400	0.11150	1514.57	1.956	242.65	0.0024944	0.09492	0.485	0.22534	1.00539	0.6945
420	0.10620	1573.49	1.983	242.61	0.0023737	0.09586	0.494	0.24166	1.00513	0.6933
440	0.10139	1631.93	2.010	242.57	0.0022644	0.09678	0.504	0.25832	1.00490	0.6922
460	0.09700	1690.66	2.033	242.52	0.0021648	0.09775	0.513	0.27534	1.00469	0.6913
480	0.09297	1749.75	2.055	242.47	0.0020737	0.09875	0.522	0.29272	1.00449	0.6905
500	0.08927	1809.70	2.074	242.42	0.0019901	0.09982	0.531	0.31048	1.00432	0.6897
520	0.08586	1870.52	2.090	242.37	0.0019130	0.10095	0.540	0.32859	1.00415	0.6891
540	0.08269	1932.32	2.104	242.34	0.0018413	0.10213	0.549	0.34711	1.00400	0.6884
560	0.07976	1995.25	2.115	242.29	0.0017753	0.10339	0.558	0.36596	1.00385	0.6879
580	0.07702	2058.81	2.125	242.23	0.0017139	0.10469	0.567	0.38518	1.00372	0.6875
600	0.07447	2123.26	2.133	242.18	0.0016567	0.10603	0.575	0.40478	1.00360	0.6871
650	0.06877	2287.35	2.147	242.06	0.0015291	0.10954	0.597	0.45540	1.00332	0.6863
700	0.06389	2454.92	2.154	241.95	0.0014199	0.11323	0.619	0.50840	1.00309	0.6858
800	0.05595	2797.74	2.158	241.75	0.0012427	0.12089	0.662	0.62148	1.00270	0.6850
1000	0.04482	3494.20	2.154	241.45	0.0009947	0.13643	0.746	0.87582	1.00216	0.6842
2000	0.02247	7282.36	2.020	240.76	0.0004985	0.27727	1.136	3.39898	1.00108	0.5355
3000	0.01500	11761.94	1.823	240.51	0.0003326	0.39355	1.483	6.70749	1.00072	0.5309
4000	0.01124	17498.05	1.585	240.20	0.0002498	0.55314	1.801	11.25426	1.00054	0.5124
5000	0.00892	30503.36	1.083	238.08	0.0002016	1.06275	2.107	19.36858	1.00043	0.4390

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

250 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.862	0.20544	2977.78	75.6668	-132.596	-123.085	1.19659	1.136	1.525	4303
26	0.20562	2984.10	75.7214	-132.382	-122.863	1.20516	1.140	1.531	4309
28	0.20785	2773.48	75.8759	-129.305	-119.683	1.32292	1.192	1.657	4226
30	0.21031	2564.51	74.9717	-125.988	-116.252	1.44124	1.239	1.778	4128
32	0.21300	2390.02	73.6403	-122.443	-112.583	1.55963	1.283	1.893	4042
34	0.21592	2225.60	72.3126	-118.672	-108.677	1.67802	1.322	2.012	3961
36	0.21908	2066.23	70.9017	-114.669	-104.527	1.79662	1.357	2.136	3881
38	0.22252	1904.40	69.3394	-110.429	-100.128	1.91551	1.388	2.267	3797
40	0.22631	1741.73	67.5854	-105.930	-95.454	2.03537	1.414	2.409	3708
42	0.23051	1572.05	65.6087	-101.149	-90.478	2.15673	1.436	2.567	3609
44	0.23520	1409.63	63.3827	-96.066	-85.178	2.28000	1.454	2.739	3507
46	0.24050	1247.71	60.8330	-90.645	-79.511	2.40593	1.469	2.930	3396
48	0.24656	1083.59	57.9355	-84.843	-73.429	2.53532	1.481	3.155	3270
50	0.25359	923.47	54.6624	-78.606	-66.866	2.66926	1.494	3.420	3130
52	0.26192	762.68	50.9966	-71.836	-59.711	2.80954	1.506	3.759	2969
54	0.27215	608.53	46.9315	-64.369	-51.770	2.95935	1.520	4.200	2792
56	0.28526	456.14	42.3975	-55.965	-42.759	3.12314	1.537	4.862	2586
58	0.30332	314.24	37.1999	-46.133	-32.091	3.31023	1.561	5.912	2348
60	0.33183	178.21	30.9267	-33.730	-18.369	3.54264	1.601	8.167	2052
62	0.39337	67.07	22.5315	-14.991	3.220	3.89604	1.725	15.172	1653
64	0.57576	42.95	13.4394	17.010	43.803	4.54015	1.882	18.577	1401
66	0.75027	79.03	9.7879	36.288	71.021	4.95960	1.765	10.105	1448
68	0.87201	114.02	8.1567	47.463	87.831	5.21076	1.692	7.279	1508
70	0.97176	145.01	7.1209	55.882	100.868	5.39981	1.647	5.927	1555
75	1.17449	209.15	5.6036	71.671	126.042	5.74776	1.588	4.464	1650
80	1.34753	263.87	4.7512	84.326	146.708	6.01471	1.569	3.870	1737
85	1.50431	312.48	4.1705	95.533	165.173	6.23869	1.561	3.544	1813
90	1.65094	357.05	3.7395	105.917	182.344	6.43504	1.560	3.339	1882
95	1.79056	398.71	3.4026	115.782	198.673	6.61164	1.563	3.201	1945
100	1.92494	438.12	3.1280	125.344	214.456	6.77359	1.571	3.103	2002
105	2.05544	475.83	2.9022	134.642	229.795	6.92328	1.582	3.036	2057
110	2.18287	512.20	2.7111	143.803	244.855	7.06340	1.598	2.991	2107
115	2.30783	547.46	2.5467	152.898	259.734	7.19569	1.619	2.963	2154
120	2.43076	581.81	2.4033	161.982	274.510	7.32146	1.646	2.949	2198
125	2.55201	615.39	2.2770	171.104	289.245	7.44176	1.677	2.947	2238
130	2.67183	648.32	2.1647	180.306	303.993	7.55745	1.712	2.954	2276
140	2.90798	712.58	1.9730	199.086	333.706	7.77762	1.795	2.993	2346
150	3.14045	775.13	1.8150	218.558	363.939	7.98618	1.893	3.057	2408
160	3.37009	836.35	1.6821	238.890	394.902	8.18598	1.999	3.138	2466
170	3.59749	896.53	1.5685	260.196	426.735	8.37894	2.112	3.230	2520
180	3.82309	955.84	1.4701	282.536	459.519	8.56630	2.226	3.327	2573
190	4.04694	1014.29	1.3830	305.999	493.345	8.74884	2.340	3.427	2623
200	4.26968	1072.24	1.3068	330.430	528.087	8.92689	2.446	3.521	2674
220	4.71216	1186.71	1.1778	382.088	600.229	9.27058	2.630	3.688	2776
240	5.15155	1299.71	1.0728	436.849	675.331	9.59705	2.770	3.814	2880
260	5.58864	1411.60	0.9855	493.803	752.519	9.90610	2.864	3.898	2984
280	6.02394	1522.62	0.9116	552.133	831.001	10.19679	2.914	3.941	3089
300	6.45784	1632.98	0.8483	611.005	909.959	10.46929	2.930	3.951	3194
320	6.89061	1742.79	0.7933	669.888	988.876	10.72405	2.921	3.937	3299
340	7.32246	1852.15	0.7452	728.361	1067.341	10.96154	2.895	3.907	3403
360	7.75356	1961.16	0.7026	786.161	1145.099	11.18385	2.859	3.868	3506
380	8.18403	2069.85	0.6647	843.148	1222.013	11.39179	2.817	3.823	3607
400	8.61397	2178.29	0.6307	899.263	1298.031	11.58684	2.775	3.779	3707
420	9.04345	2286.52	0.6001	954.518	1373.168	11.77012	2.734	3.736	3804
440	9.47256	2394.55	0.5723	1008.969	1447.484	11.94302	2.696	3.696	3900
460	9.90132	2502.43	0.5470	1062.678	1521.042	12.10652	2.662	3.661	3993
480	10.32980	2610.16	0.5239	1115.733	1593.933	12.26141	2.632	3.629	4083
500	10.75803	2717.77	0.5026	1168.214	1666.238	12.40915	2.606	3.602	4172
520	11.18604	2825.27	0.4831	1220.203	1738.040	12.55009	2.584	3.579	4258
540	11.61384	2932.96	0.4649	1271.900	1809.543	12.68502	2.565	3.558	4342
560	12.04136	3040.22	0.4481	1323.032	1880.465	12.81350	2.549	3.543	4424
580	12.46872	3147.42	0.4325	1373.943	1951.160	12.93739	2.536	3.529	4504
600	12.89595	3254.55	0.4180	1424.651	2021.646	13.05694	2.526	3.518	4582
650	13.96356	3522.15	0.3856	1550.530	2196.948	13.33785	2.507	3.498	4771
700	15.03062	3789.48	0.3579	1675.720	2371.536	13.59687	2.496	3.486	4952
800	17.16357	4323.57	0.3130	1924.888	2719.445	14.06175	2.488	3.477	5290
1000	21.42667	5390.40	0.2502	2422.549	3414.459	14.83669	2.489	3.476	5906
2000	42.72604	10716.76	0.1250	4969.659	6947.585	17.27798	2.644	3.630	8256
3000	64.02089	16040.58	0.0833	7756.014	10719.747	18.79395	2.926	3.912	9968
4000	85.37918	21363.98	0.0625	10877.967	14830.444	20.16930	3.361	4.366	11339
5000	107.58377	26687.24	0.0500	14917.495	19897.895	22.12797	4.936	6.113	12368

* TWO-PHASE BOUNDRY

250 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.862	4.86761	292.12	13.680	14494.66	0.0052203	0.04598	1.784	0.00619	1.25494	2.1298
26	4.86333	293.50	13.655	14512.68	0.0052176	0.04639	1.764	0.00623	1.25470	2.0966
28	4.81118	291.41	13.230	13343.73	0.0056863	0.05137	1.540	0.00644	1.25176	1.7886
30	4.75486	289.12	12.725	12193.90	0.0061483	0.05469	1.364	0.00647	1.24858	1.5959
32	4.69483	288.41	12.227	11220.74	0.0065629	0.05694	1.222	0.00641	1.24521	1.4626
34	4.63144	286.81	11.806	10307.72	0.0070154	0.05836	1.107	0.00626	1.24165	1.3735
36	4.56448	284.10	11.444	9431.26	0.0075177	0.05954	1.010	0.00611	1.23790	1.3048
38	4.49390	279.82	11.120	8558.17	0.0081021	0.06089	0.929	0.00598	1.23396	1.2450
40	4.41873	274.30	10.818	7696.24	0.0087816	0.06171	0.858	0.00580	1.22977	1.2057
42	4.33817	266.85	10.534	6819.84	0.0096203	0.06207	0.795	0.00557	1.22528	1.1843
44	4.25163	258.96	10.252	5993.22	0.0105757	0.06203	0.739	0.00533	1.22048	1.1751
46	4.15793	249.89	9.960	5187.88	0.0117260	0.06159	0.688	0.00506	1.21529	1.1784
48	4.05577	239.34	9.642	4394.79	0.0131828	0.06079	0.640	0.00475	1.20966	1.1968
50	3.94344	227.84	9.281	3641.66	0.0150103	0.05964	0.596	0.00442	1.20348	1.2295
52	3.81801	214.61	8.868	2911.91	0.0175131	0.05814	0.553	0.00405	1.19660	1.2858
54	3.67442	200.11	8.406	2236.00	0.0209890	0.05623	0.510	0.00364	1.18876	1.3712
56	3.50552	183.38	7.869	1599.06	0.0265140	0.05361	0.467	0.00315	1.17959	1.5242
58	3.29689	164.65	7.230	1036.03	0.0359061	0.05066	0.421	0.00260	1.16832	1.7703
60	3.01364	141.82	6.410	537.06	0.0575853	0.04910	0.370	0.00200	1.15313	2.2158
62	2.54212	114.81	5.138	170.49	0.1321544	0.04978	0.303	0.00129	1.12816	3.3294
64	1.72784	102.57	4.133	74.20	0.1811160	0.04420	0.223	0.00138	1.08592	3.3791
66	1.33285	108.75	4.160	105.33	0.0929224	0.03285	0.193	0.00244	1.06583	2.1340
68	1.14678	116.68	4.204	130.75	0.0623837	0.02910	0.181	0.00349	1.05646	1.6327
70	1.02906	124.20	4.203	149.23	0.0477183	0.02739	0.176	0.00449	1.05056	1.3739
75	0.85143	141.87	4.145	178.08	0.0314675	0.02590	0.174	0.00681	1.04170	1.0796
80	0.74210	159.49	4.082	195.82	0.0242636	0.02575	0.177	0.00897	1.03628	0.9556
85	0.66476	176.50	4.019	207.72	0.0200770	0.02609	0.181	0.01107	1.03246	0.8860
90	0.60572	193.10	3.958	216.27	0.0172908	0.02665	0.186	0.01318	1.02954	0.8412
95	0.55849	209.48	3.897	222.67	0.0152807	0.02734	0.192	0.01530	1.02722	0.8101
100	0.51950	225.81	3.833	227.60	0.0137434	0.02813	0.198	0.01745	1.02530	0.7871
105	0.48651	242.18	3.771	231.50	0.0125366	0.02897	0.204	0.01961	1.02368	0.7704
110	0.45811	258.87	3.703	234.64	0.0115541	0.02995	0.210	0.02186	1.02229	0.7558
115	0.43331	276.00	3.629	237.22	0.0107355	0.03101	0.216	0.02415	1.02107	0.7442
120	0.41139	293.70	3.550	239.35	0.0100410	0.03208	0.222	0.02645	1.02000	0.7359
125	0.39185	312.05	3.466	241.14	0.0094427	0.03318	0.228	0.02874	1.01904	0.7302
130	0.37428	331.14	3.378	242.65	0.0089209	0.03429	0.234	0.03101	1.01818	0.7269
140	0.34388	371.73	3.195	245.04	0.0080516	0.03639	0.246	0.03536	1.01670	0.7288
150	0.31843	415.69	3.012	246.82	0.0073535	0.03917	0.258	0.04025	1.01545	0.7240
160	0.29673	462.94	2.835	248.17	0.0067781	0.04225	0.269	0.04537	1.01439	0.7195
170	0.27797	513.16	2.672	249.21	0.0062940	0.04533	0.280	0.05049	1.01348	0.7188
180	0.26157	565.82	2.525	250.02	0.0058801	0.05233	0.309	0.06013	1.01268	0.7062
190	0.24710	621.04	2.392	250.63	0.0055181	0.05710	0.327	0.06743	1.01198	0.7060
200	0.23421	676.68	2.281	251.13	0.0052035	0.06150	0.342	0.07457	1.01135	0.7057
220	0.21222	788.48	2.110	251.84	0.0046769	0.06920	0.368	0.08842	1.01028	0.7052
240	0.19412	897.03	1.995	252.29	0.0042523	0.07552	0.387	0.10199	1.00940	0.7046
260	0.17893	999.09	1.923	252.58	0.0039017	0.08057	0.404	0.11551	1.00866	0.7038
280	0.16600	1092.64	1.885	252.76	0.0036067	0.08448	0.418	0.12914	1.00803	0.7027
300	0.15485	1177.87	1.869	252.87	0.0033547	0.08747	0.431	0.14296	1.00749	0.7014
320	0.14513	1255.27	1.871	252.92	0.0031366	0.08973	0.443	0.15703	1.00702	0.7001
340	0.13657	1326.32	1.885	252.94	0.0029460	0.09146	0.454	0.17140	1.00661	0.6986
360	0.12897	1392.42	1.905	252.94	0.0027778	0.09282	0.465	0.18607	1.00624	0.6972
380	0.12219	1454.77	1.931	252.91	0.0026281	0.09393	0.475	0.20107	1.00591	0.6959
400	0.11609	1515.09	1.958	252.88	0.0024941	0.09493	0.485	0.21641	1.00561	0.6946
420	0.11058	1574.04	1.985	252.84	0.0023734	0.09587	0.494	0.23208	1.00535	0.6934
440	0.10557	1632.51	2.011	252.79	0.0022640	0.09680	0.504	0.24809	1.00510	0.6924
460	0.10100	1691.27	2.035	252.74	0.0021644	0.09776	0.513	0.26444	1.00488	0.6914
480	0.09681	1750.39	2.056	252.68	0.0020733	0.09877	0.522	0.28114	1.00468	0.6905
500	0.09295	1810.35	2.075	252.63	0.0019897	0.09984	0.531	0.29819	1.00449	0.6898
520	0.08940	1871.20	2.091	252.57	0.0019126	0.10097	0.540	0.31559	1.00432	0.6891
540	0.08610	1933.03	2.105	252.54	0.0018409	0.10215	0.549	0.33338	1.00416	0.6885
560	0.08305	1995.97	2.117	252.48	0.0017749	0.10341	0.558	0.35149	1.00401	0.6880
580	0.08020	2059.54	2.126	252.43	0.0017135	0.10471	0.567	0.36995	1.00388	0.6875
600	0.07754	2124.00	2.134	252.37	0.0016562	0.10605	0.575	0.38877	1.00375	0.6871
650	0.07151	2288.11	2.148	252.24	0.0015287	0.10957	0.597	0.43739	1.00346	0.6863
700	0.06653	2455.70	2.155	252.12	0.0014195	0.11325	0.619	0.48830	1.00321	0.6858
800	0.05826	2798.55	2.159	251.90	0.0012424	0.12092	0.662	0.59691	1.00281	0.6850
1000	0.04657	3495.05	2.154	251.57	0.0009945	0.13646	0.746	0.84118	1.00225	0.6842
2000	0.02340	7283.31	2.020	250.83	0.0004984	0.27727	1.137	3.26344	1.00113	0.5357
3000	0.01562	11762.56	1.823	250.55	0.0003326	0.39353	1.484	6.43962	1.00075	0.5311
4000	0.01171	17480.35	1.588	250.22	0.0002498	0.55218	1.802	10.79755	1.00057	0.5130
5000	0.00930	30328.03	1.090	248.06	0.0002016	1.05381	2.108	18.54592	1.00045	0.4402

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

260 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.902	0.20534	2988.10	75.6990	-132.581	-122.695	1.19697	1.137	1.525	4309
26	0.20548	3000.07	75.7375	-132.427	-122.534	1.20315	1.140	1.529	4317
28	0.20769	2791.81	75.9425	-129.359	-119.360	1.32073	1.192	1.654	4236
30	0.21014	2580.26	75.1142	-126.051	-115.934	1.43888	1.239	1.775	4139
32	0.21281	2405.08	73.7836	-122.516	-112.270	1.55708	1.282	1.890	4052
34	0.21571	2240.46	72.4584	-118.757	-108.372	1.67524	1.322	2.008	3971
36	0.21885	2081.64	71.0518	-114.767	-104.230	1.79357	1.357	2.131	3892
38	0.22227	1919.98	69.4983	-110.543	-99.842	1.91220	1.387	2.262	3808
40	0.22602	1758.03	67.7531	-106.063	-95.181	2.03171	1.413	2.401	3720
42	0.23016	1593.67	65.7971	-101.311	-90.230	2.15249	1.435	2.554	3625
44	0.23481	1426.39	63.5833	-96.249	-84.944	2.27542	1.454	2.727	3521
46	0.24004	1265.59	61.0617	-90.862	-79.305	2.40074	1.469	2.915	3411
48	0.24601	1101.68	58.2040	-85.104	-73.260	2.52935	1.481	3.135	3287
50	0.25290	942.76	54.9843	-78.922	-66.746	2.66227	1.493	3.392	3150
52	0.26104	782.55	51.3795	-72.228	-59.660	2.80120	1.506	3.719	2992
54	0.27096	629.95	47.4009	-64.875	-51.829	2.94894	1.519	4.137	2820
56	0.28352	481.63	42.9846	-56.653	-43.003	3.10938	1.535	4.733	2623
58	0.30053	337.60	37.9614	-47.125	-32.656	3.29085	1.557	5.697	2392
60	0.32520	206.17	32.0546	-35.431	-19.726	3.50987	1.591	7.483	2119
62	0.37543	92.48	24.5456	-18.984	-0.909	3.81799	1.667	12.209	1772
64	0.50798	43.92	15.8033	8.199	32.655	4.35004	1.846	19.236	1456
66	0.68149	70.16	10.9991	30.818	63.628	4.82752	1.779	11.567	1454
68	0.80762	104.70	8.9556	43.575	82.458	5.10890	1.706	7.998	1508
70	0.90892	136.37	7.7231	52.810	96.570	5.31354	1.659	6.343	1554
75	1.11102	202.12	5.9940	69.562	123.052	5.67969	1.592	4.639	1652
80	1.28137	258.11	5.0397	82.654	144.346	5.95477	1.571	3.965	1737
85	1.43470	307.64	4.4052	94.124	163.197	6.18345	1.563	3.607	1813
90	1.57757	352.93	3.9389	104.688	180.640	6.38290	1.562	3.385	1882
95	1.71327	395.18	3.5769	114.688	197.173	6.56172	1.565	3.237	1946
100	1.84366	435.07	3.2830	124.358	213.121	6.72536	1.573	3.132	2003
105	1.97010	473.19	3.0424	133.740	228.591	6.87632	1.584	3.060	2058
110	2.09345	509.91	2.8393	142.971	243.760	7.01747	1.600	3.011	2109
115	2.21431	545.48	2.6651	152.125	258.733	7.15058	1.621	2.980	2156
120	2.33314	580.11	2.5134	161.259	273.588	7.27703	1.647	2.964	2199
125	2.45027	613.94	2.3801	170.425	288.394	7.39791	1.678	2.960	2240
130	2.56598	647.09	2.2616	179.665	303.204	7.51408	1.713	2.966	2278
140	2.79389	711.74	2.0598	198.510	333.022	7.73504	1.796	3.003	2348
150	3.01813	774.61	1.8938	218.033	363.341	7.94419	1.893	3.065	2410
160	3.23954	836.12	1.7543	238.408	394.376	8.14446	2.000	3.144	2468
170	3.45871	896.53	1.6353	259.751	426.270	8.33778	2.112	3.235	2522
180	3.67607	956.07	1.5322	282.121	459.106	8.52544	2.226	3.332	2575
190	3.89170	1014.69	1.4411	305.617	492.983	8.70826	2.341	3.431	2625
200	4.10621	1072.80	1.3613	330.072	527.765	8.88652	2.446	3.525	2676
220	4.53225	1187.55	1.2266	381.772	599.977	9.23054	2.631	3.691	2778
240	4.95523	1300.78	1.1170	436.566	675.135	9.55726	2.770	3.817	2881
260	5.37590	1412.85	1.0259	493.548	752.370	9.86649	2.864	3.900	2986
280	5.79479	1524.04	0.9488	551.901	830.891	10.15733	2.914	3.943	3091
300	6.21228	1634.53	0.8828	610.793	909.883	10.42994	2.931	3.953	3196
320	6.62865	1744.46	0.8255	669.693	988.829	10.68480	2.922	3.939	3301
340	7.04411	1853.93	0.7754	728.181	1067.319	10.92237	2.895	3.909	3405
360	7.45881	1963.03	0.7310	785.995	1145.099	11.14474	2.859	3.869	3508
380	7.87289	2071.80	0.6915	842.993	1222.032	11.35273	2.818	3.824	3609
400	8.28643	2180.32	0.6562	899.118	1298.068	11.54782	2.775	3.780	3709
420	8.69953	2288.60	0.6243	954.383	1373.221	11.73114	2.734	3.737	3806
440	9.11225	2396.69	0.5954	1008.843	1447.552	11.90407	2.696	3.697	3902
460	9.52463	2504.62	0.5690	1062.559	1521.122	12.06761	2.662	3.661	3995
480	9.93672	2612.40	0.5450	1115.621	1594.025	12.22252	2.632	3.630	4085
500	10.34856	2720.05	0.5229	1168.109	1666.340	12.37028	2.606	3.602	4174
520	10.76019	2827.59	0.5025	1220.104	1738.153	12.51124	2.584	3.579	4260
540	11.17165	2935.34	0.4836	1271.812	1809.671	12.64620	2.565	3.559	4344
560	11.58278	3042.63	0.4661	1322.949	1880.601	12.77469	2.550	3.543	4426
580	11.99376	3149.85	0.4499	1373.864	1951.303	12.89860	2.537	3.529	4506
600	12.40462	3257.01	0.4348	1424.576	2021.796	13.01815	2.526	3.518	4584
650	13.43127	3524.66	0.4011	1550.465	2197.113	13.29909	2.507	3.498	4773
700	14.45738	3792.03	0.3722	1675.662	2371.712	13.55813	2.496	3.486	4953
800	16.50842	4326.19	0.3255	1924.842	2719.640	14.02303	2.488	3.477	5292
1000	20.60772	5393.09	0.2602	2422.518	3414.676	14.79799	2.489	3.476	5907
2000	41.08813	10719.58	0.1300	4969.651	6947.837	17.23931	2.644	3.630	8257
3000	61.56399	16043.42	0.0867	7755.986	10719.982	18.75528	2.926	3.912	9969
4000	82.09962	21366.82	0.0650	10876.566	14829.249	20.13024	3.357	4.362	11341
5000	103.43327	26690.09	0.0520	14900.960	19880.751	22.08548	4.905	6.078	12372

* TWO-PHASE BOUNDRY

260 PSIA IS0BAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)/V_P$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.902	4.86992	293.14	13.670	14551.80	0.0052020	0.04614	1.787	0.00621	1.25507	2.1261
26	4.86672	294.67	13.653	14600.51	0.0051873	0.04642	1.772	0.00624	1.25489	2.1009
28	4.81479	292.73	13.235	13441.97	0.0056497	0.05142	1.547	0.00646	1.25196	1.7914
30	4.75871	290.18	12.743	12278.70	0.0061174	0.05475	1.370	0.00648	1.24880	1.5988
32	4.69896	289.47	12.244	11301.36	0.0065287	0.05702	1.228	0.00642	1.24544	1.4646
34	4.63589	287.90	11.823	10386.52	0.0069762	0.05845	1.111	0.00628	1.24190	1.3748
36	4.56931	285.29	11.461	9511.65	0.0074700	0.05964	1.015	0.00612	1.23817	1.3053
38	4.49912	281.09	11.137	8638.24	0.0080454	0.06100	0.933	0.00600	1.23425	1.2449
40	4.42443	275.70	10.834	7778.28	0.0087106	0.06184	0.862	0.00582	1.23008	1.2048
42	4.34474	268.82	10.552	6924.06	0.0095027	0.06222	0.799	0.00561	1.22565	1.1812
44	4.25868	260.54	10.270	6074.54	0.0104672	0.06219	0.743	0.00535	1.22087	1.1728
46	4.16590	251.67	9.980	5272.32	0.0115816	0.06178	0.692	0.00509	1.21573	1.1748
48	4.06494	241.24	9.666	4478.27	0.0129970	0.06100	0.644	0.00479	1.21016	1.1920
50	3.95417	229.99	9.311	3727.85	0.0147496	0.05989	0.599	0.00446	1.20406	1.2224
52	3.83087	216.99	8.908	2997.85	0.0171388	0.05843	0.557	0.00410	1.19730	1.2754
54	3.69058	202.91	8.458	2324.88	0.0203885	0.05658	0.514	0.00371	1.18964	1.3542
56	3.52715	187.03	7.940	1698.77	0.0253034	0.05404	0.472	0.00324	1.18076	1.4882
58	3.32743	168.60	7.328	1123.36	0.0337929	0.05100	0.428	0.00269	1.16996	1.7202
60	3.06557	147.55	6.570	632.04	0.0507161	0.04929	0.379	0.00215	1.15591	2.0715
62	2.66352	122.52	5.529	246.34	0.0996432	0.04861	0.319	0.00149	1.13456	2.8865
64	1.96859	105.24	4.348	86.46	0.1827878	0.04741	0.245	0.00125	1.09829	3.5747
66	1.46737	108.26	4.214	102.95	0.1068449	0.03550	0.204	0.00209	1.07264	2.3922
68	1.23820	115.77	4.239	129.64	0.0690825	0.03058	0.188	0.00309	1.06106	1.7728
70	1.10021	123.22	4.232	150.04	0.0514751	0.02838	0.181	0.00407	1.05412	1.4582
75	0.90007	140.81	4.183	181.93	0.0329474	0.02645	0.177	0.00634	1.04412	1.1154
80	0.78041	158.47	4.110	201.43	0.0250191	0.02614	0.178	0.00845	1.03818	0.9744
85	0.69701	175.58	4.042	214.43	0.0205435	0.02640	0.183	0.01050	1.03405	0.8981
90	0.63389	192.28	3.978	223.72	0.0176064	0.02691	0.188	0.01254	1.03093	0.8497
95	0.58368	208.75	3.915	230.66	0.0155072	0.02757	0.193	0.01459	1.02846	0.8165
100	0.54240	225.14	3.848	235.98	0.0139120	0.02833	0.199	0.01668	1.02643	0.7920
105	0.50759	241.57	3.784	240.19	0.0126668	0.02916	0.205	0.01877	1.02471	0.7743
110	0.47768	258.30	3.716	243.57	0.0116570	0.03012	0.211	0.02094	1.02325	0.7591
115	0.45161	275.48	3.641	246.34	0.0108185	0.03117	0.217	0.02316	1.02197	0.7469
120	0.42851	293.21	3.561	248.64	0.0101089	0.03223	0.223	0.02537	1.02084	0.7381
125	0.40812	311.59	3.476	250.56	0.0094990	0.03332	0.229	0.02758	1.01984	0.7321
130	0.38972	330.70	3.388	252.18	0.0089680	0.03442	0.235	0.02978	1.01894	0.7285
140	0.35792	371.34	3.204	254.75	0.0080856	0.03651	0.247	0.03397	1.01738	0.7302
150	0.33133	415.34	3.019	256.65	0.0073787	0.03928	0.258	0.03869	1.01608	0.7250
160	0.30869	462.62	2.842	258.10	0.0067971	0.04235	0.269	0.04363	1.01498	0.7203
170	0.28913	512.86	2.678	259.21	0.0063087	0.04542	0.281	0.04856	1.01402	0.7194
180	0.27203	565.56	2.531	260.08	0.0058915	0.05236	0.309	0.05777	1.01319	0.7071
190	0.25696	620.84	2.396	260.73	0.0055269	0.05712	0.327	0.06479	1.01246	0.7068
200	0.24353	676.52	2.285	261.26	0.0052105	0.06151	0.342	0.07165	1.01180	0.7064
220	0.22054	788.41	2.113	262.02	0.0046814	0.06921	0.368	0.08498	1.01069	0.7057
240	0.20181	897.04	1.998	262.51	0.0042551	0.07552	0.388	0.09805	1.00977	0.7051
260	0.18602	999.18	1.926	262.81	0.0039035	0.08057	0.404	0.11106	1.00901	0.7042
280	0.17257	1092.82	1.887	263.00	0.0036078	0.08448	0.418	0.12417	1.00835	0.7030
300	0.16097	1178.13	1.871	263.11	0.0033553	0.08748	0.431	0.13748	1.00779	0.7017
320	0.15086	1255.60	1.873	263.17	0.0031369	0.08974	0.443	0.15102	1.00730	0.7003
340	0.14196	1326.71	1.886	263.19	0.0029460	0.09147	0.454	0.16485	1.00687	0.6989
360	0.13407	1392.85	1.907	263.18	0.0027776	0.09283	0.465	0.17897	1.00649	0.6974
380	0.12702	1455.25	1.932	263.16	0.0026279	0.09395	0.475	0.19340	1.00614	0.6961
400	0.12068	1515.61	1.959	263.12	0.0024938	0.09495	0.485	0.20816	1.00584	0.6948
420	0.11495	1574.60	1.986	263.07	0.0023730	0.09588	0.494	0.22324	1.00556	0.6936
440	0.10974	1633.10	2.012	263.02	0.0022636	0.09681	0.504	0.23865	1.00531	0.6925
460	0.10499	1691.88	2.036	262.96	0.0021639	0.09778	0.513	0.25438	1.00508	0.6915
480	0.10064	1751.02	2.057	262.90	0.0020729	0.09879	0.522	0.27044	1.00487	0.6906
500	0.09663	1811.01	2.076	262.84	0.0019892	0.09986	0.531	0.28685	1.00467	0.6899
520	0.09294	1871.87	2.093	262.78	0.0019122	0.10099	0.540	0.30359	1.00449	0.6892
540	0.08951	1933.73	2.106	262.75	0.0018404	0.10217	0.549	0.32071	1.00433	0.6885
560	0.08634	1996.69	2.118	262.69	0.0017744	0.10343	0.558	0.33813	1.00417	0.6880
580	0.08338	2060.27	2.127	262.62	0.0017130	0.10473	0.567	0.35589	1.00403	0.6876
600	0.08062	2124.74	2.135	262.56	0.0016558	0.10607	0.576	0.37400	1.00390	0.6872
650	0.07445	2288.88	2.149	262.42	0.0015283	0.10959	0.597	0.42077	1.00360	0.6864
700	0.06917	2456.49	2.156	262.29	0.0014192	0.11327	0.619	0.46975	1.00334	0.6858
800	0.06058	2799.37	2.159	262.06	0.0012421	0.12094	0.662	0.57423	1.00293	0.6850
1000	0.04853	3495.91	2.155	261.70	0.0009943	0.13649	0.746	0.80921	1.00234	0.6842
2000	0.02434	7284.26	2.020	260.89	0.0004983	0.27727	1.137	3.13833	1.00118	0.5358
3000	0.01624	11763.20	1.824	260.60	0.0003326	0.39351	1.484	6.19237	1.00078	0.5313
4000	0.01218	17463.75	1.590	260.25	0.0002498	0.55127	1.803	10.37636	1.00059	0.5134
5000	0.00967	30162.93	1.096	258.04	0.0002015	1.04538	2.109	17.78875	1.00047	0.4414

* TWO-PHASE BOUNDRY

270 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.942	0.20524	2998.39	75.7316	-132.566	-122.305	1.19735	1.138	1.525	4315
26	0.20533	3015.97	75.7536	-132.472	-122.206	1.20116	1.140	1.526	4325
28	0.20754	2810.05	76.0087	-129.412	-119.036	1.31856	1.191	1.651	4247
30	0.20997	2595.92	75.2560	-126.113	-115.615	1.43653	1.238	1.773	4149
32	0.21263	2420.04	73.9260	-122.588	-111.958	1.55454	1.282	1.887	4062
34	0.21550	2255.22	72.6032	-118.841	-108.066	1.67248	1.321	2.005	3981
36	0.21862	2096.94	71.2009	-114.864	-103.934	1.79056	1.356	2.127	3903
38	0.22201	1935.44	69.6560	-110.655	-99.555	1.90891	1.387	2.256	3820
40	0.22573	1774.18	67.9194	-106.193	-94.908	2.02809	1.413	2.394	3732
42	0.22983	1610.30	65.9770	-101.463	-89.973	2.14847	1.435	2.545	3638
44	0.23443	1442.95	63.7814	-96.429	-84.708	2.27091	1.454	2.716	3534
46	0.23959	1283.22	61.2871	-91.075	-79.096	2.39562	1.469	2.900	3426
48	0.24546	1119.47	58.4679	-85.359	-73.087	2.52347	1.481	3.117	3303
50	0.25224	964.75	55.2921	-79.224	-66.613	2.65559	1.493	3.360	3171
52	0.26019	807.07	51.7523	-72.609	-59.600	2.79308	1.505	3.668	3019
54	0.26982	650.64	47.8542	-65.362	-51.872	2.93888	1.518	4.080	2847
56	0.28190	504.23	43.5421	-57.299	-43.205	3.09642	1.533	4.632	2656
58	0.29797	364.04	38.6877	-48.054	-33.157	3.27266	1.553	5.474	2438
60	0.32141	232.86	33.0725	-36.929	-20.859	3.48099	1.584	6.975	2180
62	0.36245	117.61	26.2130	-22.125	-4.003	3.75706	1.643	10.455	1862
64	0.45801	52.80	18.1608	0.630	23.529	4.19350	1.794	17.322	1537
66	0.61820	63.93	12.3910	24.897	55.805	4.69077	1.784	13.002	1469
68	0.74761	96.61	9.8418	39.426	76.804	5.00460	1.720	8.776	1511
70	0.85043	128.15	8.3753	49.585	92.103	5.22648	1.671	6.802	1555
75	1.05445	196.59	6.3946	67.475	120.194	5.61485	1.598	4.810	1656
80	1.22013	252.48	5.3388	80.953	141.955	5.89595	1.574	4.064	1738
85	1.37030	302.92	4.6466	92.698	161.208	6.12950	1.566	3.672	1814
90	1.50970	348.91	4.1430	103.449	178.928	6.33214	1.564	3.433	1883
95	1.64178	391.73	3.7545	113.587	195.670	6.51321	1.567	3.274	1947
100	1.76846	432.09	3.4405	123.368	211.785	6.67856	1.575	3.161	2005
105	1.89115	470.62	3.1846	132.836	227.387	6.83082	1.585	3.084	2059
110	2.01072	507.68	2.9692	142.137	242.667	6.97299	1.601	3.031	2110
115	2.12778	543.56	2.7848	151.350	257.732	7.10693	1.622	2.998	2157
120	2.24281	578.46	2.6247	160.536	272.669	7.23407	1.648	2.979	2201
125	2.35613	612.53	2.4840	169.746	287.544	7.35552	1.679	2.973	2242
130	2.46802	645.91	2.3593	179.024	302.417	7.47219	1.714	2.977	2280
140	2.68830	710.93	2.1472	197.934	332.340	7.69392	1.797	3.012	2350
150	2.90491	774.13	1.9730	217.509	362.745	7.90367	1.894	3.072	2412
160	3.11869	835.91	1.8269	237.927	393.852	8.10440	2.000	3.151	2470
170	3.33023	896.57	1.7023	259.306	425.807	8.29809	2.113	3.241	2524
180	3.53998	956.31	1.5946	281.708	458.695	8.48605	2.226	3.337	2577
190	3.74798	1015.11	1.4993	305.236	492.622	8.66914	2.341	3.436	2627
200	3.95488	1073.39	1.4160	329.715	527.446	8.84762	2.447	3.529	2678
220	4.36570	1188.41	1.2755	381.456	599.726	9.19197	2.631	3.694	2780
240	4.77346	1301.86	1.1612	436.284	674.941	9.51892	2.771	3.820	2883
260	5.17893	1414.13	1.0663	493.293	752.222	9.82834	2.864	3.902	2988
280	5.58262	1525.47	0.9861	551.669	830.782	10.11933	2.914	3.944	3093
300	5.98492	1636.10	0.9174	610.581	909.807	10.39206	2.931	3.954	3198
320	6.38611	1746.15	0.8578	669.498	988.782	10.64701	2.922	3.940	3303
340	6.78638	1855.72	0.8056	728.001	1067.297	10.88465	2.896	3.910	3407
360	7.18590	1964.90	0.7595	785.828	1145.099	11.10708	2.859	3.870	3510
380	7.58480	2073.76	0.7184	842.838	1222.053	11.31513	2.818	3.825	3611
400	7.98317	2182.34	0.6816	898.974	1298.106	11.51027	2.775	3.780	3711
420	8.38109	2290.69	0.6485	954.248	1373.275	11.69363	2.734	3.737	3808
440	8.77863	2398.84	0.6184	1008.717	1447.619	11.86659	2.696	3.697	3904
460	9.17584	2506.81	0.5911	1062.441	1521.203	12.03015	2.662	3.662	3997
480	9.57276	2614.64	0.5660	1115.510	1594.117	12.18509	2.632	3.630	4087
500	9.96943	2722.33	0.5431	1168.005	1666.443	12.33287	2.606	3.603	4176
520	10.36588	2829.91	0.5219	1220.005	1738.265	12.47385	2.584	3.580	4262
540	10.76222	2937.72	0.5022	1271.723	1809.798	12.60884	2.565	3.559	4346
560	11.15818	3045.04	0.4841	1322.865	1880.737	12.73734	2.550	3.543	4428
580	11.55399	3152.29	0.4672	1373.785	1951.446	12.86126	2.537	3.530	4508
600	11.94967	3259.47	0.4515	1424.502	2021.946	12.98083	2.526	3.518	4586
650	12.93841	3527.17	0.4165	1550.399	2197.277	13.26179	2.507	3.498	4775
700	13.92659	3794.59	0.3866	1675.605	2371.888	13.52084	2.496	3.486	4955
800	15.90180	4328.81	0.3380	1924.797	2719.834	13.98578	2.488	3.477	5294
1000	19.84944	5395.79	0.2702	2422.487	3414.893	14.76076	2.489	3.476	5909
2000	39.57155	10722.39	0.1350	4969.642	6948.088	17.20210	2.644	3.630	8258
3000	59.28908	16046.25	0.0900	7755.960	10720.218	18.71807	2.926	3.912	9970
4000	79.06306	21369.66	0.0675	10875.244	14828.135	20.09267	3.353	4.357	11342
5000	99.59119	26692.93	0.0540	14885.353	19864.583	22.04466	4.876	6.046	12377

* TWO-PHASE BOUNDRY

270 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.942	4.87223	294.15	13.661	14608.86	0.0051840	0.04629	1.790	0.00623	1.25520	2.1225
26	4.87009	295.83	13.651	14688.04	0.0051575	0.04646	1.781	0.00625	1.25508	2.1052
28	4.81837	294.03	13.240	13539.85	0.0056137	0.05147	1.554	0.00647	1.25216	1.7942
30	4.76253	291.23	12.760	12363.14	0.0060871	0.05481	1.376	0.00649	1.24902	1.6017
32	4.70306	290.51	12.261	11381.61	0.0064952	0.05710	1.233	0.00643	1.24567	1.4667
34	4.64031	288.98	11.840	10464.91	0.0069379	0.05854	1.116	0.00629	1.24215	1.3761
36	4.57410	286.48	11.477	9591.61	0.0074232	0.05974	1.019	0.00614	1.23844	1.3059
38	4.50429	282.35	11.153	8717.81	0.0079901	0.06112	0.937	0.00601	1.23454	1.2449
40	4.43008	277.07	10.850	7859.77	0.0086414	0.06197	0.866	0.00584	1.23040	1.2040
42	4.35096	270.31	10.568	7006.34	0.0094168	0.06237	0.803	0.00563	1.22599	1.1797
44	4.26563	262.10	10.287	6155.11	0.0103624	0.06236	0.747	0.00538	1.22126	1.1706
46	4.17375	253.41	9.999	5355.84	0.0114430	0.06196	0.695	0.00512	1.21617	1.1714
48	4.07395	243.10	9.689	4560.64	0.0128201	0.06121	0.648	0.00482	1.21066	1.1874
50	3.96443	232.42	9.340	3824.67	0.0144567	0.06012	0.603	0.00451	1.20463	1.2135
52	3.84339	219.87	8.946	3101.89	0.0166841	0.05870	0.561	0.00416	1.19799	1.2611
54	3.70618	205.58	8.508	2411.38	0.0198451	0.05691	0.519	0.00376	1.19049	1.3390
56	3.54739	190.27	8.006	1788.70	0.0243429	0.05446	0.477	0.00331	1.18186	1.4607
58	3.35607	172.87	7.421	1221.75	0.0316659	0.05147	0.434	0.00280	1.17151	1.6610
60	3.11127	152.80	6.712	724.49	0.0456494	0.04956	0.387	0.00228	1.15835	1.9615
62	2.75897	129.42	5.781	324.47	0.0807860	0.04830	0.332	0.00167	1.13960	2.5909
64	2.18338	109.96	4.637	115.29	0.1575289	0.04804	0.265	0.00127	1.10941	3.4453
66	1.61759	108.51	4.294	103.41	0.1198237	0.03834	0.217	0.00182	1.08028	2.6452
68	1.33760	115.23	4.278	129.22	0.0761617	0.03221	0.196	0.00274	1.06607	1.9244
70	1.17587	122.39	4.263	150.69	0.0555800	0.02946	0.187	0.00368	1.05792	1.5518
75	0.94836	140.25	4.218	186.44	0.0342983	0.02701	0.179	0.00592	1.04653	1.1507
80	0.81959	157.51	4.138	206.93	0.0257999	0.02655	0.180	0.00797	1.04012	0.9943
85	0.72977	174.71	4.066	221.06	0.0210198	0.02671	0.184	0.00997	1.03567	0.9107
90	0.66239	191.50	3.998	231.11	0.0179262	0.02718	0.189	0.01195	1.03234	0.8586
95	0.60909	208.05	3.933	238.60	0.0157354	0.02781	0.194	0.01394	1.02971	0.8231
100	0.56547	224.51	3.863	244.33	0.0140813	0.02854	0.200	0.01597	1.02756	0.7971
105	0.52878	240.99	3.799	248.85	0.0127971	0.02935	0.206	0.01800	1.02576	0.7784
110	0.49734	257.76	3.729	252.49	0.0117598	0.03030	0.212	0.02010	1.02421	0.7623
115	0.46997	274.97	3.653	255.46	0.0109011	0.03133	0.218	0.02224	1.02287	0.7496
120	0.44587	292.74	3.572	257.92	0.0101764	0.03238	0.224	0.02438	1.02169	0.7404
125	0.42442	311.15	3.487	259.97	0.0095549	0.03346	0.230	0.02652	1.02064	0.7341
130	0.40518	330.29	3.397	261.71	0.0090148	0.03456	0.235	0.02864	1.01969	0.7302
140	0.37198	370.96	3.212	264.45	0.0081193	0.03662	0.247	0.03269	1.01807	0.7316
150	0.34424	414.99	3.026	266.49	0.0074036	0.03939	0.259	0.03724	1.01671	0.7261
160	0.32065	462.30	2.848	268.03	0.0068160	0.04245	0.270	0.04202	1.01556	0.7211
170	0.30028	512.58	2.683	269.22	0.0063231	0.04552	0.281	0.04677	1.01457	0.7201
180	0.28249	565.31	2.536	270.15	0.0059027	0.05239	0.309	0.05558	1.01370	0.7079
190	0.26681	620.66	2.400	270.84	0.0055356	0.05715	0.327	0.06234	1.01294	0.7076
200	0.25285	676.37	2.289	271.41	0.0052174	0.06153	0.342	0.06896	1.01226	0.7071
220	0.22906	788.34	2.117	272.22	0.0046857	0.06921	0.368	0.08180	1.01110	0.7063
240	0.20949	897.06	2.001	272.73	0.0042579	0.07553	0.388	0.09439	1.01015	0.7055
260	0.19309	999.29	1.928	273.05	0.0039052	0.08058	0.404	0.10694	1.00935	0.7046
280	0.17913	1093.01	1.889	273.25	0.0036088	0.08449	0.419	0.11958	1.00867	0.7034
300	0.16709	1178.39	1.873	273.37	0.0033558	0.08748	0.431	0.13240	1.00809	0.7020
320	0.15659	1255.93	1.875	273.43	0.0031372	0.08974	0.443	0.14546	1.00758	0.7006
340	0.14735	1327.10	1.888	273.45	0.0029461	0.09148	0.454	0.15879	1.00713	0.6991
360	0.13916	1393.29	1.909	273.44	0.0027775	0.09284	0.465	0.17239	1.00673	0.6976
380	0.13184	1455.74	1.934	273.41	0.0026277	0.09396	0.475	0.18630	1.00638	0.6962
400	0.12526	1516.14	1.961	273.37	0.0024935	0.09496	0.485	0.20052	1.00606	0.6949
420	0.11932	1575.16	1.988	273.32	0.0023726	0.09590	0.494	0.21506	1.00577	0.6937
440	0.11391	1633.68	2.014	273.26	0.0022632	0.09683	0.504	0.22990	1.00551	0.6926
460	0.10898	1692.49	2.037	273.20	0.0021635	0.09779	0.513	0.24506	1.00527	0.6916
480	0.10446	1751.66	2.059	273.13	0.0020724	0.09880	0.522	0.26054	1.00505	0.6907
500	0.10031	1811.66	2.077	273.07	0.0019888	0.09987	0.531	0.27635	1.00485	0.6900
520	0.09647	1872.55	2.094	273.00	0.0019117	0.10101	0.540	0.29248	1.00466	0.6893
540	0.09292	1934.44	2.107	272.97	0.0018400	0.10218	0.549	0.30898	1.00449	0.6886
560	0.08962	1997.41	2.119	272.90	0.0017740	0.10345	0.558	0.32576	1.00433	0.6881
580	0.08655	2061.00	2.128	272.83	0.0017126	0.10475	0.567	0.34288	1.00418	0.6876
600	0.08368	2125.49	2.136	272.77	0.0016554	0.10609	0.576	0.36032	1.00404	0.6872
650	0.07729	2289.65	2.149	272.61	0.0015279	0.10961	0.597	0.40539	1.00374	0.6864
700	0.07181	2457.28	2.157	272.47	0.0014188	0.11330	0.619	0.45257	1.00347	0.6858
800	0.06289	2800.19	2.160	272.22	0.0012417	0.12097	0.662	0.55323	1.00304	0.6850
1000	0.05038	3496.76	2.155	271.84	0.0009941	0.13653	0.746	0.77961	1.00243	0.6842
2000	0.02527	7285.21	2.021	270.96	0.0004983	0.27727	1.137	3.02248	1.00122	0.5360
3000	0.01687	11763.87	1.824	270.64	0.0003326	0.39349	1.485	5.96343	1.00081	0.5315
4000	0.01265	17448.14	1.592	270.29	0.0002497	0.55041	1.803	9.98672	1.00061	0.5139
5000	0.01004	30007.10	1.103	268.03	0.0002015	1.03742	2.109	17.08963	1.00048	0.4425

* TWO-PHASE BOUNDRY

280 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 25.982	0.20515	3008.66	75.7645	-132.551	-121.915	1.19773	1.139	1.525	4321
26	0.20519	3031.79	75.7695	-132.516	-121.878	1.19917	1.139	1.523	4333
28	0.20739	2828.19	76.0746	-129.465	-118.712	1.31640	1.191	1.647	4257
30	0.20980	2611.49	75.3969	-126.175	-115.297	1.43419	1.238	1.770	4159
32	0.21244	2434.92	74.0675	-122.660	-111.645	1.55201	1.282	1.884	4072
34	0.21530	2269.88	72.7471	-118.924	-107.761	1.66973	1.321	2.001	3992
36	0.21840	2112.13	71.3489	-114.961	-103.637	1.78756	1.356	2.122	3914
38	0.22176	1950.78	69.8125	-110.766	-99.269	1.90565	1.386	2.251	3831
40	0.22544	1790.19	68.0841	-106.322	-94.633	2.02450	1.413	2.387	3744
42	0.22951	1626.75	66.1551	-101.614	-89.714	2.14450	1.434	2.537	3651
44	0.23405	1459.31	63.9771	-96.606	-84.471	2.26644	1.453	2.705	3547
46	0.23915	1300.61	61.5095	-91.284	-78.885	2.39058	1.468	2.886	3441
48	0.24493	1136.95	58.7274	-85.610	-72.910	2.51769	1.481	3.099	3320
50	0.25159	984.42	55.5946	-79.527	-66.482	2.64888	1.493	3.333	3191
52	0.25936	827.70	52.1164	-72.979	-59.532	2.78515	1.505	3.630	3042
54	0.26873	674.54	48.2906	-65.831	-51.898	2.92916	1.517	4.013	2875
56	0.28037	525.83	44.0749	-57.916	-43.379	3.08402	1.532	4.543	2688
58	0.29563	386.64	39.3651	-48.915	-33.587	3.25576	1.551	5.313	2477
60	0.31723	258.63	34.0020	-38.273	-21.825	3.45504	1.577	6.576	2235
62	0.35264	144.32	27.6342	-24.657	-6.373	3.70816	1.627	9.181	1943
64	0.42522	68.19	20.2591	-5.146	16.901	4.07718	1.742	14.639	1629
66	0.56214	61.56	13.9487	18.749	47.894	4.55437	1.779	13.986	1497
68	0.69194	89.37	10.8188	35.029	70.905	4.89827	1.731	9.627	1518
70	0.79504	120.63	9.0805	46.207	87.480	5.13865	1.682	7.296	1557
75	0.99980	189.70	6.8185	65.247	117.084	5.54804	1.606	5.009	1655
80	1.16329	247.01	5.6492	79.223	139.538	5.83815	1.577	4.167	1739
85	1.31056	298.31	4.8950	91.255	159.205	6.07675	1.568	3.740	1815
90	1.44674	344.99	4.3518	102.199	177.210	6.28264	1.566	3.481	1885
95	1.57547	388.37	3.9356	112.479	194.164	6.46601	1.570	3.311	1948
100	1.69870	429.19	3.6006	122.373	210.448	6.63310	1.577	3.191	2006
105	1.81790	468.11	3.3288	131.928	226.183	6.78666	1.587	3.108	2061
110	1.93396	505.52	3.1007	141.301	241.574	6.92986	1.603	3.052	2112
115	2.04750	541.70	2.9059	150.574	256.734	7.06464	1.623	3.015	2159
120	2.15898	576.86	2.7370	159.811	271.751	7.19247	1.649	2.994	2203
125	2.26876	611.18	2.5889	169.066	286.697	7.31450	1.680	2.986	2244
130	2.37711	644.77	2.4578	178.383	301.632	7.43165	1.715	2.989	2282
140	2.59030	710.17	2.2352	197.358	331.661	7.65417	1.798	3.021	2351
150	2.79982	773.68	2.0527	216.985	362.151	7.86451	1.894	3.080	2414
160	3.00651	835.74	1.8999	237.447	393.330	8.06570	2.001	3.158	2472
170	3.21097	896.63	1.7697	258.862	425.345	8.25976	2.113	3.247	2526
180	3.41363	956.58	1.6572	281.295	458.286	8.44802	2.227	3.342	2579
190	3.61455	1015.55	1.5577	304.855	492.263	8.63139	2.342	3.440	2629
200	3.81437	1073.99	1.4709	329.359	527.128	8.81007	2.447	3.533	2680
220	4.21106	1189.28	1.3245	381.141	599.477	9.15475	2.631	3.697	2782
240	4.60470	1302.96	1.2056	436.002	674.748	9.48195	2.771	3.822	2885
260	4.99604	1415.41	1.1068	493.038	752.075	9.79155	2.864	3.905	2990
280	5.38562	1526.92	1.0234	551.438	830.674	10.08268	2.915	3.946	3095
300	5.77382	1637.68	0.9520	610.369	909.732	10.35553	2.931	3.956	3200
320	6.16089	1747.84	0.8901	669.303	988.736	10.61057	2.922	3.941	3305
340	6.54707	1857.51	0.8358	727.821	1067.276	10.84829	2.896	3.911	3409
360	6.93249	1966.79	0.7880	785.662	1145.100	11.07078	2.860	3.871	3512
380	7.31729	2075.72	0.7453	842.683	1222.073	11.27868	2.818	3.826	3613
400	7.70157	2184.37	0.7071	898.830	1298.144	11.47407	2.776	3.781	3713
420	8.08540	2292.78	0.6727	954.113	1373.329	11.65746	2.735	3.738	3810
440	8.46885	2400.99	0.6415	1008.591	1447.687	11.83046	2.696	3.698	3906
460	8.85197	2509.01	0.6131	1062.323	1521.283	11.99405	2.662	3.662	3999
480	9.23480	2516.88	0.5871	1115.399	1594.209	12.14902	2.632	3.631	4089
500	9.61738	2724.62	0.5633	1167.900	1666.546	12.29682	2.606	3.604	4178
520	9.99974	2832.23	0.5413	1219.907	1738.378	12.43781	2.584	3.580	4264
540	10.38203	2940.10	0.5209	1271.635	1809.927	12.57283	2.565	3.560	4348
560	10.76390	3047.46	0.5021	1322.782	1880.873	12.70135	2.550	3.544	4430
580	11.14563	3154.73	0.4846	1373.706	1951.589	12.82528	2.537	3.530	4510
600	11.52723	3261.94	0.4683	1424.427	2022.096	12.94486	2.526	3.519	4588
650	12.48075	3529.69	0.4320	1550.334	2197.441	13.22584	2.507	3.499	4777
700	13.43373	3797.14	0.4009	1675.547	2372.064	13.48491	2.496	3.487	4957
800	15.33852	4331.43	0.3506	1924.751	2720.028	13.94987	2.488	3.477	5295
1000	19.14532	5398.49	0.2802	2422.456	3415.110	14.72488	2.489	3.476	5910
2000	38.16330	10725.20	0.1400	4969.633	6948.340	17.16625	2.644	3.630	8259
3000	57.17667	16049.08	0.0933	7755.936	10720.455	18.68221	2.926	3.912	9971
4000	76.24345	21372.50	0.0700	10873.993	14827.095	20.05647	3.350	4.353	11344
5000	96.02441	26695.78	0.0560	14870.589	19849.303	22.00539	4.849	6.015	12381

* TWO-PHASE BOUNDRY

280 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 25.982	4.87453	295.17	13.652	14665.83	0.0051661	0.04644	1.793	0.00625	1.25533	2.1189
26	4.87345	296.99	13.649	14775.27	0.0051281	0.04649	1.789	0.00626	1.25527	2.1095
28	4.82194	295.33	13.245	13637.36	0.0055784	0.05152	1.561	0.00648	1.25236	1.7970
30	4.76634	292.27	12.777	12447.24	0.0060573	0.05488	1.382	0.00650	1.24923	1.6047
32	4.70714	291.55	12.278	11461.48	0.0064623	0.05717	1.238	0.00645	1.24590	1.4688
34	4.64470	290.06	11.856	10542.91	0.0069001	0.05863	1.121	0.00631	1.24240	1.3775
36	4.57886	287.65	11.493	9671.14	0.0073775	0.05984	1.023	0.00616	1.23871	1.3066
38	4.50942	283.59	11.169	8796.90	0.0079360	0.06123	0.941	0.00603	1.23483	1.2450
40	4.43568	278.44	10.866	7940.70	0.0085741	0.06210	0.869	0.00586	1.23071	1.2033
42	4.35712	271.78	10.584	7087.96	0.0093334	0.06251	0.807	0.00566	1.22634	1.1783
44	4.27251	263.63	10.304	6234.94	0.0102611	0.06252	0.750	0.00541	1.22164	1.1685
46	4.18150	255.13	10.018	5438.48	0.0113100	0.06215	0.699	0.00515	1.21660	1.1681
48	4.08281	244.92	9.712	4641.96	0.0126514	0.06142	0.651	0.00485	1.21115	1.1832
50	3.97473	234.58	9.368	3912.82	0.0142083	0.06036	0.607	0.00456	1.20519	1.2065
52	3.85562	222.30	8.983	3191.29	0.0163308	0.05898	0.565	0.00421	1.19866	1.2510
54	3.72124	208.61	8.555	2510.11	0.0192384	0.05723	0.523	0.00383	1.19131	1.3205
56	3.56673	193.32	8.068	1875.51	0.0235003	0.05485	0.482	0.00339	1.18291	1.4369
58	3.38261	176.50	7.505	1307.84	0.0300992	0.05199	0.440	0.00289	1.17294	1.6173
60	3.15225	157.67	6.838	815.28	0.0417060	0.04987	0.395	0.00241	1.16055	1.8733
62	2.83575	135.97	5.991	409.25	0.0675246	0.04822	0.344	0.00185	1.14367	2.3559
64	2.35170	115.88	4.946	160.36	0.1263324	0.04754	0.283	0.00138	1.11818	3.1409
66	1.77893	109.80	4.407	109.50	0.1273826	0.04094	0.231	0.00165	1.08853	2.8348
68	1.44521	114.92	4.326	129.15	0.0837679	0.03403	0.205	0.00245	1.07152	2.0885
70	1.25622	121.77	4.297	151.54	0.0599211	0.03064	0.193	0.00334	1.06196	1.6531
75	1.00020	139.37	4.244	189.74	0.0359365	0.02762	0.183	0.00551	1.04912	1.1922
80	0.85963	156.61	4.168	212.34	0.0266047	0.02697	0.183	0.00753	1.04211	1.0152
85	0.76303	173.89	4.091	227.62	0.0215052	0.02704	0.186	0.00948	1.03732	0.9239
90	0.69121	190.76	4.019	238.46	0.0182497	0.02745	0.190	0.01141	1.03376	0.8677
95	0.63473	207.38	3.950	246.51	0.0159652	0.02804	0.195	0.01334	1.03097	0.8298
100	0.58869	223.90	3.879	252.66	0.0142511	0.02875	0.201	0.01531	1.02870	0.8022
105	0.55009	240.43	3.813	257.50	0.0129274	0.02954	0.207	0.01727	1.02680	0.7824
110	0.51707	257.25	3.742	261.39	0.0118623	0.03047	0.212	0.01931	1.02518	0.7657
115	0.48840	274.49	3.665	264.57	0.0109835	0.03149	0.218	0.02139	1.02377	0.7523
120	0.46318	292.29	3.583	267.19	0.0102437	0.03254	0.224	0.02346	1.02254	0.7427
125	0.44077	310.73	3.497	269.39	0.0096105	0.03361	0.230	0.02553	1.02144	0.7360
130	0.42068	329.89	3.407	271.24	0.0090613	0.03469	0.236	0.02759	1.02045	0.7319
140	0.38606	370.60	3.221	274.16	0.0081527	0.03674	0.248	0.03150	1.01876	0.7330
150	0.35717	414.66	3.034	276.33	0.0074283	0.03950	0.259	0.03590	1.01735	0.7272
160	0.33261	462.01	2.855	277.98	0.0068346	0.04255	0.270	0.04052	1.01615	0.7219
170	0.31143	512.31	2.689	279.24	0.0063375	0.04562	0.281	0.04512	1.01511	0.7207
180	0.29294	565.07	2.541	280.22	0.0059139	0.05242	0.309	0.05355	1.01421	0.7087
190	0.27666	620.48	2.404	280.96	0.0055442	0.05717	0.327	0.06007	1.01342	0.7084
200	0.26217	676.24	2.293	281.56	0.0052241	0.06154	0.342	0.06645	1.01271	0.7077
220	0.23747	788.28	2.120	282.42	0.0046900	0.06922	0.368	0.07885	1.01151	0.7068
240	0.21717	897.08	2.003	282.96	0.0042606	0.07554	0.388	0.09100	1.01052	0.7060
260	0.20016	999.40	1.931	283.31	0.0039069	0.08058	0.404	0.10311	1.00969	0.7050
280	0.18568	1093.20	1.891	283.52	0.0036098	0.08449	0.419	0.11531	1.00899	0.7037
300	0.17320	1178.66	1.875	283.64	0.0033564	0.08749	0.431	0.12769	1.00838	0.7023
320	0.16231	1256.26	1.877	283.70	0.0031374	0.08975	0.443	0.14029	1.00786	0.7008
340	0.15274	1327.49	1.890	283.72	0.0029461	0.09149	0.454	0.15316	1.00739	0.6993
360	0.14425	1393.74	1.910	283.71	0.0027774	0.09285	0.465	0.16629	1.00698	0.6978
380	0.13666	1456.23	1.935	283.67	0.0026274	0.09397	0.475	0.17971	1.00661	0.6964
400	0.12984	1516.67	1.962	283.63	0.0024932	0.09497	0.485	0.19343	1.00628	0.6951
420	0.12368	1575.72	1.989	283.57	0.0023723	0.09591	0.495	0.20746	1.00598	0.6938
440	0.11808	1634.27	2.015	283.51	0.0022628	0.09684	0.504	0.22178	1.00571	0.6927
460	0.11297	1693.11	2.038	283.44	0.0021631	0.09781	0.513	0.23641	1.00546	0.6917
480	0.10829	1752.29	2.060	283.37	0.0020720	0.09882	0.522	0.25135	1.00524	0.6908
500	0.10398	1812.32	2.079	283.30	0.0019883	0.09989	0.531	0.26660	1.00503	0.6900
520	0.10000	1873.22	2.095	283.23	0.0019113	0.10102	0.540	0.28216	1.00483	0.6894
540	0.09632	1935.15	2.109	283.19	0.0018395	0.10220	0.549	0.29808	1.00466	0.6886
560	0.09290	1998.13	2.120	283.12	0.0017735	0.10347	0.558	0.31428	1.00449	0.6881
580	0.08972	2061.74	2.129	283.05	0.0017122	0.10477	0.567	0.33079	1.00434	0.6877
600	0.08675	2126.23	2.137	282.98	0.0016549	0.10611	0.576	0.34762	1.00419	0.6873
650	0.08012	2290.41	2.150	282.81	0.0015275	0.10963	0.598	0.39110	1.00387	0.6864
700	0.07444	2458.06	2.158	282.66	0.0014184	0.11332	0.619	0.43662	1.00360	0.6859
800	0.06520	2801.00	2.161	282.39	0.0012414	0.12100	0.662	0.53373	1.00315	0.6851
1000	0.05223	3497.62	2.156	281.97	0.0009939	0.13656	0.747	0.75212	1.00252	0.6842
2000	0.02620	7286.16	2.021	281.03	0.0004982	0.27727	1.138	2.91491	1.00127	0.5362
3000	0.01749	11764.56	1.824	280.69	0.0003325	0.39347	1.485	5.75086	1.00084	0.5316
4000	0.01312	17433.44	1.593	280.32	0.0002497	0.54959	1.804	9.62520	1.00063	0.5144
5000	0.01041	29859.72	1.109	278.01	0.0002014	1.02989	2.110	16.44219	1.00050	0.4435

* TWO-PHASE BOUNDRY

290 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 26.021	0.20505	3018.91	75.7977	-132.536	-121.525	1.19812	1.139	1.525	4327
28	0.20723	2846.24	76.1401	-129.517	-118.389	1.31425	1.191	1.644	4267
30	0.20964	2626.97	75.5372	-126.236	-114.978	1.43186	1.238	1.768	4169
32	0.21226	2449.70	74.2081	-122.730	-111.332	1.54951	1.281	1.881	4082
34	0.21510	2284.44	72.8899	-119.006	-107.455	1.66701	1.321	1.998	4002
36	0.21817	2127.21	71.4958	-115.056	-103.340	1.78458	1.355	2.118	3924
38	0.22151	1966.00	69.9676	-110.876	-98.981	1.90241	1.386	2.245	3842
40	0.22516	1806.05	68.2474	-106.450	-94.358	2.02095	1.412	2.381	3756
42	0.22919	1643.04	66.3313	-101.762	-89.454	2.14057	1.434	2.528	3663
44	0.23368	1480.44	64.1732	-96.783	-84.234	2.26198	1.453	2.691	3564
46	0.23871	1317.76	61.7288	-91.490	-78.671	2.38560	1.468	2.872	3456
48	0.24441	1159.39	58.9794	-85.852	-72.727	2.51206	1.481	3.074	3339
50	0.25095	1003.72	55.8912	-79.822	-66.346	2.64229	1.493	3.308	3210
52	0.25856	847.84	52.4719	-73.340	-59.455	2.77739	1.504	3.595	3064
54	0.26768	695.36	48.7135	-66.286	-51.911	2.91972	1.516	3.961	2901
56	0.27892	546.54	44.5856	-58.506	-43.528	3.07212	1.530	4.465	2718
58	0.29344	411.68	40.0141	-49.732	-33.975	3.23968	1.548	5.145	2518
60	0.31357	282.03	34.8586	-39.481	-22.643	3.43167	1.572	6.279	2284
62	0.34485	169.24	28.8809	-26.774	-8.255	3.66739	1.614	8.343	2013
64	0.40298	86.82	22.0672	-9.544	12.096	3.99014	1.701	12.496	1719
66	0.51510	63.20	15.6103	12.753	40.413	4.42593	1.765	14.267	1538
68	0.64087	84.39	11.8895	30.431	64.846	4.79104	1.738	10.401	1530
70	0.74551	114.37	9.8439	42.682	82.716	5.05022	1.692	7.796	1562
75	0.94906	183.87	7.2634	62.966	113.931	5.48193	1.614	5.203	1657
80	1.11042	241.70	5.9717	77.465	137.095	5.78130	1.579	4.274	1741
85	1.25500	293.83	5.1505	89.796	157.189	6.02510	1.570	3.809	1817
90	1.38820	341.17	4.5654	100.940	175.486	6.23433	1.569	3.531	1886
95	1.51379	385.09	4.1202	111.365	192.656	6.42003	1.572	3.349	1950
100	1.63362	426.36	3.7633	121.374	209.110	6.58888	1.579	3.221	2007
105	1.74977	465.67	3.4750	131.018	224.981	6.74376	1.589	3.133	2062
110	1.86255	503.41	3.2338	140.464	240.483	6.88800	1.604	3.072	2113
115	1.97280	539.89	3.0283	149.797	255.737	7.02362	1.625	3.032	2161
120	2.08099	575.32	2.8505	159.086	270.835	7.15214	1.650	3.009	2205
125	2.18747	609.86	2.6948	168.385	285.853	7.27474	1.681	3.000	2246
130	2.29252	643.67	2.5571	177.742	300.850	7.39238	1.716	3.001	2284
140	2.49910	709.44	2.3238	196.781	330.984	7.61568	1.798	3.031	2353
150	2.70201	773.27	2.1329	216.462	361.560	7.82661	1.895	3.088	2416
160	2.90210	835.59	1.9732	236.967	392.810	8.02827	2.002	3.164	2474
170	3.09996	896.72	1.8373	258.418	424.886	8.22270	2.114	3.252	2528
180	3.29603	956.87	1.7201	280.882	457.879	8.41126	2.227	3.347	2581
190	3.49035	1016.02	1.6164	304.474	491.907	8.59489	2.342	3.444	2631
200	3.68359	1074.61	1.5260	329.003	526.812	8.77379	2.448	3.537	2682
220	4.06710	1190.17	1.3737	380.826	599.230	9.11880	2.632	3.700	2784
240	4.44758	1304.07	1.2500	435.720	674.556	9.44624	2.771	3.825	2888
260	4.82578	1416.70	1.1474	492.784	751.929	9.75603	2.865	3.907	2992
280	5.20222	1528.37	1.0608	551.207	830.567	10.04730	2.915	3.948	3097
300	5.57728	1639.26	0.9867	610.158	909.658	10.32026	2.931	3.958	3202
320	5.95122	1749.54	0.9224	669.109	988.691	10.57539	2.922	3.943	3307
340	6.32427	1859.32	0.8661	727.642	1067.256	10.81319	2.896	3.912	3411
360	6.69657	1968.68	0.8165	785.495	1145.102	11.03575	2.860	3.872	3514
380	7.06824	2077.69	0.7722	842.529	1222.095	11.24390	2.818	3.827	3616
400	7.43940	2186.41	0.7326	898.686	1298.183	11.43912	2.776	3.782	3715
420	7.81011	2294.88	0.6969	953.979	1373.383	11.62256	2.735	3.739	3813
440	8.18044	2403.14	0.6646	1008.465	1447.755	11.79559	2.697	3.699	3908
460	8.55044	2511.22	0.6352	1062.205	1521.364	11.95921	2.663	3.663	4001
480	8.92015	2619.13	0.6082	1115.288	1594.302	12.11420	2.632	3.631	4091
500	9.28961	2726.91	0.5835	1167.796	1666.649	12.26202	2.606	3.604	4180
520	9.65886	2834.56	0.5608	1219.809	1738.491	12.40304	2.584	3.581	4266
540	10.02806	2942.49	0.5396	1271.547	1810.055	12.53808	2.565	3.560	4350
560	10.39682	3049.87	0.5201	1322.699	1881.009	12.66661	2.550	3.544	4432
580	10.76544	3157.17	0.5020	1373.627	1951.733	12.79056	2.537	3.530	4512
600	11.13392	3264.40	0.4851	1424.353	2022.246	12.91015	2.526	3.519	4590
650	12.05466	3532.21	0.4475	1550.269	2197.606	13.19115	2.507	3.499	4779
700	12.97485	3799.70	0.4153	1675.489	2372.241	13.45024	2.496	3.487	4959
800	14.81408	4334.05	0.3631	1924.705	2720.223	13.91522	2.488	3.477	5297
1000	18.48975	5401.19	0.2903	2422.425	3415.328	14.69026	2.489	3.476	5912
2000	36.85217	10728.00	0.1450	4969.625	6948.592	17.13166	2.644	3.630	8260
3000	55.20994	16051.91	0.0967	7755.912	10720.694	18.64762	2.926	3.912	9972
4000	73.61834	21375.34	0.0725	10872.808	14826.123	20.02154	3.346	4.350	11346
5000	92.70437	26698.62	0.0580	14856.596	19834.834	21.96755	4.823	5.985	12384

* TWO-PHASE BOUNDRY

290 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.021	4.87683	296.18	13.642	14722.71	0.0051484	0.04659	1.795	0.00627	1.25546	2.1154
28	4.82549	296.62	13.250	13734.51	0.0055437	0.05156	1.568	0.00650	1.25256	1.7999
30	4.77013	293.30	12.794	12530.99	0.0060280	0.05494	1.388	0.00651	1.24944	1.6076
32	4.71119	292.58	12.295	11540.98	0.0064300	0.05725	1.243	0.00646	1.24613	1.4709
34	4.64907	291.12	11.873	10620.52	0.0068631	0.05872	1.126	0.00632	1.24264	1.3789
36	4.58358	286.81	11.509	9750.23	0.0073327	0.05994	1.028	0.00618	1.23897	1.3072
38	4.51452	284.82	11.185	8875.52	0.0078832	0.06135	0.945	0.00605	1.23511	1.2451
40	4.44122	279.79	10.882	8021.09	0.0085085	0.06223	0.873	0.00589	1.23102	1.2027
42	4.36321	273.23	10.600	7168.96	0.0092526	0.06266	0.810	0.00568	1.22668	1.1770
44	4.27940	265.62	10.321	6335.38	0.0101293	0.06268	0.754	0.00544	1.22202	1.1648
46	4.18914	256.82	10.036	5520.26	0.0111822	0.06233	0.702	0.00518	1.21702	1.1651
48	4.09143	247.24	9.733	4743.55	0.0124336	0.06162	0.655	0.00490	1.21162	1.1764
50	3.98483	236.70	9.395	3999.65	0.0139740	0.06059	0.611	0.00460	1.20575	1.2000
52	3.86756	224.65	9.018	3279.07	0.0160021	0.05924	0.568	0.00426	1.19931	1.2417
54	3.73587	211.24	8.600	2597.77	0.0187521	0.05755	0.527	0.00389	1.19211	1.3067
56	3.58526	196.21	8.126	1959.48	0.0227537	0.05524	0.487	0.00345	1.18391	1.4160
58	3.40785	180.38	7.585	1402.96	0.0285213	0.05248	0.445	0.00299	1.17430	1.5712
60	3.18911	162.01	6.952	899.44	0.0387560	0.05022	0.402	0.00251	1.16252	1.8075
62	2.89984	141.76	6.172	490.76	0.0588497	0.04840	0.354	0.00200	1.14707	2.1936
64	2.48153	121.99	5.228	215.43	0.1024311	0.04717	0.298	0.00152	1.12498	2.8450
66	1.94138	112.14	4.556	122.70	0.1272244	0.04297	0.245	0.00155	1.09689	2.9266
68	1.56037	115.19	4.384	131.68	0.0902893	0.03588	0.215	0.00221	1.07737	2.2403
70	1.34136	121.50	4.337	153.41	0.0641692	0.03189	0.200	0.00305	1.06626	1.7565
75	1.05368	138.78	4.271	193.74	0.0374895	0.02826	0.186	0.00515	1.05179	1.2335
80	0.90056	155.80	4.198	217.67	0.0274350	0.02740	0.185	0.00712	1.04415	1.0374
85	0.79681	173.13	4.116	234.13	0.0219991	0.02738	0.187	0.00902	1.03899	0.9375
90	0.72036	190.06	4.040	245.76	0.0185766	0.02773	0.191	0.01090	1.03520	0.8770
95	0.66059	206.75	3.969	254.39	0.0161962	0.02828	0.196	0.01279	1.03225	0.8367
100	0.61206	223.33	3.895	260.96	0.0144211	0.02896	0.202	0.01469	1.02986	0.8074
105	0.57150	239.90	3.827	266.13	0.0130576	0.02973	0.207	0.01661	1.02786	0.7866
110	0.53690	256.76	3.755	270.28	0.0119647	0.03065	0.213	0.01858	1.02616	0.7690
115	0.50689	274.04	3.677	273.67	0.0110656	0.03165	0.219	0.02059	1.02468	0.7551
120	0.48054	291.86	3.595	276.46	0.0103105	0.03269	0.225	0.02261	1.02339	0.7450
125	0.45715	310.32	3.507	278.80	0.0096658	0.03375	0.231	0.02461	1.02224	0.7380
130	0.43620	329.50	3.417	280.77	0.0091075	0.03483	0.236	0.02661	1.02121	0.7336
140	0.40014	370.26	3.229	283.88	0.0081858	0.03686	0.248	0.03039	1.01945	0.7344
150	0.37009	414.35	3.041	286.18	0.0074527	0.03961	0.259	0.03466	1.01798	0.7282
160	0.34458	461.72	2.861	287.93	0.0068531	0.04266	0.271	0.03913	1.01673	0.7228
170	0.32258	512.05	2.695	289.27	0.0063516	0.04572	0.282	0.04358	1.01566	0.7214
180	0.30340	564.84	2.546	290.31	0.0059249	0.05246	0.309	0.05166	1.01472	0.7096
190	0.28650	620.32	2.409	291.09	0.0055527	0.05719	0.327	0.05796	1.01390	0.7091
200	0.27147	676.11	2.296	291.73	0.0052308	0.06156	0.343	0.06412	1.01316	0.7084
220	0.24588	788.24	2.123	292.63	0.0046942	0.06923	0.368	0.07610	1.01192	0.7074
240	0.22484	897.12	2.006	293.21	0.0042632	0.07554	0.388	0.08785	1.01089	0.7065
260	0.20722	999.52	1.933	293.57	0.0039085	0.08059	0.404	0.09955	1.01004	0.7054
280	0.19223	1093.40	1.893	293.79	0.0036108	0.08450	0.419	0.11134	1.00931	0.7041
300	0.17930	1178.93	1.877	293.92	0.0033569	0.08750	0.432	0.12331	1.00868	0.7026
320	0.16803	1256.60	1.879	293.98	0.0031376	0.08976	0.443	0.13548	1.00813	0.7011
340	0.15812	1327.89	1.891	294.00	0.0029461	0.09150	0.454	0.14791	1.00765	0.6996
360	0.14933	1394.19	1.912	293.98	0.0027772	0.09286	0.465	0.16060	1.00723	0.6980
380	0.14148	1456.72	1.937	293.95	0.0026272	0.09398	0.475	0.17358	1.00684	0.6966
400	0.13442	1517.19	1.964	293.90	0.0024929	0.09499	0.485	0.18683	1.00650	0.6952
420	0.12804	1576.28	1.990	293.83	0.0023719	0.09593	0.495	0.20038	1.00619	0.6940
440	0.12224	1634.86	2.016	293.77	0.0022624	0.09686	0.504	0.21422	1.00591	0.6928
460	0.11695	1693.72	2.040	293.69	0.0021627	0.09783	0.513	0.22836	1.00566	0.6918
480	0.11211	1752.93	2.061	293.62	0.0020715	0.09884	0.522	0.24279	1.00542	0.6909
500	0.10765	1812.98	2.080	293.54	0.0019879	0.09991	0.531	0.25752	1.00520	0.6901
520	0.10353	1873.90	2.096	293.47	0.0019108	0.10104	0.540	0.27256	1.00501	0.6894
540	0.09972	1935.86	2.110	293.43	0.0018390	0.10222	0.549	0.28794	1.00482	0.6887
560	0.09618	1998.85	2.121	293.35	0.0017731	0.10349	0.558	0.30358	1.00465	0.6882
580	0.09289	2062.47	2.130	293.27	0.0017117	0.10479	0.567	0.31954	1.00449	0.6877
600	0.08982	2126.98	2.138	293.19	0.0016545	0.10614	0.576	0.33580	1.00434	0.6873
650	0.08296	2291.18	2.151	293.02	0.0015271	0.10966	0.598	0.37780	1.00401	0.6865
700	0.07707	2458.85	2.158	292.85	0.0014181	0.11335	0.619	0.42177	1.00372	0.6859
800	0.06750	2801.82	2.162	292.56	0.0012411	0.12102	0.662	0.51557	1.00326	0.6851
1000	0.05408	3498.48	2.156	292.12	0.0009937	0.13660	0.747	0.72653	1.00261	0.6842
2000	0.02714	7287.11	2.021	291.11	0.0004982	0.27727	1.138	2.81475	1.00131	0.5363
3000	0.01811	11765.26	1.824	290.74	0.0003325	0.39345	1.486	5.55295	1.00087	0.5318
4000	0.01358	17419.56	1.595	290.35	0.0002497	0.54882	1.804	9.26889	1.00066	0.5148
5000	0.01079	29720.05	1.115	288.00	0.0002014	1.02276	2.110	15.84096	1.00052	0.4446

* TWO-PHASE BOUNDRY

300 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 26.061	0.20495	3029.13	75.8312	-132.521	-121.136	1.19850	1.140	1.525	4332
28	0.20708	2864.21	76.2053	-129.569	-118.065	1.31211	1.191	1.641	4277
30	0.20947	2642.38	75.6766	-126.296	-114.660	1.42955	1.237	1.766	4179
32	0.21208	2464.39	74.3479	-122.800	-111.019	1.54701	1.281	1.879	4092
34	0.21490	2298.91	73.0319	-119.087	-107.149	1.66430	1.320	1.995	4012
36	0.21795	2142.18	71.6417	-115.150	-103.043	1.78163	1.355	2.114	3935
38	0.22126	1981.09	70.1216	-110.985	-98.693	1.89920	1.385	2.240	3853
40	0.22488	1821.78	68.4092	-106.575	-94.083	2.01743	1.412	2.374	3767
42	0.22887	1659.17	66.5058	-101.908	-89.194	2.13668	1.434	2.520	3675
44	0.23331	1497.42	64.3644	-96.955	-83.994	2.25762	1.453	2.680	3577
46	0.23828	1334.68	61.9452	-91.693	-78.456	2.38069	1.468	2.859	3470
48	0.24390	1177.74	59.2264	-86.093	-72.544	2.50647	1.481	3.056	3355
50	0.25033	1022.65	56.1822	-80.111	-66.205	2.63583	1.493	3.284	3228
52	0.25778	867.52	52.8193	-73.692	-59.371	2.76982	1.504	3.562	3085
54	0.26666	715.56	49.1239	-66.726	-51.912	2.91054	1.516	3.913	2926
56	0.27753	571.90	45.0852	-59.077	-43.660	3.06057	1.529	4.368	2751
58	0.29142	433.81	40.6284	-50.496	-34.307	3.22462	1.546	5.016	2554
60	0.31024	307.08	35.6610	-40.601	-23.366	3.40998	1.568	5.996	2333
62	0.33841	192.00	29.9863	-28.597	-9.798	3.63230	1.604	7.761	2075
64	0.38718	106.66	23.6009	-12.952	8.557	3.92341	1.671	10.949	1799
66	0.47778	69.96	17.2853	7.334	33.871	4.31267	1.745	13.655	1593
68	0.59480	81.46	13.0407	25.725	58.767	4.68485	1.740	11.041	1547
70	0.69875	108.66	10.6635	39.027	77.844	4.96152	1.701	8.323	1570
75	0.90176	178.02	7.7306	60.628	110.723	5.41632	1.621	5.412	1659
80	1.06114	236.58	6.3033	75.681	134.629	5.72533	1.584	4.385	1742
85	1.20322	289.48	5.4133	88.321	155.162	5.97447	1.573	3.879	1819
90	1.33363	337.46	4.7840	99.670	173.756	6.18711	1.571	3.581	1888
95	1.45631	381.91	4.3083	110.244	191.144	6.37519	1.574	3.387	1951
100	1.57333	423.62	3.9287	120.371	207.772	6.54581	1.581	3.251	2009
105	1.68524	463.30	3.6233	130.105	223.779	6.70202	1.591	3.157	2064
110	1.79597	501.37	3.3686	139.624	239.393	6.84731	1.606	3.093	2115
115	1.90315	538.14	3.1520	149.019	254.742	6.98377	1.626	3.050	2163
120	2.00826	573.82	2.9650	158.360	269.922	7.11298	1.651	3.024	2207
125	2.11165	608.60	2.8016	167.704	285.010	7.23617	1.682	3.013	2247
130	2.21361	642.61	2.6572	177.100	300.070	7.35430	1.717	3.013	2286
140	2.41402	708.75	2.4130	196.205	330.309	7.57838	1.799	3.040	2356
150	2.61076	772.89	2.2135	215.938	360.971	7.78990	1.896	3.096	2418
160	2.80468	835.48	2.0469	236.487	392.292	7.99202	2.002	3.171	2476
170	2.99638	896.83	1.9053	257.975	424.429	8.18682	2.114	3.258	2530
180	3.18629	957.19	1.7832	280.470	457.474	8.37567	2.227	3.351	2583
190	3.37445	1016.50	1.6752	304.095	491.552	8.55958	2.343	3.449	2633
200	3.56154	1075.25	1.5812	328.648	526.498	8.73869	2.448	3.540	2684
220	3.93276	1191.08	1.4229	380.512	598.984	9.08402	2.632	3.703	2786
240	4.30096	1305.19	1.2945	435.439	674.365	9.41170	2.772	3.827	2890
260	4.66688	1418.01	1.1881	492.530	751.784	9.72167	2.865	3.909	2994
280	5.03106	1529.83	1.0982	550.976	830.461	10.01309	2.915	3.950	3099
300	5.39385	1640.85	1.0214	609.947	909.585	10.28616	2.932	3.959	3204
320	5.75554	1751.25	0.9547	668.915	988.646	10.54139	2.922	3.944	3309
340	6.11633	1861.12	0.8965	727.463	1067.237	10.77926	2.896	3.913	3413
360	6.47637	1970.57	0.8450	785.330	1145.104	11.00188	2.860	3.873	3516
380	6.83580	2079.66	0.7992	842.375	1222.116	11.21008	2.818	3.828	3618
400	7.19471	2188.45	0.7582	898.542	1298.222	11.40536	2.776	3.783	3717
420	7.55317	2296.98	0.7212	953.845	1373.438	11.58883	2.735	3.740	3815
440	7.91125	2405.30	0.6877	1008.339	1447.824	11.76189	2.697	3.699	3910
460	8.26901	2513.42	0.6572	1062.087	1521.446	11.92554	2.663	3.664	4003
480	8.62648	2621.38	0.6294	1115.178	1594.395	12.08056	2.632	3.632	4093
500	8.98370	2729.20	0.6038	1167.692	1666.753	12.22840	2.606	3.605	4182
520	9.34070	2836.89	0.5802	1219.711	1738.604	12.36943	2.584	3.581	4268
540	9.69770	2944.88	0.5583	1271.458	1810.184	12.50450	2.565	3.561	4352
560	10.05422	3052.29	0.5381	1322.615	1881.146	12.63305	2.550	3.544	4433
580	10.41059	3159.62	0.5194	1373.549	1951.877	12.75701	2.537	3.531	4514
600	10.76683	3266.87	0.5019	1424.279	2022.396	12.87661	2.526	3.519	4592
650	11.65697	3534.72	0.4629	1550.204	2197.771	13.15764	2.507	3.499	4780
700	12.54657	3802.26	0.4296	1675.432	2372.417	13.41674	2.496	3.487	4960
800	14.32460	4336.67	0.3757	1924.659	2720.418	13.88175	2.488	3.478	5299
1000	17.87790	5403.89	0.3003	2422.394	3415.545	14.65681	2.489	3.476	5913
2000	35.62844	10730.81	0.1500	4969.617	6948.843	17.09823	2.644	3.630	8261
3000	53.37432	16054.74	0.1000	7755.890	10720.933	18.61419	2.926	3.912	9972
4000	71.16829	21378.18	0.0750	10871.682	14825.214	19.98781	3.343	4.346	11348
5000	89.60633	26701.46	0.0600	14843.308	19821.108	21.93106	4.798	5.958	12388

* TWO-PHASE BOUNDRY

300 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.061	4.87912	297.19	13.633	14779.50	0.0051308	0.04674	1.798	0.00628	1.25559	2.1119
28	4.82902	297.91	13.255	13831.31	0.0055096	0.05161	1.575	0.00651	1.25276	1.8028
30	4.77389	294.33	12.810	12614.41	0.0059992	0.05500	1.394	0.00652	1.24966	1.6107
32	4.71522	293.60	12.311	11620.12	0.0063982	0.05732	1.249	0.00647	1.24636	1.4730
34	4.65340	292.18	11.889	10697.74	0.0068268	0.05880	1.130	0.00634	1.24288	1.3804
36	4.58827	289.97	11.524	9828.91	0.0072889	0.06004	1.032	0.00619	1.23923	1.3080
38	4.51957	286.04	11.201	8953.67	0.0078316	0.06146	0.949	0.00607	1.23539	1.2452
40	4.44672	281.12	10.898	8100.95	0.0084446	0.06235	0.877	0.00591	1.23133	1.2021
42	4.36925	274.66	10.616	7249.33	0.0091741	0.06280	0.814	0.00570	1.22701	1.1757
44	4.28611	267.21	10.337	6418.09	0.0100286	0.06284	0.757	0.00547	1.22239	1.1627
46	4.19668	258.47	10.054	5601.21	0.0110592	0.06250	0.706	0.00521	1.21744	1.1623
48	4.10001	249.13	9.754	4828.74	0.0122654	0.06182	0.659	0.00493	1.21209	1.1720
50	3.99474	238.76	9.421	4085.21	0.0137526	0.06082	0.614	0.00464	1.20630	1.1940
52	3.87922	226.94	9.052	3365.31	0.0156952	0.05951	0.572	0.00431	1.19995	1.2331
54	3.75006	213.77	8.643	2683.40	0.0183066	0.05786	0.531	0.00394	1.19289	1.2942
56	3.60325	199.64	8.182	2060.68	0.0218788	0.05561	0.491	0.00353	1.18489	1.3891
58	3.43144	183.80	7.659	1488.58	0.0272934	0.05294	0.450	0.00308	1.17558	1.5367
60	3.22326	166.44	7.057	989.79	0.0360287	0.05054	0.408	0.00261	1.16436	1.7433
62	2.95502	146.84	6.328	567.37	0.0528514	0.04871	0.362	0.00212	1.15001	2.0779
64	2.58277	127.80	5.467	275.47	0.0856749	0.04707	0.311	0.00166	1.13030	2.6034
66	2.09335	115.70	4.733	146.46	0.1180241	0.04413	0.259	0.00154	1.10474	2.8860
68	1.68124	115.94	4.457	136.95	0.0952242	0.03772	0.225	0.00203	1.08353	2.3701
70	1.43114	121.38	4.381	155.51	0.0685719	0.03324	0.207	0.00279	1.07080	1.8653
75	1.10894	138.22	4.300	197.42	0.0391585	0.02893	0.190	0.00482	1.05456	1.2786
80	0.94238	155.10	4.224	222.95	0.0282720	0.02785	0.187	0.00674	1.04623	1.0605
85	0.83110	172.41	4.142	240.59	0.0225003	0.02772	0.189	0.00860	1.04069	0.9516
90	0.74983	189.41	4.062	253.03	0.0189064	0.02801	0.193	0.01043	1.03666	0.8867
95	0.68667	206.16	3.987	262.25	0.0164283	0.02853	0.197	0.01227	1.03354	0.8437
100	0.63559	222.79	3.910	269.25	0.0145914	0.02918	0.203	0.01412	1.03102	0.8128
105	0.59303	239.40	3.841	274.75	0.0131877	0.02992	0.208	0.01598	1.02892	0.7908
110	0.55680	256.29	3.768	279.17	0.0120667	0.03083	0.214	0.01790	1.02713	0.7724
115	0.52545	273.60	3.689	282.76	0.0111472	0.03182	0.220	0.01986	1.02559	0.7579
120	0.49794	291.45	3.606	285.73	0.0103770	0.03284	0.225	0.02181	1.02424	0.7473
125	0.47356	309.94	3.518	288.21	0.0097206	0.03390	0.231	0.02376	1.02304	0.7399
130	0.45175	329.14	3.426	290.30	0.0091533	0.03497	0.237	0.02569	1.02197	0.7352
140	0.41425	369.93	3.238	293.60	0.0082186	0.03697	0.249	0.02936	1.02014	0.7358
150	0.38303	414.05	3.048	296.04	0.0074770	0.03972	0.260	0.03350	1.01861	0.7293
160	0.35655	461.45	2.868	297.89	0.0068713	0.04276	0.271	0.03783	1.01731	0.7236
170	0.33374	511.81	2.701	299.31	0.0063656	0.04582	0.282	0.04214	1.01620	0.7220
180	0.31384	564.62	2.551	300.41	0.0059358	0.05249	0.309	0.04990	1.01523	0.7104
190	0.29634	620.17	2.413	301.23	0.0055611	0.05722	0.327	0.05598	1.01438	0.7099
200	0.28078	675.99	2.300	301.91	0.0052374	0.06158	0.343	0.06195	1.01362	0.7091
220	0.25427	788.20	2.126	302.86	0.0046983	0.06924	0.368	0.07354	1.01233	0.7080
240	0.23251	897.16	2.009	303.47	0.0042658	0.07555	0.388	0.08490	1.01127	0.7069
260	0.21428	999.64	1.935	303.85	0.0039101	0.08059	0.404	0.09623	1.01038	0.7058
280	0.19877	1093.61	1.895	304.08	0.0036117	0.08451	0.419	0.10764	1.00963	0.7044
300	0.18540	1179.21	1.879	304.21	0.0033574	0.08750	0.432	0.11921	1.00898	0.7029
320	0.17375	1256.94	1.880	304.27	0.0031378	0.08977	0.443	0.13100	1.00841	0.7014
340	0.16350	1328.29	1.893	304.29	0.0029461	0.09151	0.455	0.14302	1.00791	0.6998
360	0.15441	1394.64	1.913	304.27	0.0027771	0.09287	0.465	0.15530	1.00747	0.6982
380	0.14629	1457.22	1.939	304.23	0.0026269	0.09399	0.475	0.16785	1.00708	0.6967
400	0.13899	1517.73	1.965	304.18	0.0024925	0.09500	0.485	0.18067	1.00672	0.6954
420	0.13239	1576.84	1.992	304.11	0.0023715	0.09594	0.495	0.19378	1.00640	0.6941
440	0.12640	1635.46	2.018	304.04	0.0022620	0.09687	0.504	0.20717	1.00611	0.6929
460	0.12093	1694.34	2.041	303.96	0.0021622	0.09784	0.513	0.22084	1.00585	0.6919
480	0.11592	1753.57	2.062	303.88	0.0020711	0.09885	0.522	0.23480	1.00561	0.6910
500	0.11131	1813.64	2.081	303.79	0.0019875	0.09993	0.532	0.24905	1.00538	0.6902
520	0.10706	1874.58	2.097	303.71	0.0019104	0.10106	0.540	0.26359	1.00518	0.6895
540	0.10312	1936.58	2.111	303.67	0.0018386	0.10224	0.549	0.27847	1.00499	0.6888
560	0.09946	1999.58	2.122	303.58	0.0017726	0.10351	0.558	0.29360	1.00481	0.6882
580	0.09605	2063.21	2.131	303.50	0.0017113	0.10481	0.567	0.30903	1.00464	0.6878
600	0.09288	2127.72	2.139	303.42	0.0016541	0.10616	0.576	0.32476	1.00449	0.6873
650	0.08579	2291.95	2.152	303.23	0.0015267	0.10968	0.598	0.36538	1.00415	0.6865
700	0.07970	2459.64	2.159	303.05	0.0014177	0.11337	0.619	0.40791	1.00385	0.6859
800	0.06981	2802.64	2.162	302.74	0.0012408	0.12105	0.662	0.49863	1.00337	0.6851
1000	0.05593	3499.33	2.157	302.27	0.0009934	0.13663	0.747	0.70265	1.00270	0.6842
2000	0.02807	7288.06	2.021	301.19	0.0004981	0.27727	1.138	2.72127	1.00136	0.5365
3000	0.01874	11765.98	1.824	300.80	0.0003325	0.39343	1.486	5.36823	1.00090	0.5320
4000	0.01405	17406.43	1.597	300.39	0.0002497	0.54809	1.805	8.97523	1.00068	0.5153
5000	0.01116	29587.45	1.121	297.99	0.0002014	1.01598	2.111	15.28120	1.00054	0.4456

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

350 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 26.258	0.20448	3079.88	76.0032	-132.443	-119.190	1.20040	1.143	1.525	4362
28	0.20636	2926.52	76.5103	-129.809	-116.435	1.30197	1.189	1.631	4312
30	0.20867	2730.02	76.1818	-126.587	-113.063	1.41825	1.236	1.750	4232
32	0.21119	2553.85	74.9952	-123.142	-109.455	1.53466	1.279	1.861	4149
34	0.21391	2383.43	73.7066	-119.482	-105.618	1.65093	1.318	1.975	4067
36	0.21687	2221.05	72.3395	-115.603	-101.548	1.76723	1.353	2.091	3989
38	0.22006	2062.85	70.8623	-111.509	-97.247	1.88348	1.383	2.212	3910
40	0.22353	1903.38	69.1987	-107.182	-92.695	2.00023	1.410	2.341	3826
42	0.22735	1737.50	67.3532	-102.610	-87.875	2.11778	1.432	2.482	3735
44	0.23156	1579.52	65.2888	-97.775	-82.768	2.23656	1.451	2.630	3642
46	0.23624	1422.39	62.9845	-92.658	-77.347	2.35704	1.467	2.793	3542
48	0.24149	1265.43	60.4067	-87.231	-71.581	2.47973	1.481	2.975	3432
50	0.24742	1114.26	57.5532	-81.466	-65.430	2.60525	1.493	3.178	3315
52	0.25421	965.15	54.4237	-75.320	-58.845	2.73437	1.503	3.413	3186
54	0.26210	817.26	51.0138	-68.734	-51.747	2.86827	1.513	3.701	3043
56	0.27149	677.68	47.3271	-61.605	-44.010	3.00894	1.525	4.051	2888
58	0.28295	543.79	43.3506	-53.807	-35.468	3.15877	1.538	4.510	2718
60	0.29745	419.44	39.0389	-45.137	-25.859	3.32161	1.553	5.125	2532
62	0.31667	307.88	34.3648	-35.307	-14.784	3.50313	1.574	5.990	2330
64	0.34373	212.65	29.3208	-23.871	-1.593	3.71242	1.603	7.264	2113
66	0.38429	143.23	24.1792	-10.292	14.614	3.96167	1.648	9.015	1905
68	0.44499	107.01	19.1647	5.220	34.060	4.25182	1.698	10.256	1730
70	0.52159	104.43	15.4517	20.297	54.102	4.54268	1.701	9.764	1666
75	0.70881	156.12	10.4181	48.216	94.154	5.09668	1.652	6.503	1687
80	0.86095	216.24	8.1304	66.507	122.306	5.46059	1.608	4.965	1759
85	0.99171	271.30	6.8041	80.832	145.105	5.73724	1.587	4.228	1830
90	1.10874	320.72	5.9438	93.187	165.045	5.96531	1.581	3.837	1899
95	1.21921	367.49	5.3028	104.552	183.570	6.16569	1.583	3.584	1963
100	1.32372	411.16	4.7954	115.301	201.091	6.34550	1.590	3.405	2020
105	1.42397	452.56	4.3958	125.503	217.791	6.50848	1.599	3.282	2075
110	1.52094	492.15	4.0672	135.402	233.975	6.65907	1.613	3.197	2126
115	1.61533	530.26	3.7909	145.112	249.803	6.79979	1.632	3.138	2173
120	1.70763	567.16	3.5546	154.720	265.393	6.93250	1.657	3.101	2217
125	1.79820	603.03	3.3496	164.294	280.837	7.05859	1.687	3.079	2258
130	1.88733	638.03	3.1698	173.890	296.209	7.17917	1.721	3.071	2297
140	2.06210	705.89	2.8679	193.328	326.974	7.40715	1.803	3.087	2366
150	2.23321	771.50	2.6235	213.327	358.063	7.62162	1.899	3.135	2429
160	2.40153	835.35	2.4208	234.094	389.738	7.82603	2.005	3.203	2487
170	2.56765	897.81	2.2494	255.765	422.176	8.02265	2.116	3.286	2541
180	2.73202	959.14	2.1022	278.416	455.479	8.21298	2.229	3.375	2594
190	2.89462	1019.25	1.9723	302.204	489.806	8.39825	2.345	3.470	2643
200	3.05619	1078.75	1.8598	326.860	524.953	8.57839	2.450	3.559	2694
220	3.37644	1195.86	1.6710	378.948	597.777	8.92534	2.634	3.718	2797
240	3.69371	1311.02	1.5185	434.041	673.433	9.25421	2.773	3.840	2900
260	4.00876	1424.72	1.3924	491.269	751.078	9.56509	2.866	3.919	3004
280	4.32208	1537.29	1.2862	549.829	829.945	9.85722	2.916	3.959	3109
300	4.63406	1548.95	1.1955	608.898	909.233	10.13085	2.933	3.967	3214
320	4.94495	1759.90	1.1170	667.951	988.435	10.38654	2.923	3.951	3319
340	5.25495	1870.26	1.0484	726.573	1067.149	10.62478	2.897	3.919	3424
360	5.56423	1980.14	0.9879	784.505	1145.125	10.84771	2.861	3.878	3526
380	5.87289	2089.60	0.9342	841.608	1222.233	11.05618	2.819	3.833	3628
400	6.18105	2198.73	0.8860	897.828	1298.425	11.25167	2.777	3.787	3727
420	6.48877	2307.56	0.8427	953.177	1373.717	11.43533	2.736	3.743	3825
440	6.79611	2416.14	0.8034	1007.714	1448.174	11.60855	2.697	3.703	3920
460	7.10313	2524.51	0.7677	1061.501	1521.858	11.77234	2.663	3.667	4013
480	7.40987	2632.69	0.7351	1114.627	1594.865	11.92748	2.633	3.635	4103
500	7.71637	2740.70	0.7051	1167.173	1667.275	12.07543	2.607	3.607	4191
520	8.02265	2848.57	0.6775	1219.222	1739.174	12.21656	2.585	3.584	4277
540	8.32907	2956.88	0.6519	1271.020	1810.831	12.35176	2.566	3.563	4361
560	8.63488	3064.43	0.6283	1322.202	1881.833	12.48038	2.550	3.546	4443
580	8.94054	3171.88	0.6063	1373.158	1952.599	12.60440	2.537	3.532	4523
600	9.24607	3279.25	0.5859	1423.909	2023.152	12.72406	2.527	3.521	4601
650	10.00943	3547.35	0.5404	1549.881	2198.597	13.00520	2.508	3.500	4789
700	10.77226	3815.09	0.5014	1675.147	2373.302	13.26439	2.497	3.488	4969
800	12.29677	4349.80	0.4384	1924.432	2721.392	13.72952	2.489	3.478	5307
1000	15.34306	5417.39	0.3504	2422.241	3416.633	14.50471	2.489	3.477	5921
2000	30.55870	10744.84	0.1750	4969.575	6950.101	16.94626	2.644	3.630	8267
3000	45.76961	16068.88	0.1167	7755.791	10722.143	18.46220	2.925	3.911	9977
4000	61.01853	21392.35	0.0875	10866.797	14821.440	19.83448	3.328	4.330	11355
5000	76.77877	26715.65	0.0700	14785.648	19761.720	21.76574	4.690	5.837	12405

* TWO-PHASE BOUNDRY

350 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.258	4.89049	302.18	13.591	15062.13	0.0050460	0.04749	1.813	0.00637	1.25623	2.0952
28	4.84580	302.27	13.278	14181.33	0.0053951	0.05184	1.608	0.00656	1.25371	1.8212
30	4.79226	300.60	12.860	13082.95	0.0058230	0.05531	1.423	0.00659	1.25069	1.6217
32	4.73516	300.07	12.384	12092.89	0.0062016	0.05770	1.275	0.00655	1.24748	1.4807
34	4.67482	298.51	11.962	11142.12	0.0066151	0.05924	1.154	0.00642	1.24409	1.3853
36	4.61111	296.09	11.597	10241.52	0.0070634	0.06053	1.054	0.00628	1.24051	1.3108
38	4.54430	292.68	11.275	9374.21	0.0075593	0.06201	0.969	0.00617	1.23677	1.2447
40	4.47357	288.04	10.973	8514.90	0.0081268	0.06298	0.896	0.00601	1.23282	1.1990
42	4.39855	281.58	10.693	7642.47	0.0088130	0.06349	0.832	0.00582	1.22864	1.1707
44	4.31858	274.82	10.416	6821.28	0.0095713	0.06361	0.775	0.00560	1.22420	1.1536
46	4.23300	267.00	10.141	6020.97	0.0104608	0.06337	0.723	0.00536	1.21945	1.1478
48	4.14100	258.09	9.853	5240.17	0.0115276	0.06279	0.676	0.00510	1.21436	1.1533
50	4.04154	248.63	9.541	4503.42	0.0127799	0.06191	0.632	0.00482	1.20888	1.1679
52	3.93371	238.09	9.203	3796.61	0.0143348	0.06075	0.591	0.00452	1.20294	1.1948
54	3.81530	226.20	8.835	3118.08	0.0163606	0.05930	0.551	0.00420	1.19645	1.2383
56	3.68336	213.67	8.426	2496.14	0.0189601	0.05731	0.513	0.00384	1.18925	1.3047
58	3.53421	199.92	7.975	1921.86	0.0225566	0.05501	0.475	0.00345	1.18114	1.4008
60	3.36188	185.12	7.477	1410.12	0.0276849	0.05236	0.436	0.00304	1.17182	1.5379
62	3.15787	169.46	6.915	972.24	0.0353460	0.05038	0.397	0.00266	1.16085	1.7010
64	2.90927	153.27	6.286	618.65	0.0473950	0.04838	0.357	0.00229	1.14757	1.9298
66	2.60221	138.96	5.638	372.72	0.0648729	0.04625	0.316	0.00197	1.13132	2.2148
68	2.24726	128.69	5.023	240.48	0.0796946	0.04341	0.277	0.00188	1.11273	2.3560
70	1.91721	126.51	4.737	200.21	0.0771774	0.03966	0.248	0.00212	1.09564	2.1982
75	1.41081	137.49	4.469	220.26	0.0472999	0.03273	0.213	0.00357	1.06977	1.5213
80	1.16150	153.37	4.353	251.16	0.0323713	0.03030	0.201	0.00525	1.05720	1.1875
85	1.00836	170.01	4.252	273.57	0.0248715	0.02954	0.199	0.00693	1.04953	1.0247
90	0.90192	186.76	4.169	289.27	0.0205479	0.02952	0.200	0.00853	1.04422	0.9376
95	0.82020	203.74	4.083	301.42	0.0175930	0.02981	0.204	0.01014	1.04015	0.8813
100	0.75545	220.54	3.992	310.61	0.0154386	0.03030	0.208	0.01178	1.03694	0.8408
105	0.70226	237.30	3.915	317.82	0.0138312	0.03093	0.213	0.01342	1.03431	0.8126
110	0.65749	254.32	3.835	323.58	0.0125691	0.03175	0.218	0.01510	1.03210	0.7898
115	0.61987	271.75	3.751	328.27	0.0115481	0.03267	0.223	0.01682	1.03020	0.7721
120	0.58561	289.71	3.663	332.13	0.0107023	0.03363	0.229	0.01852	1.02855	0.7591
125	0.55611	308.29	3.571	335.35	0.0099885	0.03464	0.234	0.02023	1.02710	0.7499
130	0.52985	327.58	3.476	338.06	0.0093764	0.03567	0.240	0.02192	1.02581	0.7437
140	0.48494	368.51	3.280	342.32	0.0083779	0.03757	0.251	0.02510	1.02360	0.7427
150	0.44779	412.76	3.086	345.47	0.0075941	0.04028	0.262	0.02869	1.02178	0.7345
160	0.41640	460.27	2.900	347.84	0.0069594	0.04329	0.273	0.03245	1.02024	0.7277
170	0.38946	510.76	2.729	349.66	0.0064330	0.04631	0.284	0.03619	1.01892	0.7252
180	0.36603	563.70	2.576	351.07	0.0059880	0.05266	0.310	0.04263	1.01778	0.7146
190	0.34547	619.58	2.434	352.12	0.0056012	0.05735	0.328	0.04783	1.01677	0.7137
200	0.32720	675.56	2.320	352.97	0.0052689	0.06168	0.343	0.05296	1.01588	0.7125
220	0.29617	786.13	2.142	354.18	0.0047180	0.06930	0.368	0.06293	1.01437	0.7107
240	0.27073	897.49	2.022	354.93	0.0042782	0.07559	0.388	0.07272	1.01313	0.7093
260	0.24945	1000.37	1.947	355.40	0.0039177	0.08063	0.404	0.08247	1.01209	0.7078
280	0.23137	1094.72	1.906	355.68	0.0036162	0.08454	0.419	0.09230	1.01121	0.7061
300	0.21579	1180.67	1.889	355.83	0.0033597	0.08754	0.432	0.10227	1.01045	0.7044
320	0.20223	1258.73	1.889	355.90	0.0031386	0.08981	0.444	0.11241	1.00979	0.7027
340	0.19030	1330.35	1.902	355.90	0.0029459	0.09155	0.455	0.12276	1.00921	0.7009
360	0.17972	1396.94	1.922	355.87	0.0027762	0.09293	0.465	0.13333	1.00870	0.6992
380	0.17027	1459.73	1.946	355.80	0.0026255	0.09405	0.476	0.14413	1.00824	0.6976
400	0.16178	1520.42	1.972	355.72	0.0024908	0.09506	0.485	0.15516	1.00783	0.6961
420	0.15411	1579.70	1.999	355.62	0.0023696	0.09601	0.495	0.16644	1.00746	0.6947
440	0.14714	1638.45	2.024	355.52	0.0022599	0.09695	0.504	0.17795	1.00712	0.6935
460	0.14078	1697.45	2.048	355.41	0.0021601	0.09792	0.514	0.18970	1.00681	0.6924
480	0.13496	1756.80	2.069	355.29	0.0020689	0.09894	0.523	0.20170	1.00653	0.6914
500	0.12959	1816.96	2.087	355.18	0.0019852	0.10002	0.532	0.21396	1.00627	0.6906
520	0.12465	1877.99	2.103	355.07	0.0019082	0.10115	0.541	0.22646	1.00603	0.6899
540	0.12006	1940.15	2.116	355.01	0.0018362	0.10234	0.550	0.23926	1.00581	0.6891
560	0.11581	2003.22	2.127	354.89	0.0017703	0.10360	0.559	0.25226	1.00560	0.6885
580	0.11185	2066.91	2.136	354.78	0.0017090	0.10491	0.568	0.26552	1.00541	0.6880
600	0.10815	2131.47	2.144	354.66	0.0016519	0.10626	0.576	0.27904	1.00523	0.6875
650	0.09991	2295.81	2.157	354.40	0.0015247	0.10979	0.598	0.31395	1.00483	0.6867
700	0.09283	2463.59	2.163	354.16	0.0014159	0.11349	0.620	0.35049	1.00449	0.6860
800	0.08132	2806.73	2.166	353.74	0.0012393	0.12119	0.663	0.42843	1.00393	0.6852
1000	0.06518	3503.62	2.160	353.08	0.0009923	0.13680	0.748	0.60369	1.00315	0.6842
2000	0.03272	7292.81	2.023	351.61	0.0004978	0.27727	1.140	2.33401	1.00158	0.5373
3000	0.02185	11769.79	1.826	351.08	0.0003323	0.39336	1.489	4.60304	1.00105	0.5329
4000	0.01639	17350.22	1.604	350.59	0.0002496	0.54491	1.808	7.67833	1.00079	0.5173
5000	0.01302	29012.45	1.146	347.96	0.0002012	0.98653	2.114	12.97753	1.00063	0.4502

* TWO-PHASE BOUNDRY

400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 26.454	0.20401	3130.03	76.1823	-132.360	-117.249	1.20230	1.147	1.525	4391
28	0.20564	3000.75	76.6694	-130.046	-114.814	1.29173	1.188	1.617	4351
30	0.20789	2909.34	76.5318	-126.865	-111.467	1.40718	1.235	1.735	4277
32	0.21033	2630.79	75.6076	-123.463	-107.884	1.52275	1.277	1.847	4198
34	0.21297	2457.62	74.3516	-119.854	-104.080	1.63806	1.316	1.959	4116
36	0.21583	2294.59	73.0133	-116.034	-100.048	1.75326	1.351	2.072	4038
38	0.21891	2138.08	71.5644	-112.004	-95.789	1.86837	1.381	2.189	3962
40	0.22226	1980.30	69.9535	-107.752	-91.290	1.98376	1.408	2.312	3881
42	0.22590	1822.66	68.1639	-103.271	-86.539	2.09965	1.430	2.442	3797
44	0.22991	1663.64	66.1694	-98.542	-81.512	2.21655	1.450	2.584	3706
46	0.23435	1503.39	63.9578	-93.548	-76.190	2.33482	1.467	2.739	3607
48	0.23928	1352.87	61.5027	-88.275	-70.551	2.45480	1.480	2.903	3506
50	0.24480	1198.82	58.8058	-82.695	-64.563	2.57702	1.493	3.093	3393
52	0.25107	1058.54	55.8553	-76.773	-58.176	2.70224	1.503	3.292	3277
54	0.25820	915.59	52.6827	-70.485	-51.361	2.83083	1.512	3.533	3148
56	0.26651	775.81	49.2728	-63.755	-44.015	2.96438	1.523	3.828	3006
58	0.27636	645.51	45.6294	-56.495	-36.025	3.10454	1.534	4.180	2855
60	0.28832	524.18	41.7446	-48.599	-27.243	3.25337	1.546	4.616	2693
62	0.30325	412.52	37.6286	-39.919	-17.458	3.41377	1.560	5.184	2520
64	0.32247	315.32	33.2945	-30.269	-6.384	3.58950	1.578	5.910	2339
66	0.34810	234.81	28.8197	-19.440	6.343	3.78526	1.603	6.841	2155
68	0.38288	178.01	24.4021	-7.352	21.008	4.00410	1.633	7.808	1986
70	0.42883	145.88	20.4066	5.618	37.381	4.24138	1.664	8.468	1855
75	0.57487	151.59	13.6350	35.368	77.948	4.80190	1.663	7.292	1755
80	0.71371	203.13	10.2814	56.796	109.660	5.21183	1.628	5.555	1792
85	0.83468	257.29	8.4066	73.038	134.862	5.51769	1.604	4.616	1852
90	0.94317	308.12	7.2033	86.642	156.501	5.76521	1.593	4.090	1914
95	1.04359	356.08	6.3519	98.783	176.081	5.97700	1.593	3.764	1974
100	1.13812	401.02	5.7293	110.156	194.456	6.16558	1.599	3.563	2034
105	1.22870	443.81	5.2202	120.854	211.863	6.33546	1.607	3.409	2089
110	1.31598	484.66	4.8069	131.151	228.624	6.49143	1.620	3.302	2139
115	1.40066	523.93	4.4632	141.190	244.935	6.63645	1.639	3.227	2186
120	1.48325	561.87	4.1718	151.073	260.936	6.77266	1.663	3.177	2230
125	1.56412	598.70	3.9209	160.883	276.736	6.90165	1.692	3.146	2271
130	1.64355	634.59	3.7020	170.684	292.420	7.02469	1.726	3.130	2309
140	1.79895	704.01	3.3376	190.460	323.707	7.25654	1.807	3.134	2379
150	1.95075	770.96	3.0449	210.728	355.218	7.47393	1.902	3.173	2441
160	2.09979	835.97	2.8036	231.714	387.244	7.68059	2.007	3.235	2499
170	2.24666	899.45	2.6007	253.568	419.977	7.87901	2.118	3.313	2553
180	2.39181	961.69	2.4273	276.375	453.534	8.07080	2.231	3.399	2605
190	2.53519	1022.53	2.2741	300.328	488.108	8.25741	2.348	3.492	2654
200	2.67758	1082.72	2.1423	325.126	523.452	8.43856	2.453	3.578	2705
220	2.95953	1201.03	1.9220	377.399	596.608	8.78709	2.636	3.733	2807
240	3.23855	1317.19	1.7446	432.655	672.532	9.11714	2.775	3.852	2910
260	3.51539	1431.72	1.5983	490.018	750.401	9.42891	2.868	3.929	3015
280	3.79055	1544.99	1.4755	548.692	829.455	9.72173	2.918	3.967	3120
300	4.06438	1657.27	1.3707	607.858	908.903	9.99592	2.934	3.974	3225
320	4.33714	1768.75	1.2802	666.995	988.244	10.25205	2.924	3.957	3330
340	4.60904	1879.57	1.2011	725.691	1067.078	10.49066	2.898	3.925	3434
360	4.88022	1989.85	1.1315	783.687	1145.161	10.71390	2.862	3.883	3537
380	5.15080	2099.68	1.0696	840.848	1222.364	10.92262	2.820	3.837	3638
400	5.42088	2209.12	1.0143	897.119	1298.639	11.11833	2.777	3.791	3738
420	5.69053	2318.24	0.9645	952.515	1374.008	11.30218	2.736	3.747	3835
440	5.95981	2427.08	0.9194	1007.094	1448.533	11.47556	2.698	3.706	3930
460	6.22878	2535.68	0.8784	1060.919	1522.279	11.63948	2.664	3.670	4023
480	6.49746	2644.07	0.8410	1114.080	1595.342	11.79474	2.634	3.637	4113
500	6.76591	2752.27	0.8066	1166.659	1667.804	11.94280	2.608	3.610	4201
520	7.03414	2860.31	0.7750	1218.738	1739.751	12.08402	2.585	3.586	4287
540	7.30264	2968.95	0.7456	1270.584	1811.485	12.21935	2.566	3.565	4371
560	7.57041	3076.64	0.7185	1321.791	1882.525	12.34804	2.551	3.548	4453
580	7.83803	3184.21	0.6934	1372.771	1953.327	12.47212	2.538	3.534	4532
600	8.10552	3291.69	0.6700	1423.543	2023.912	12.59183	2.527	3.523	4610
650	8.77380	3560.03	0.6178	1549.560	2199.428	12.87309	2.508	3.502	4799
700	9.44155	3827.96	0.5733	1674.864	2374.191	13.13237	2.497	3.489	4978
800	10.77591	4362.96	0.5011	1924.207	2722.370	13.59761	2.489	3.479	5315
1000	13.44193	5430.90	0.4005	2422.089	3417.722	14.37293	2.489	3.477	5929
2000	26.75638	10758.86	0.2000	4969.535	6951.358	16.81461	2.644	3.630	8272
3000	40.06606	16082.99	0.1333	7755.709	10723.369	18.33054	2.925	3.911	9982
4000	53.40672	21406.49	0.1000	10862.859	14818.650	19.70174	3.317	4.318	11362
5000	67.16606	26729.80	0.0800	14739.168	19714.102	21.62334	4.604	5.739	12420

* TWO-PHASE BOUNDRY

400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.454	4.90171	307.11	13.551	15342.53	0.0049654	0.04823	1.427	0.00645	1.25687	2.0798
28	4.86281	307.78	13.276	14592.09	0.0052542	0.05208	1.643	0.00662	1.25467	1.8371
30	4.81032	306.43	12.884	13513.80	0.0056632	0.05561	1.454	0.00666	1.25171	1.6331
32	4.75439	305.55	12.449	12507.80	0.0060448	0.05806	1.302	0.00661	1.24856	1.4909
34	4.69542	303.98	12.031	11539.56	0.0064432	0.05966	1.178	0.00649	1.24524	1.3925
36	4.63330	301.74	11.666	10631.55	0.0068676	0.06101	1.076	0.00635	1.24176	1.3152
38	4.56809	298.73	11.343	9766.95	0.0073272	0.06255	0.989	0.00626	1.23811	1.2460
40	4.49931	294.49	11.043	8909.98	0.0078511	0.06358	0.915	0.00611	1.23426	1.1977
42	4.42669	289.08	10.765	8068.36	0.0084483	0.06416	0.850	0.00594	1.23021	1.1647
44	4.34947	282.54	10.490	7235.93	0.0091446	0.06436	0.792	0.00573	1.22591	1.1451
46	4.26715	274.77	10.220	6415.20	0.0099697	0.06420	0.740	0.00549	1.22134	1.1374
48	4.17922	266.88	9.942	5653.95	0.0108778	0.06370	0.693	0.00525	1.21647	1.1369
50	4.08491	257.58	9.645	4897.07	0.0120084	0.06293	0.649	0.00498	1.21126	1.1487
52	3.98301	248.50	9.329	4216.18	0.0132478	0.06189	0.608	0.00472	1.20565	1.1646
54	3.87293	237.82	8.994	3546.03	0.0148568	0.06060	0.569	0.00443	1.19961	1.1952
56	3.75223	226.14	8.623	2911.00	0.0169264	0.05880	0.532	0.00409	1.19300	1.2470
58	3.61841	213.95	8.222	2335.71	0.0195355	0.05676	0.496	0.00375	1.18571	1.3144
60	3.46833	201.03	7.788	1818.03	0.0229614	0.05446	0.460	0.00340	1.17757	1.4039
62	3.29764	187.40	7.315	1360.36	0.0276608	0.05209	0.425	0.00305	1.16836	1.5210
64	3.10105	173.58	6.804	977.83	0.0340493	0.05024	0.389	0.00274	1.15781	1.6474
66	2.87277	160.11	6.260	674.57	0.0427232	0.04822	0.354	0.00245	1.14563	1.8054
68	2.61177	148.77	5.720	464.92	0.0524869	0.04597	0.319	0.00225	1.13183	1.9517
70	2.33193	141.17	5.259	340.19	0.0599857	0.04346	0.289	0.00220	1.11715	2.0237
75	1.73954	141.02	4.713	263.69	0.0517087	0.03684	0.240	0.00290	1.08652	1.7068
80	1.40112	153.76	4.508	284.61	0.0361250	0.03311	0.219	0.00425	1.06928	1.3243
85	1.19807	169.24	4.376	308.25	0.0272719	0.03161	0.211	0.00572	1.05904	1.1115
90	1.06025	185.48	4.264	326.68	0.0220500	0.03114	0.210	0.00718	1.05212	0.9915
95	0.95823	202.18	4.161	341.21	0.0186158	0.03116	0.211	0.00864	1.04702	0.9172
100	0.87864	219.10	4.077	352.35	0.0162601	0.03150	0.214	0.01006	1.04306	0.8711
105	0.81387	235.89	3.992	361.20	0.0144522	0.03199	0.218	0.01153	1.03984	0.8358
110	0.75989	252.96	3.905	368.29	0.0130518	0.03270	0.222	0.01304	1.03716	0.8081
115	0.71395	270.45	3.815	374.06	0.0119317	0.03355	0.227	0.01456	1.03489	0.7868
120	0.67420	288.47	3.722	378.81	0.0110127	0.03445	0.232	0.01609	1.03292	0.7713
125	0.63934	307.10	3.625	382.77	0.0102432	0.03540	0.238	0.01760	1.03120	0.7600
130	0.60844	326.44	3.526	386.11	0.0095881	0.03638	0.243	0.01910	1.02968	0.7523
140	0.55588	367.47	3.324	391.35	0.0085285	0.03819	0.254	0.02192	1.02709	0.7496
150	0.51252	411.81	3.123	395.21	0.0077044	0.04084	0.265	0.02511	1.02496	0.7398
160	0.47624	459.42	2.933	398.12	0.0070421	0.04382	0.275	0.02844	1.02318	0.7317
170	0.44510	510.00	2.758	400.35	0.0064961	0.04682	0.286	0.03175	1.02165	0.7284
180	0.41809	563.06	2.602	402.08	0.0060368	0.05286	0.310	0.03719	1.02033	0.7188
190	0.39445	619.25	2.456	403.33	0.0056383	0.05749	0.328	0.04175	1.01917	0.7174
200	0.37347	675.38	2.339	404.37	0.0052980	0.06179	0.343	0.04624	1.01814	0.7158
220	0.33789	788.29	2.158	405.82	0.0047361	0.06937	0.368	0.05499	1.01640	0.7135
240	0.30878	898.01	2.036	406.72	0.0042894	0.07564	0.388	0.06360	1.01498	0.7116
260	0.28446	1001.27	1.959	407.27	0.0039244	0.08067	0.405	0.07217	1.01380	0.7098
280	0.26381	1095.97	1.917	407.59	0.0036200	0.08458	0.419	0.08081	1.01279	0.7079
300	0.24604	1182.26	1.899	407.75	0.0033615	0.08758	0.432	0.08957	1.01193	0.7059
320	0.23057	1260.62	1.899	407.81	0.0031391	0.08986	0.444	0.09849	1.01117	0.7039
340	0.21696	1332.50	1.910	407.80	0.0029454	0.09161	0.455	0.10758	1.01051	0.7020
360	0.20491	1399.33	1.930	407.74	0.0027750	0.09299	0.466	0.11686	1.00992	0.7002
380	0.19414	1462.31	1.954	407.64	0.0026239	0.09412	0.476	0.12634	1.00940	0.6984
400	0.18447	1523.18	1.980	407.52	0.0024889	0.09513	0.486	0.13603	1.00893	0.6968
420	0.17573	1582.60	2.006	407.39	0.0023675	0.09609	0.495	0.14593	1.00851	0.6954
440	0.16779	1641.49	2.031	407.24	0.0022577	0.09703	0.505	0.15604	1.00812	0.6941
460	0.16055	1700.61	2.054	407.09	0.0021578	0.09801	0.514	0.16636	1.00777	0.6929
480	0.15391	1760.06	2.075	406.94	0.0020666	0.09902	0.523	0.17689	1.00745	0.6919
500	0.14780	1820.31	2.093	406.79	0.0019829	0.10010	0.532	0.18764	1.00715	0.6910
520	0.14216	1881.42	2.109	406.63	0.0019059	0.10125	0.541	0.19861	1.00688	0.6902
540	0.13694	1943.76	2.122	406.56	0.0018339	0.10243	0.550	0.20985	1.00662	0.6894
560	0.13209	2006.89	2.132	406.40	0.0017680	0.10370	0.559	0.22126	1.00639	0.6888
580	0.12758	2070.63	2.141	406.25	0.0017068	0.10501	0.568	0.23290	1.00617	0.6882
600	0.12337	2135.24	2.149	406.10	0.0016497	0.10637	0.577	0.24475	1.00597	0.6878
650	0.11398	2299.69	2.161	405.76	0.0015227	0.10990	0.599	0.27537	1.00551	0.6868
700	0.10591	2467.56	2.168	405.44	0.0014140	0.11361	0.621	0.30743	1.00512	0.6861
800	0.09280	2810.84	2.170	404.88	0.0012377	0.12132	0.664	0.37578	1.00449	0.6852
1000	0.07439	3507.90	2.163	404.03	0.0009912	0.13697	0.749	0.52948	1.00359	0.6842
2000	0.03737	7297.56	2.024	402.10	0.0004975	0.27727	1.142	2.04356	1.00180	0.5381
3000	0.02496	11773.86	1.827	401.41	0.0003322	0.39330	1.491	4.02920	1.00121	0.5338
4000	0.01872	17305.98	1.610	400.82	0.0002495	0.54235	1.911	6.70849	1.00090	0.5191
5000	0.01489	28549.65	1.167	397.97	0.0002010	0.96277	2.117	11.26743	1.00072	0.4543

* TWO-PHASE BOUNDRY

450 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 26.647	0.20355	3179.66	76.3465	-132.274	-115.313	1.20418	1.150	1.525	4419
28	0.20494	3073.29	76.8248	-130.270	-113.192	1.28178	1.186	1.604	4388
30	0.20713	2886.72	76.8732	-127.128	-109.868	1.39641	1.234	1.721	4320
32	0.20951	2705.69	76.2038	-123.769	-106.312	1.51116	1.276	1.834	4245
34	0.21207	2529.65	74.9778	-120.208	-102.537	1.62556	1.315	1.944	4163
36	0.21483	2365.77	73.6655	-116.443	-98.541	1.73973	1.349	2.055	4086
38	0.21781	2210.74	72.2425	-112.472	-94.322	1.85378	1.379	2.168	4012
40	0.22104	2054.32	70.6798	-108.290	-89.871	1.96791	1.406	2.286	3934
42	0.22454	1899.32	68.9354	-103.889	-85.178	2.08239	1.429	2.410	3852
44	0.22837	1742.35	67.0104	-99.256	-80.226	2.19755	1.449	2.544	3765
46	0.23258	1588.26	64.8793	-94.378	-74.997	2.31377	1.466	2.687	3673
48	0.23724	1433.12	62.5292	-89.236	-69.468	2.43142	1.480	2.845	3572
50	0.24242	1288.63	59.9558	-83.817	-63.617	2.55083	1.493	3.011	3470
52	0.24824	1146.24	57.1603	-78.090	-57.405	2.67263	1.503	3.195	3359
54	0.25478	1007.45	54.1789	-72.044	-50.814	2.79699	1.512	3.404	3241
56	0.26226	870.95	50.9920	-65.627	-43.773	2.92499	1.522	3.651	3111
58	0.27097	743.06	47.6034	-58.771	-36.191	3.05800	1.532	3.937	2975
60	0.28123	621.50	44.0374	-51.419	-27.984	3.19709	1.541	4.283	2829
62	0.29357	511.74	40.2867	-43.483	-19.021	3.34402	1.553	4.691	2676
64	0.30871	412.28	36.3964	-34.866	-9.142	3.50080	1.565	5.194	2518
66	0.32764	327.46	32.4143	-25.475	1.827	3.66953	1.581	5.791	2357
68	0.35169	260.29	28.4346	-15.245	14.061	3.85210	1.601	6.438	2202
70	0.38216	211.80	24.6394	-4.265	27.580	4.04801	1.622	7.048	2065
75	0.48677	170.42	17.1150	23.859	64.420	4.55629	1.655	7.311	1868
80	0.60610	201.52	12.7063	47.051	97.556	4.98448	1.638	5.998	1849
85	0.71540	250.02	10.1948	65.111	124.807	5.31522	1.617	4.975	1888
90	0.81637	299.82	8.6116	79.974	148.001	5.58053	1.605	4.352	1941
95	0.90867	347.78	7.5163	92.995	168.713	5.80460	1.603	3.962	1996
100	0.99536	393.17	6.7066	105.005	187.946	6.00199	1.607	3.706	2049
105	1.07825	437.19	6.0827	116.186	206.035	6.17853	1.614	3.527	2104
110	1.15781	479.01	5.5872	126.887	223.365	6.33979	1.627	3.406	2156
115	1.23481	519.21	5.1684	137.262	240.156	6.48908	1.645	3.315	2202
120	1.30974	558.03	4.8161	147.428	256.565	6.62876	1.668	3.252	2245
125	1.38297	595.67	4.5149	157.478	272.718	6.76064	1.697	3.212	2286
130	1.45479	632.32	4.2537	167.486	288.710	6.88609	1.730	3.188	2323
140	1.59502	703.12	3.8216	187.603	320.512	7.12177	1.810	3.180	2392
150	1.73169	771.27	3.4773	208.142	352.440	7.34203	1.905	3.210	2454
160	1.86565	837.34	3.1952	229.349	384.810	7.55092	2.009	3.267	2511
170	1.99750	901.76	2.9591	251.387	417.834	7.75110	2.120	3.340	2565
180	2.12765	964.83	2.7581	274.349	451.641	7.94432	2.233	3.422	2618
190	2.25603	1026.34	2.5806	298.468	486.458	8.13226	2.350	3.512	2666
200	2.38346	1087.18	2.4288	323.387	521.996	8.31441	2.455	3.597	2716
220	2.63555	1206.61	2.1758	375.863	595.477	8.66449	2.638	3.748	2818
240	2.88478	1323.69	1.9728	431.282	671.665	8.99568	2.777	3.864	2921
260	3.13187	1439.00	1.8059	488.779	749.751	9.30833	2.869	3.939	3025
280	3.37731	1552.94	1.6660	547.566	828.989	9.60183	2.919	3.976	3130
300	3.62144	1665.80	1.5469	606.828	908.594	9.87656	2.935	3.982	3236
320	3.86453	1777.78	1.4441	666.048	988.071	10.13313	2.925	3.964	3340
340	4.10677	1889.04	1.3545	724.816	1067.024	10.37210	2.899	3.930	3444
360	4.34831	1999.71	1.2756	782.876	1145.212	10.59564	2.863	3.888	3547
380	4.58926	2109.88	1.2055	840.094	1222.507	10.80461	2.821	3.841	3649
400	4.82971	2219.63	1.1429	896.417	1298.866	11.00053	2.778	3.795	3748
420	5.06974	2329.03	1.0866	951.859	1374.309	11.18456	2.737	3.750	3845
440	5.30941	2438.12	1.0357	1006.479	1448.901	11.35810	2.699	3.709	3940
460	5.54877	2546.94	0.9894	1060.342	1522.709	11.52216	2.665	3.673	4033
480	5.78785	2655.53	0.9471	1113.538	1595.827	11.67754	2.634	3.640	4123
500	6.02670	2763.92	0.9083	1166.149	1668.341	11.82570	2.608	3.612	4211
520	6.26533	2872.12	0.8726	1218.257	1740.334	11.96701	2.586	3.588	4297
540	6.50435	2981.10	0.8394	1270.152	1812.145	12.10247	2.567	3.567	4381
560	6.74252	3088.91	0.8089	1321.384	1883.223	12.23123	2.551	3.550	4462
580	6.98055	3196.60	0.7805	1372.386	1954.060	12.35538	2.538	3.536	4542
600	7.21846	3304.18	0.7541	1423.179	2024.677	12.47514	2.528	3.524	4620
650	7.81277	3572.75	0.6954	1549.242	2200.263	12.75651	2.509	3.503	4808
700	8.40656	3840.87	0.6452	1674.583	2375.083	13.01587	2.497	3.490	4987
800	9.59302	4376.14	0.5639	1923.984	2723.350	13.48123	2.489	3.480	5324
1000	11.96326	5444.43	0.4506	2421.940	3418.812	14.25667	2.489	3.478	5936
2000	23.79300	10772.85	0.2250	4969.497	6952.615	16.69849	2.644	3.630	8278
3000	35.62995	16097.07	0.1500	7755.641	10724.606	18.21441	2.925	3.911	9986
4000	47.48674	21420.60	0.1125	10859.597	14816.563	19.58472	3.307	4.307	11369
5000	59.69455	26743.92	0.0900	14700.668	19674.884	21.49831	4.532	5.658	12434

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

450 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 26.647	4.91280	312.02	13.511	15621.01	0.0048874	0.04895	1.841	0.00653	1.25749	2.0654
28	4.87942	313.13	13.276	14995.90	0.0051231	0.05230	1.679	0.00668	1.25561	1.8537
30	4.82793	312.10	12.907	13936.88	0.0055158	0.05590	1.484	0.00673	1.25270	1.6453
32	4.77311	310.87	12.511	12914.55	0.0059006	0.05841	1.328	0.00667	1.24961	1.5019
34	4.71543	309.26	12.095	11928.39	0.0062857	0.06007	1.202	0.00655	1.24637	1.4004
36	4.65478	307.17	11.731	11012.15	0.0066895	0.06148	1.097	0.00643	1.24296	1.3204
38	4.59106	304.53	11.407	10149.63	0.0071177	0.06308	1.009	0.00634	1.23939	1.2483
40	4.52408	300.64	11.109	9293.91	0.0076050	0.06416	0.934	0.00620	1.23564	1.1975
42	4.45350	295.74	10.831	8458.59	0.0081497	0.06481	0.868	0.00604	1.23170	1.1616
44	4.37881	289.67	10.560	7629.40	0.0087832	0.06507	0.809	0.00584	1.22754	1.1392
46	4.29953	282.82	10.294	6828.77	0.0095009	0.06499	0.757	0.00562	1.22314	1.1269
48	4.21509	274.83	10.023	6040.74	0.0103512	0.06457	0.709	0.00539	1.21846	1.1252
50	4.12504	266.91	9.737	5315.64	0.0112791	0.06389	0.666	0.00515	1.21348	1.1292
52	4.02841	258.08	9.438	4617.53	0.0123790	0.06296	0.625	0.00489	1.20815	1.1415
54	3.92493	248.41	9.127	3954.18	0.0137017	0.06180	0.587	0.00463	1.20246	1.1631
56	3.81294	237.79	8.787	3320.87	0.0153550	0.06016	0.550	0.00432	1.19632	1.2022
58	3.69043	226.76	8.422	2742.19	0.0173596	0.05830	0.515	0.00401	1.18963	1.2519
60	3.55576	214.95	8.035	2209.91	0.0199273	0.05625	0.481	0.00369	1.18231	1.3184
62	3.40632	202.96	7.618	1743.15	0.0231114	0.05400	0.447	0.00338	1.17422	1.3995
64	3.23930	190.59	7.178	1335.50	0.0272530	0.05197	0.415	0.00309	1.16522	1.4918
66	3.05215	178.55	6.716	999.46	0.0324317	0.05014	0.382	0.00284	1.15519	1.5899
68	2.84344	167.58	6.248	740.13	0.0384183	0.04815	0.351	0.00263	1.14408	1.6908
70	2.61668	158.53	5.807	554.20	0.0444590	0.04604	0.322	0.00250	1.13208	1.7758
75	2.05435	149.56	5.034	350.11	0.0488847	0.04046	0.267	0.00269	1.10272	1.7374
80	1.64989	156.94	4.702	332.48	0.0382163	0.03607	0.239	0.00365	1.08193	1.4312
85	1.39588	170.30	4.518	349.00	0.0292112	0.03385	0.226	0.00487	1.06902	1.1964
90	1.22493	185.61	4.380	367.26	0.0234480	0.03290	0.221	0.00617	1.06039	1.0512
95	1.10051	201.75	4.262	382.73	0.0196386	0.03263	0.220	0.00748	1.05414	0.9600
100	1.00466	218.28	4.153	395.00	0.0169786	0.03274	0.221	0.00879	1.04934	0.9002
105	0.92743	235.13	4.063	405.47	0.0150017	0.03309	0.224	0.01011	1.04549	0.8585
110	0.86370	252.23	3.977	413.72	0.0135048	0.03370	0.227	0.01146	1.04231	0.8273
115	0.80984	269.71	3.880	420.48	0.0122917	0.03446	0.232	0.01284	1.03964	0.8022
120	0.76351	287.73	3.782	426.06	0.0113039	0.03529	0.236	0.01421	1.03734	0.7838
125	0.72308	306.38	3.680	430.72	0.0104821	0.03618	0.241	0.01558	1.03534	0.7704
130	0.68738	325.74	3.577	434.65	0.0097865	0.03712	0.246	0.01694	1.03357	0.7611
140	0.62695	366.81	3.368	440.83	0.0086692	0.03881	0.256	0.01947	1.03059	0.7566
150	0.57747	411.21	3.162	445.39	0.0078074	0.04142	0.267	0.02234	1.02815	0.7450
160	0.53601	458.88	2.967	448.82	0.0071192	0.04436	0.277	0.02533	1.02611	0.7357
170	0.50053	509.54	2.788	451.44	0.0065548	0.04733	0.288	0.02830	1.02437	0.7316
180	0.47000	562.69	2.628	453.47	0.0060821	0.05306	0.311	0.03299	1.02287	0.7228
190	0.44326	619.17	2.477	454.93	0.0056726	0.05765	0.329	0.03703	1.02156	0.7211
200	0.41956	675.44	2.358	456.13	0.0053248	0.06192	0.344	0.04103	1.02040	0.7192
220	0.37943	786.65	2.174	457.82	0.0047525	0.06946	0.369	0.04884	1.01843	0.7162
240	0.34665	898.72	2.050	458.85	0.0042994	0.07570	0.389	0.05652	1.01683	0.7139
260	0.31930	1002.32	1.971	459.47	0.0039303	0.08072	0.405	0.06418	1.01550	0.7117
280	0.29609	1097.37	1.928	459.82	0.0036231	0.08463	0.420	0.07189	1.01436	0.7095
300	0.27613	1183.97	1.909	459.98	0.0033629	0.08764	0.432	0.07971	1.01339	0.7074
320	0.25876	1262.61	1.908	460.02	0.0031392	0.08991	0.444	0.08767	1.01254	0.7052
340	0.24350	1334.75	1.919	459.98	0.0029446	0.09167	0.456	0.09578	1.01180	0.7031
360	0.22997	1401.79	1.938	459.88	0.0027737	0.09305	0.466	0.10406	1.01114	0.7011
380	0.21790	1464.96	1.961	459.74	0.0026222	0.09419	0.476	0.11252	1.01056	0.6993
400	0.20705	1525.99	1.987	459.58	0.0024869	0.09521	0.486	0.12116	1.01003	0.6976
420	0.19725	1585.56	2.013	459.40	0.0023653	0.09616	0.496	0.12999	1.00955	0.6960
440	0.18834	1644.57	2.038	459.21	0.0022554	0.09711	0.505	0.13900	1.00912	0.6946
460	0.18022	1703.80	2.060	459.01	0.0021555	0.09809	0.514	0.14820	1.00873	0.6934
480	0.17278	1763.35	2.081	458.81	0.0020642	0.09911	0.524	0.15759	1.00836	0.6923
500	0.16593	1823.70	2.099	458.61	0.0019806	0.10020	0.533	0.16718	1.00803	0.6914
520	0.15961	1884.89	2.114	458.42	0.0019036	0.10134	0.542	0.17696	1.00772	0.6906
540	0.15374	1947.40	2.127	458.32	0.0018315	0.10253	0.551	0.18698	1.00744	0.6897
560	0.14831	2010.58	2.138	458.12	0.0017657	0.10380	0.560	0.19715	1.00718	0.6890
580	0.14326	2074.37	2.147	457.93	0.0017045	0.10511	0.569	0.20752	1.00693	0.6884
600	0.13853	2139.04	2.154	457.74	0.0016475	0.10647	0.577	0.21809	1.00670	0.6880
650	0.12800	2303.59	2.166	457.30	0.0015207	0.11002	0.599	0.24537	1.00619	0.6870
700	0.11895	2471.54	2.172	456.89	0.0014122	0.11373	0.621	0.27393	1.00575	0.6862
800	0.10424	2814.96	2.173	456.18	0.0012362	0.12146	0.664	0.33484	1.00504	0.6853
1000	0.08359	3512.20	2.166	455.10	0.0009901	0.13714	0.749	0.47176	1.00404	0.6842
2000	0.04202	7302.30	2.025	452.66	0.0004971	0.27727	1.143	1.81766	1.00203	0.5390
3000	0.02807	11778.11	1.828	451.78	0.0003320	0.39325	1.494	3.58291	1.00136	0.5348
4000	0.02106	17270.28	1.615	451.09	0.0002494	0.54023	1.814	5.95598	1.00102	0.5208
5000	0.01675	23167.02	1.186	448.01	0.0002009	0.94306	2.120	9.94908	1.00081	0.4580

* TWO-PHASE BOUNDRY

500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 26.840	0.20310	3228.59	76.4911	-132.184	-113.380	1.20606	1.154	1.525	4447
28	0.20426	3144.22	76.9768	-130.481	-111.569	1.27210	1.184	1.592	4425
30	0.20639	2962.28	77.2066	-127.378	-108.269	1.38591	1.232	1.709	4362
32	0.20871	2775.61	76.6790	-124.059	-104.735	1.49992	1.275	1.822	4286
34	0.21121	2613.15	75.5350	-120.539	-100.984	1.61360	1.313	1.927	4214
36	0.21389	2446.28	74.2665	-116.827	-97.024	1.72675	1.348	2.035	4137
38	0.21677	2287.49	72.8831	-112.915	-92.845	1.83970	1.378	2.146	4062
40	0.21988	2132.56	71.3633	-108.797	-88.439	1.95268	1.405	2.260	3987
42	0.22325	1978.37	69.6748	-104.472	-83.802	2.06580	1.428	2.379	3908
44	0.22692	1823.17	67.8128	-99.926	-78.916	2.17943	1.448	2.506	3823
46	0.23093	1665.85	65.7526	-95.150	-73.768	2.29383	1.465	2.644	3732
48	0.23535	1517.33	63.4958	-90.130	-68.340	2.40933	1.480	2.788	3639
50	0.24023	1373.00	61.0309	-84.851	-62.609	2.52630	1.493	2.942	3541
52	0.24566	1228.57	58.3721	-79.297	-56.553	2.64504	1.504	3.115	3434
54	0.25173	1095.87	55.5348	-73.448	-50.141	2.76602	1.513	3.296	3326
56	0.25857	963.41	52.5324	-67.284	-43.344	2.88960	1.522	3.508	3208
58	0.26639	834.12	49.3575	-60.752	-36.088	3.01689	1.531	3.757	3080
60	0.27543	714.63	46.0297	-53.810	-28.309	3.14874	1.539	4.038	2947
62	0.28604	604.94	42.5586	-46.403	-19.920	3.28625	1.549	4.361	2809
64	0.29863	505.77	38.9751	-38.480	-10.831	3.43051	1.559	4.733	2667
66	0.31378	417.35	35.3289	-29.988	-0.936	3.58273	1.570	5.169	2523
68	0.33221	343.77	31.6815	-20.895	9.864	3.74390	1.583	5.641	2382
70	0.35469	285.55	28.1313	-11.227	21.612	3.91416	1.597	6.117	2251
75	0.43121	210.99	20.4866	14.303	54.227	4.36396	1.631	6.768	2014
80	0.52830	213.46	15.3094	37.826	86.739	4.78386	1.637	6.177	1932
85	0.62647	250.95	12.1417	57.275	115.277	5.13019	1.625	5.254	1939
90	0.71794	296.90	10.1357	73.305	139.777	5.41044	1.614	4.587	1977
95	0.80297	343.32	8.7658	87.196	161.540	5.64588	1.611	4.150	2024
100	0.88292	388.63	7.7656	99.862	181.608	5.85186	1.615	3.855	2073
105	0.95898	432.54	7.0025	111.539	200.328	6.03457	1.621	3.648	2124
110	1.03199	474.89	6.3951	122.626	218.174	6.20063	1.633	3.501	2172
115	1.10320	516.16	5.9015	133.344	235.485	6.35454	1.651	3.399	2219
120	1.17189	555.65	5.4868	143.793	252.294	6.49763	1.673	3.327	2262
125	1.23892	593.96	5.1310	154.086	268.793	6.63233	1.701	3.276	2302
130	1.30457	631.25	4.8240	164.303	285.088	6.76016	1.734	3.245	2339
140	1.43253	703.23	4.3196	184.763	317.396	6.99959	1.814	3.225	2407
150	1.55701	772.44	3.9205	205.573	349.731	7.22267	1.907	3.247	2468
160	1.67885	839.46	3.5953	227.000	382.439	7.43374	2.012	3.298	2525
170	1.79861	904.72	3.3243	249.221	415.748	7.63565	2.122	3.366	2578
180	1.91671	968.56	3.0945	272.338	449.799	7.83026	2.234	3.445	2630
190	2.03304	1030.66	2.8917	296.624	484.856	8.01953	2.353	3.533	2677
200	2.14848	1092.10	2.7190	321.664	520.584	8.20264	2.457	3.615	2728
220	2.37662	1212.56	2.4323	374.341	594.384	8.55425	2.640	3.762	2830
240	2.60197	1330.51	2.2030	429.922	670.829	8.88656	2.778	3.876	2932
260	2.82523	1446.56	2.0150	487.551	749.129	9.20007	2.871	3.949	3036
280	3.04686	1561.13	1.8577	546.449	828.547	9.49424	2.920	3.984	3141
300	3.26722	1674.53	1.7240	605.806	908.307	9.76950	2.936	3.989	3246
320	3.48655	1786.99	1.6088	665.109	987.916	10.02650	2.927	3.970	3351
340	3.70505	1898.67	1.5085	723.949	1066.986	10.26582	2.900	3.936	3455
360	3.92286	2009.71	1.4202	782.073	1145.277	10.48965	2.863	3.893	3558
380	4.14009	2120.21	1.3419	839.347	1222.663	10.69887	2.821	3.846	3659
400	4.35684	2230.26	1.2720	895.720	1299.104	10.89500	2.779	3.799	3758
420	4.57317	2339.92	1.2091	951.207	1374.621	11.07921	2.738	3.754	3855
440	4.78914	2449.24	1.1522	1005.869	1449.279	11.25290	2.699	3.712	3950
460	5.00480	2558.28	1.1006	1059.770	1523.147	11.41710	2.665	3.675	4043
480	5.22020	2667.06	1.0534	1113.001	1596.320	11.57259	2.635	3.643	4133
500	5.43536	2775.63	1.0102	1165.643	1668.884	11.72086	2.609	3.614	4221
520	5.65032	2884.00	0.9704	1217.780	1740.923	11.86226	2.586	3.590	4307
540	5.86574	2993.31	0.9334	1269.723	1812.811	11.99785	2.567	3.569	4390
560	6.08024	3101.25	0.8994	1320.979	1883.927	12.12668	2.552	3.552	4472
580	6.29460	3209.05	0.8678	1372.004	1954.799	12.25088	2.539	3.537	4551
600	6.50883	3316.73	0.8384	1422.818	2025.448	12.37070	2.528	3.526	4629
650	7.04397	3585.52	0.7730	1548.926	2201.102	12.65218	2.509	3.504	4817
700	7.57859	3853.81	0.7172	1674.305	2375.979	12.91163	2.498	3.491	4996
800	8.64672	4389.36	0.6267	1923.764	2724.333	13.37711	2.489	3.481	5332
1000	10.78033	5457.96	0.5007	2421.792	3419.904	14.15267	2.489	3.478	5944
2000	21.43308	10786.83	0.2500	4969.460	6953.872	16.59461	2.644	3.630	8283
3000	32.08103	16111.13	0.1667	7755.581	10725.851	18.11053	2.924	3.910	9990
4000	42.75096	21434.68	0.1250	10856.839	14814.999	19.48008	3.299	4.298	11375
5000	53.72071	26758.01	0.1000	14668.098	19641.908	21.38691	4.471	5.590	12446

* TWO-PHASE BOUNDRY

500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 26.840	4.92375	316.94	13.468	15896.77	0.0048117	0.04966	1.856	0.00661	1.25811	2.0518
28	4.89567	318.35	13.276	15393.08	0.0050007	0.05253	1.715	0.00674	1.25652	1.8708
30	4.84513	317.61	12.931	14352.66	0.0053793	0.05619	1.515	0.00679	1.25367	1.6582
32	4.79125	315.96	12.552	13298.67	0.0057659	0.05876	1.355	0.00673	1.25063	1.5127
34	4.73459	315.55	12.148	12372.18	0.0061052	0.06046	1.226	0.00663	1.24744	1.4060
36	4.67540	313.42	11.787	11437.34	0.0064933	0.06193	1.119	0.00651	1.24412	1.3238
38	4.61326	310.68	11.465	10552.81	0.0069065	0.06359	1.029	0.00642	1.24063	1.2501
40	4.54791	307.17	11.169	9698.71	0.0073580	0.06473	0.952	0.00630	1.23698	1.1967
42	4.47929	302.57	10.894	8861.70	0.0078625	0.06544	0.885	0.00614	1.23314	1.1586
44	4.40682	296.95	10.626	8034.37	0.0084403	0.06576	0.826	0.00595	1.22910	1.1336
46	4.33023	290.09	10.363	7213.51	0.0091152	0.06574	0.773	0.00574	1.22484	1.1199
48	4.24900	283.08	10.098	6447.16	0.0098487	0.06541	0.726	0.00552	1.22033	1.1134
50	4.16264	275.55	9.821	5715.29	0.0106785	0.06481	0.682	0.00529	1.21555	1.1142
52	4.07071	266.92	9.535	5001.17	0.0116717	0.06397	0.641	0.00504	1.21048	1.1239
54	3.97247	258.37	9.242	4353.33	0.0127569	0.06291	0.603	0.00480	1.20507	1.1373
56	3.86739	248.78	8.926	3725.89	0.0140993	0.06139	0.567	0.00453	1.19930	1.1665
58	3.75387	238.32	8.590	3131.18	0.0157632	0.05970	0.533	0.00423	1.19309	1.2072
60	3.63053	227.62	8.236	2594.55	0.0177409	0.05783	0.500	0.00394	1.18638	1.2565
62	3.49605	216.72	7.860	2114.89	0.0201233	0.05580	0.468	0.00366	1.17907	1.3162
64	3.34864	205.66	7.468	1693.66	0.0230124	0.05360	0.437	0.00338	1.17111	1.3880
66	3.18692	194.60	7.060	1330.06	0.0265619	0.05188	0.406	0.00315	1.16241	1.4579
68	3.01014	184.24	6.647	1034.81	0.0306159	0.05009	0.377	0.00295	1.15295	1.5299
70	2.81940	175.05	6.246	805.07	0.0349425	0.04821	0.350	0.00280	1.14280	1.5984
75	2.31907	161.64	5.416	489.30	0.0418695	0.04329	0.293	0.00276	1.11648	1.6512
80	1.89286	163.02	4.940	404.05	0.0378895	0.03894	0.259	0.00333	1.09439	1.4807
85	1.59625	173.34	4.681	400.59	0.0303098	0.03617	0.242	0.00431	1.07920	1.2643
90	1.39286	187.14	4.508	413.54	0.0245098	0.03476	0.233	0.00544	1.06886	1.1070
95	1.24538	202.40	4.369	427.56	0.0205018	0.03417	0.229	0.00661	1.06142	1.0029
100	1.13261	218.48	4.246	440.16	0.0176427	0.03406	0.229	0.00780	1.05575	0.9324
105	1.04277	234.95	4.144	451.04	0.0155253	0.03424	0.230	0.00900	1.05125	0.8832
110	0.96900	251.91	4.042	460.17	0.0138973	0.03473	0.233	0.01024	1.04756	0.8455
115	0.90645	269.49	3.945	467.87	0.0126135	0.03540	0.236	0.01149	1.04444	0.8175
120	0.85332	287.48	3.843	474.15	0.0115719	0.03616	0.241	0.01274	1.04180	0.7967
125	0.80716	306.10	3.736	479.42	0.0107024	0.03699	0.245	0.01399	1.03951	0.7811
130	0.76654	325.45	3.629	483.87	0.0099696	0.03787	0.250	0.01523	1.03749	0.7700
140	0.69807	366.52	3.412	490.90	0.0087993	0.03945	0.259	0.01752	1.03410	0.7636
150	0.64226	410.93	3.200	496.10	0.0079025	0.04201	0.270	0.02014	1.03135	0.7502
160	0.59555	458.63	3.000	500.02	0.0071903	0.04491	0.280	0.02286	1.02905	0.7397
170	0.55599	509.35	2.817	503.01	0.0066088	0.04784	0.290	0.02556	1.02709	0.7347
180	0.52173	562.57	2.654	505.32	0.0061237	0.05328	0.312	0.02965	1.02541	0.7269
190	0.49187	619.35	2.499	506.96	0.0057039	0.05783	0.330	0.03328	1.02394	0.7248
200	0.46545	675.73	2.377	508.32	0.0053491	0.06206	0.345	0.03689	1.02265	0.7224
220	0.42077	789.22	2.190	510.20	0.0047673	0.06956	0.369	0.04394	1.02046	0.7189
240	0.38432	899.60	2.063	511.35	0.0043083	0.07578	0.389	0.05087	1.01867	0.7162
260	0.35395	1003.53	1.983	512.02	0.0039354	0.08079	0.406	0.05779	1.01719	0.7137
280	0.32821	1098.90	1.938	512.37	0.0036257	0.08469	0.420	0.06476	1.01593	0.7112
300	0.30607	1185.80	1.918	512.53	0.0033638	0.08769	0.433	0.07183	1.01485	0.7088
320	0.28682	1264.70	1.917	512.54	0.0031389	0.08997	0.445	0.07902	1.01391	0.7065
340	0.26990	1337.08	1.927	512.45	0.0029436	0.09173	0.456	0.08635	1.01309	0.7042
360	0.25492	1404.32	1.946	512.31	0.0027722	0.09312	0.466	0.09383	1.01236	0.7021
380	0.24154	1467.68	1.969	512.12	0.0026203	0.09426	0.477	0.10147	1.01171	0.7001
400	0.22952	1528.86	1.994	511.90	0.0024848	0.09528	0.487	0.10927	1.01112	0.6983
420	0.21867	1588.57	2.020	511.66	0.0023631	0.09624	0.496	0.11725	1.01059	0.6967
440	0.20881	1647.69	2.044	511.42	0.0022530	0.09719	0.506	0.12538	1.01011	0.6952
460	0.19981	1707.03	2.067	511.16	0.0021531	0.09817	0.515	0.13369	1.00968	0.6939
480	0.19156	1766.67	2.087	510.91	0.0020619	0.09920	0.524	0.14216	1.00928	0.6928
500	0.18398	1827.11	2.105	510.66	0.0019782	0.10029	0.533	0.15081	1.00891	0.6918
520	0.17698	1888.38	2.120	510.41	0.0019012	0.10143	0.542	0.15964	1.00857	0.6909
540	0.17048	1951.07	2.133	510.30	0.0018290	0.10263	0.551	0.16869	1.00825	0.6900
560	0.16447	2014.30	2.143	510.05	0.0017633	0.10390	0.560	0.17787	1.00796	0.6893
580	0.15887	2078.14	2.152	509.81	0.0017022	0.10522	0.569	0.18723	1.00769	0.6887
600	0.15364	2142.86	2.159	509.57	0.0016453	0.10658	0.578	0.19676	1.00743	0.6882
650	0.14197	2307.50	2.170	509.02	0.0015186	0.11013	0.600	0.22138	1.00687	0.6871
700	0.13195	2475.54	2.176	508.51	0.0014103	0.11385	0.622	0.24714	1.00638	0.6864
800	0.11565	2819.09	2.177	507.63	0.0012346	0.12160	0.665	0.30208	1.00559	0.6853
1000	0.09276	3516.50	2.169	506.29	0.0009891	0.13730	0.750	0.42558	1.00448	0.6842
2000	0.04666	7307.05	2.027	503.28	0.0004968	0.27727	1.145	1.63693	1.00225	0.5398
3000	0.03117	11782.50	1.828	502.20	0.0003319	0.39321	1.496	3.22589	1.00151	0.5357
4000	0.02339	17240.93	1.620	501.38	0.0002493	0.53843	1.817	5.35520	1.00113	0.5223
5000	0.01861	27844.04	1.202	498.09	0.0002008	0.92638	2.124	8.90253	1.00090	0.4613

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

550 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 27.030	0.20265	3247.56	76.6463	-132.090	-111.451	1.20793	1.157	1.529	4459
28	0.20362	3202.48	77.1125	-130.677	-109.939	1.26287	1.183	1.582	4455
30	0.20569	3021.55	77.4204	-127.610	-106.661	1.37592	1.231	1.697	4393
32	0.20794	2845.68	77.0409	-124.336	-103.158	1.48893	1.274	1.808	4326
34	0.21037	2687.25	76.0750	-120.859	-99.434	1.60179	1.312	1.912	4259
36	0.21296	2516.13	74.8532	-117.195	-95.505	1.71405	1.346	2.019	4183
38	0.21576	2358.36	73.5028	-113.336	-91.362	1.82605	1.377	2.127	4109
40	0.21877	2204.87	72.0195	-109.279	-86.998	1.93794	1.404	2.238	4035
42	0.22202	2052.34	70.3823	-105.022	-82.410	2.04986	1.427	2.352	3959
44	0.22555	1899.81	68.5743	-100.556	-77.586	2.16206	1.447	2.473	3878
46	0.22938	1747.66	66.5860	-95.873	-72.512	2.27482	1.465	2.602	3792
48	0.23358	1598.72	64.4115	-90.963	-67.174	2.38841	1.480	2.738	3702
50	0.23821	1452.13	62.0417	-85.809	-61.549	2.50320	1.493	2.886	3606
52	0.24331	1313.76	59.4929	-80.401	-55.621	2.61944	1.504	3.040	3507
54	0.24897	1178.83	56.7815	-74.733	-49.377	2.73725	1.513	3.208	3403
56	0.25529	1050.35	53.9326	-68.776	-42.775	2.85728	1.522	3.394	3294
58	0.26242	923.65	50.9359	-62.506	-35.781	2.97999	1.531	3.608	3176
60	0.27054	805.72	47.7975	-55.886	-28.334	3.10621	1.538	3.844	3054
62	0.27987	693.87	44.5510	-48.887	-20.383	3.23654	1.547	4.119	2926
64	0.29072	594.18	41.2027	-41.468	-11.859	3.37183	1.555	4.417	2796
66	0.30344	505.37	37.8053	-33.604	-2.701	3.51272	1.564	4.747	2665
68	0.31845	426.80	34.4047	-25.280	7.152	3.65978	1.574	5.115	2535
70	0.33624	364.05	31.0718	-16.504	17.740	3.81322	1.584	5.470	2414
75	0.39515	264.90	23.5579	6.809	47.053	4.21744	1.610	6.154	2165
80	0.47287	239.65	17.9484	29.839	77.999	4.61693	1.625	6.078	2038
85	0.55793	261.01	14.2029	49.774	106.596	4.96371	1.628	5.415	2005
90	0.64070	299.71	11.7614	66.758	132.010	5.25441	1.621	4.779	2023
95	0.71886	343.76	10.0932	81.453	154.665	5.49951	1.618	4.312	2060
100	0.79275	387.93	8.8859	94.753	175.491	5.71326	1.621	3.990	2103
105	0.86311	431.21	7.9715	106.929	194.832	5.90204	1.626	3.761	2149
110	0.93063	473.41	7.2492	118.417	213.197	6.07294	1.638	3.596	2195
115	0.99591	514.18	6.6639	129.442	230.871	6.23008	1.655	3.479	2238
120	1.05925	554.09	6.1779	140.159	248.038	6.37622	1.678	3.395	2279
125	1.12186	593.59	5.7679	150.715	264.970	6.51447	1.706	3.339	2320
130	1.18238	631.37	5.4125	161.140	281.560	6.64460	1.738	3.300	2356
140	1.30019	704.33	4.8311	181.943	314.361	6.88770	1.817	3.269	2423
150	1.41461	774.45	4.3740	203.023	347.094	7.11353	1.910	3.263	2483
160	1.52645	842.30	4.0035	224.670	380.132	7.32673	2.014	3.328	2539
170	1.63627	908.33	3.6962	247.073	413.720	7.53033	2.124	3.392	2592
180	1.74447	972.86	3.4363	270.344	448.010	7.72631	2.236	3.467	2644
190	1.85091	1035.50	3.2070	294.798	483.304	7.91687	2.356	3.553	2690
200	1.95549	1097.48	3.0129	319.957	519.216	8.10094	2.460	3.632	2740
220	2.16500	1218.90	2.6914	372.833	593.328	8.45403	2.642	3.777	2841
240	2.37077	1337.66	2.4352	428.574	670.025	8.78744	2.780	3.887	2944
260	2.57449	1454.39	2.2256	486.335	748.535	9.10178	2.872	3.959	3048
280	2.77663	1569.56	2.0507	545.343	828.129	9.39661	2.922	3.993	3152
300	2.97751	1683.47	1.9021	604.795	908.040	9.67239	2.937	3.996	3257
320	3.17740	1796.38	1.7743	664.178	987.780	9.92981	2.928	3.976	3362
340	3.37646	1908.45	1.6631	723.089	1066.965	10.16949	2.901	3.941	3466
360	3.57484	2019.85	1.5653	781.276	1145.356	10.39360	2.864	3.898	3568
380	3.77266	2130.66	1.4787	838.606	1222.833	10.60306	2.822	3.850	3670
400	3.96999	2240.99	1.4014	895.029	1299.353	10.79940	2.780	3.803	3769
420	4.16692	2350.90	1.3319	950.561	1374.942	10.98379	2.738	3.757	3866
440	4.36350	2460.46	1.2691	1005.264	1449.666	11.15763	2.700	3.715	3961
460	4.55978	2569.70	1.2120	1059.202	1523.593	11.32196	2.666	3.678	4053
480	4.75579	2678.67	1.1600	1112.467	1596.820	11.47757	2.635	3.645	4143
500	4.95157	2787.41	1.1122	1165.141	1669.433	11.62593	2.609	3.617	4231
520	5.14714	2895.93	1.0684	1217.307	1741.518	11.76742	2.587	3.592	4316
540	5.34327	3005.60	1.0275	1269.297	1813.483	11.90314	2.568	3.571	4400
560	5.53840	3113.65	0.9900	1320.578	1884.637	12.03203	2.552	3.554	4481
580	5.73338	3221.56	0.9552	1371.625	1955.542	12.15630	2.539	3.539	4561
600	5.92825	3329.34	0.9228	1422.460	2026.223	12.27617	2.529	3.527	4639
650	6.41496	3598.34	0.8507	1548.613	2201.945	12.55776	2.509	3.505	4826
700	6.90117	3866.80	0.7892	1674.029	2376.879	12.81729	2.498	3.492	5004
800	7.87248	4402.60	0.6896	1923.545	2725.318	13.28289	2.490	3.481	5340
1000	9.81247	5471.51	0.5509	2421.645	3420.997	14.05857	2.489	3.478	5951
2000	19.49730	10800.80	0.2751	4969.424	6955.129	16.50064	2.644	3.630	8288
3000	29.17736	16125.16	0.1833	7755.530	10727.101	18.01656	2.924	3.910	9995
4000	38.87637	21448.73	0.1375	10854.466	14813.834	19.38546	3.292	4.291	11380
5000	48.83537	26772.07	0.1100	14640.078	19613.720	21.28646	4.418	5.531	12457

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

550 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.030	4.93457	319.59	13.428	16025.32	0.0047828	0.05036	1.870	0.00668	1.25872	2.0437
28	4.91121	322.62	13.277	15728.04	0.0049029	0.05274	1.750	0.00679	1.25740	1.8895
30	4.86158	322.04	12.936	14689.49	0.0052705	0.05646	1.545	0.00684	1.25460	1.6721
32	4.80906	321.22	12.575	13685.01	0.0056296	0.05909	1.382	0.00680	1.25164	1.5227
34	4.75354	321.07	12.197	12773.95	0.0059555	0.06085	1.250	0.00669	1.24851	1.4137
36	4.69561	318.93	11.841	11824.15	0.0063305	0.06237	1.141	0.00658	1.24525	1.3293
38	4.63480	316.30	11.520	10930.53	0.0067245	0.06409	1.049	0.00650	1.24184	1.2533
40	4.57099	313.13	11.225	10078.42	0.0071459	0.06528	0.971	0.00638	1.23827	1.1976
42	4.50409	308.91	10.953	9243.92	0.0076139	0.06605	0.903	0.00623	1.23453	1.1572
44	4.43370	303.78	10.687	8423.17	0.0081411	0.06643	0.843	0.00606	1.23060	1.1296
46	4.35951	297.69	10.428	7618.92	0.0087396	0.06647	0.790	0.00586	1.22647	1.1125
48	4.28114	290.95	10.168	6844.34	0.0094109	0.06621	0.741	0.00565	1.22212	1.1038
50	4.19806	283.54	9.898	6096.15	0.0101772	0.06568	0.697	0.00542	1.21751	1.1029
52	4.10997	275.91	9.622	5399.50	0.0110182	0.06492	0.657	0.00520	1.21264	1.1069
54	4.01661	267.55	9.342	4734.89	0.0119921	0.06396	0.619	0.00496	1.20750	1.1175
56	3.91707	258.89	9.046	4114.31	0.0131085	0.06254	0.583	0.00470	1.20203	1.1394
58	3.81073	249.33	8.733	3519.80	0.0144712	0.06097	0.550	0.00443	1.19620	1.1708
60	3.69634	239.53	8.405	2978.23	0.0160490	0.05925	0.517	0.00417	1.18996	1.2083
62	3.57307	229.22	8.061	2479.24	0.0179696	0.05740	0.486	0.00390	1.18325	1.2563
64	3.43973	219.09	7.704	2043.83	0.0201596	0.05541	0.456	0.00365	1.17602	1.3095
66	3.29559	209.11	7.334	1665.50	0.0226991	0.05345	0.427	0.00342	1.16825	1.3667
68	3.14023	199.27	6.961	1340.27	0.0256700	0.05182	0.400	0.00323	1.15990	1.4208
70	2.97406	190.61	6.597	1082.71	0.0286981	0.05009	0.374	0.00308	1.15102	1.4689
75	2.53065	175.11	5.780	670.38	0.0351413	0.04563	0.317	0.00293	1.12756	1.5415
80	2.11474	171.61	5.223	506.79	0.0354156	0.04152	0.279	0.00323	1.10585	1.4718
85	1.79235	178.35	4.867	467.82	0.0303596	0.03847	0.258	0.00396	1.08922	1.3052
90	1.56079	190.06	4.649	467.78	0.0251429	0.03667	0.246	0.00492	1.07739	1.1535
95	1.39109	204.30	4.484	478.20	0.0211065	0.03576	0.240	0.00596	1.06877	1.0415
100	1.26143	219.71	4.346	489.34	0.0181588	0.03542	0.238	0.00704	1.06223	0.9633
105	1.15860	235.69	4.231	499.61	0.0159556	0.03544	0.238	0.00813	1.05705	0.9077
110	1.07454	252.33	4.120	508.69	0.0142506	0.03580	0.239	0.00926	1.05264	0.8649
115	1.00411	269.55	4.010	516.30	0.0129071	0.03637	0.242	0.01041	1.04931	0.8329
120	0.94407	287.49	3.900	523.10	0.0118102	0.03705	0.245	0.01156	1.04632	0.8092
125	0.89138	306.26	3.793	529.11	0.0109011	0.03781	0.249	0.01270	1.04369	0.7920
130	0.84575	325.56	3.681	533.98	0.0101360	0.03864	0.253	0.01384	1.04142	0.7791
140	0.76912	366.57	3.457	541.72	0.0089181	0.04010	0.263	0.01595	1.03762	0.7707
150	0.70691	410.96	3.239	547.46	0.0079896	0.04260	0.272	0.01835	1.03454	0.7555
160	0.65511	458.68	3.034	551.80	0.0072554	0.04546	0.282	0.02085	1.03198	0.7436
170	0.61114	509.43	2.847	555.12	0.0066583	0.04836	0.292	0.02333	1.02981	0.7378
180	0.57324	562.71	2.681	557.68	0.0061617	0.05352	0.313	0.02693	1.02794	0.7308
190	0.54027	619.76	2.520	559.45	0.0057324	0.05802	0.330	0.03023	1.02632	0.7284
200	0.51112	676.25	2.397	560.94	0.0053711	0.06222	0.345	0.03351	1.02489	0.7257
220	0.46189	789.99	2.206	563.00	0.0047805	0.06967	0.370	0.03994	1.02247	0.7216
240	0.42180	900.66	2.077	564.23	0.0043160	0.07586	0.389	0.04627	1.02051	0.7184
260	0.38843	1004.89	1.995	564.92	0.0039397	0.08086	0.406	0.05258	1.01887	0.7156
280	0.36015	1100.56	1.949	565.27	0.0036277	0.08475	0.420	0.05894	1.01749	0.7129
300	0.33585	1187.74	1.928	565.39	0.0033642	0.08776	0.433	0.06539	1.01630	0.7103
320	0.31472	1266.89	1.926	565.36	0.0031384	0.09003	0.445	0.07195	1.01527	0.7077
340	0.29617	1339.49	1.936	565.22	0.0029424	0.09180	0.456	0.07864	1.01437	0.7053
360	0.27973	1406.93	1.954	565.02	0.0027704	0.09319	0.467	0.08546	1.01357	0.7030
380	0.26507	1470.45	1.977	564.76	0.0026183	0.09433	0.477	0.09243	1.01285	0.7009
400	0.25189	1531.79	2.001	564.48	0.0024826	0.09536	0.487	0.09955	1.01221	0.6990
420	0.23999	1591.62	2.027	564.18	0.0023607	0.09632	0.497	0.10682	1.01163	0.6973
440	0.22917	1650.86	2.051	563.87	0.0022506	0.09727	0.506	0.11424	1.01110	0.6958
460	0.21931	1710.30	2.073	563.56	0.0021507	0.09826	0.515	0.12181	1.01062	0.6944
480	0.21027	1770.03	2.093	563.24	0.0020594	0.09929	0.524	0.12954	1.01019	0.6932
500	0.20196	1830.55	2.111	562.93	0.0019758	0.10038	0.534	0.13743	1.00978	0.6922
520	0.19428	1891.89	2.126	562.63	0.0018989	0.10153	0.543	0.14547	1.00941	0.6912
540	0.18715	1954.76	2.138	562.50	0.0018266	0.10273	0.552	0.15373	1.00906	0.6902
560	0.18056	2018.05	2.148	562.19	0.0017609	0.10400	0.561	0.16209	1.00874	0.6895
580	0.17442	2081.94	2.157	561.90	0.0016999	0.10532	0.569	0.17062	1.00844	0.6889
600	0.16868	2146.69	2.163	561.61	0.0016431	0.10669	0.578	0.17931	1.00816	0.6884
650	0.15589	2311.44	2.175	560.93	0.0015166	0.11024	0.600	0.20175	1.00754	0.6873
700	0.14490	2479.55	2.180	560.31	0.0014084	0.11397	0.622	0.22523	1.00701	0.6865
800	0.12702	2823.23	2.181	559.24	0.0012331	0.12173	0.666	0.27528	1.00614	0.6854
1000	0.10191	3520.80	2.171	557.61	0.0009880	0.13747	0.751	0.38780	1.00493	0.6843
2000	0.05129	7311.78	2.028	553.96	0.0004965	0.27727	1.147	1.48906	1.00248	0.5406
3000	0.03427	11786.99	1.829	552.66	0.0003317	0.39318	1.499	2.93381	1.00166	0.5366
4000	0.02572	17216.44	1.624	551.72	0.0002492	0.53689	1.821	4.86450	1.00124	0.5238
5000	0.02048	27566.84	1.216	548.21	0.0002007	0.91202	2.127	8.05212	1.00099	0.4644

* TWO-PHASE BOUNDRY

600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 27.220	0.20221	3299.15	76.8112	-131.993	-109.526	1.20979	1.160	1.528	4488
28	0.20297	3266.13	77.2086	-130.866	-108.315	1.25368	1.181	1.571	4486
30	0.20500	3089.37	77.6336	-127.835	-105.059	1.36596	1.230	1.685	4429
32	0.20719	2914.11	77.3944	-124.599	-101.579	1.47821	1.273	1.796	4364
34	0.20956	2759.47	76.6013	-121.164	-97.881	1.59028	1.311	1.899	4303
36	0.21208	2587.94	75.4233	-117.544	-93.982	1.70171	1.345	2.004	4227
38	0.21479	2427.12	74.1042	-113.735	-89.871	1.81281	1.375	2.110	4153
40	0.21771	2274.84	72.6547	-109.735	-85.547	1.92369	1.403	2.217	4082
42	0.22085	2123.72	71.0650	-105.542	-81.005	2.03449	1.426	2.328	4008
44	0.22424	1973.46	69.3060	-101.151	-76.237	2.14539	1.446	2.444	3930
46	0.22792	1822.90	67.3835	-96.553	-71.230	2.25666	1.464	2.566	3847
48	0.23193	1675.80	65.2788	-91.740	-65.972	2.36855	1.479	2.695	3761
50	0.23632	1533.13	62.9972	-86.700	-60.444	2.48136	1.493	2.832	3670
52	0.24114	1392.24	60.5473	-81.426	-54.635	2.59527	1.505	2.979	3573
54	0.24645	1260.17	57.9448	-75.909	-48.527	2.71051	1.514	3.132	3475
56	0.25233	1130.93	55.2217	-70.135	-42.100	2.82737	1.523	3.303	3371
58	0.25891	1010.84	52.3678	-64.079	-35.313	2.94645	1.531	3.484	3265
60	0.26629	891.11	49.3978	-57.727	-28.141	3.06800	1.538	3.696	3149
62	0.27466	780.51	46.3280	-51.049	-20.534	3.19271	1.546	3.928	3031
64	0.28424	679.73	43.1714	-44.019	-12.440	3.32118	1.553	4.178	2911
66	0.29524	588.95	39.9695	-36.627	-3.824	3.45372	1.561	4.451	2789
68	0.30796	509.55	36.7668	-28.861	5.355	3.59073	1.569	4.737	2670
70	0.32271	441.73	33.6091	-20.732	15.123	3.73229	1.576	5.028	2555
75	0.37019	323.51	26.3091	0.834	41.963	4.10241	1.596	5.668	2307
80	0.43310	277.51	20.4962	22.774	70.893	4.47580	1.614	5.820	2153
85	0.50563	280.64	16.3203	42.812	98.990	4.81643	1.627	5.446	2086
90	0.57964	309.85	13.4646	60.454	124.855	5.11226	1.625	4.901	2081
95	0.65114	348.67	11.4899	75.833	148.178	5.36458	1.624	4.448	2104
100	0.71940	390.61	10.0611	89.717	169.645	5.58492	1.627	4.110	2138
105	0.78466	432.73	8.9845	102.371	189.549	5.77919	1.631	3.864	2179
110	0.84738	474.18	8.1408	114.250	208.397	5.95458	1.642	3.686	2221
115	0.90799	515.08	7.4608	125.598	226.480	6.11536	1.659	3.556	2262
120	0.96686	554.80	6.8989	136.589	244.011	6.26460	1.682	3.464	2301
125	1.02429	593.89	6.4254	147.350	261.153	6.40457	1.709	3.398	2338
130	1.08123	632.69	6.0161	158.006	278.134	6.53776	1.742	3.352	2375
140	1.19046	706.42	5.3554	179.148	311.412	6.78439	1.820	3.312	2440
150	1.29642	777.30	4.8375	200.496	344.533	7.01289	1.913	3.318	2499
160	1.39987	845.87	4.4197	222.360	377.891	7.22817	2.017	3.357	2554
170	1.50135	912.57	4.0744	244.944	411.750	7.43342	2.126	3.417	2607
180	1.60126	977.73	3.7833	268.368	446.274	7.63073	2.238	3.489	2657
190	1.69941	1040.84	3.5265	292.989	481.800	7.82256	2.358	3.572	2703
200	1.79676	1103.32	3.3103	318.267	517.893	8.00756	2.462	3.649	2753
220	1.98885	1225.61	2.9531	371.340	592.309	8.36210	2.644	3.790	2853
240	2.17827	1345.11	2.6694	427.239	669.253	8.69659	2.782	3.899	2955
260	2.36569	1462.49	2.4378	485.130	747.967	9.01175	2.874	3.968	3059
280	2.55155	1578.21	2.2447	544.248	827.735	9.30722	2.923	4.001	3163
300	2.73619	1592.61	2.0812	603.792	907.793	9.58351	2.939	4.003	3268
320	2.91985	1805.94	1.9406	663.256	987.662	9.84135	2.929	3.982	3373
340	3.10270	1918.39	1.8183	722.237	1066.959	10.08136	2.902	3.947	3477
360	3.28489	2030.12	1.7110	780.486	1145.449	10.30576	2.865	3.903	3579
380	3.46652	2141.24	1.6159	837.871	1223.014	10.51546	2.823	3.854	3680
400	3.64767	2251.84	1.5311	894.344	1299.614	10.71200	2.781	3.807	3779
420	3.82843	2361.99	1.4550	949.921	1375.274	10.89656	2.739	3.761	3876
440	4.00884	2471.76	1.3861	1004.664	1450.062	11.07055	2.701	3.719	3971
460	4.18895	2581.20	1.3237	1058.639	1524.047	11.23501	2.666	3.681	4063
480	4.36880	2690.35	1.2667	1111.938	1597.328	11.39074	2.636	3.648	4153
500	4.54843	2799.25	1.2145	1164.642	1669.990	11.53920	2.610	3.619	4241
520	4.72785	2907.93	1.1664	1216.837	1742.119	11.68078	2.588	3.595	4326
540	4.90791	3017.96	1.1217	1268.874	1814.161	11.81662	2.568	3.572	4410
560	5.08689	3126.12	1.0807	1320.180	1885.352	11.94558	2.553	3.555	4491
580	5.26573	3234.13	1.0426	1371.250	1956.291	12.06991	2.540	3.541	4570
600	5.44445	3342.01	1.0072	1422.104	2027.003	12.18983	2.529	3.529	4648
650	5.89080	3611.20	0.9284	1548.302	2202.793	12.47153	2.510	3.507	4835
700	6.33666	3879.82	0.8612	1673.755	2377.781	12.73114	2.498	3.493	5013
800	7.22728	4415.87	0.7525	1923.328	2726.306	13.19685	2.490	3.482	5349
1000	9.00592	5485.07	0.6010	2421.501	3422.092	13.97265	2.490	3.479	5959
2000	17.88415	10814.74	0.3001	4969.389	6956.385	16.41484	2.644	3.631	8294
3000	26.75762	16139.16	0.2000	7755.485	10728.357	17.93077	2.924	3.910	9999
4000	35.64764	21462.75	0.1500	10852.397	14812.984	19.29911	3.286	4.284	11386
5000	44.76593	26786.10	0.1200	14615.638	19589.300	21.19503	4.373	5.480	12467

* TWO-PHASE BOUNDRY

600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.220	4.94526	324.63	13.393	16315.14	0.0047080	0.05104	1.885	0.00675	1.25933	2.0314
28	4.92678	327.35	13.272	16091.51	0.0047981	0.05295	1.787	0.00684	1.25828	1.9077
30	4.87804	327.11	12.942	15070.04	0.0051515	0.05674	1.576	0.00690	1.25553	1.6854
32	4.82645	326.34	12.598	14064.82	0.0055027	0.05943	1.409	0.00686	1.25262	1.5333
34	4.77200	326.44	12.244	13168.17	0.0058172	0.06124	1.274	0.00676	1.24955	1.4222
36	4.71525	324.25	11.892	12202.79	0.0061808	0.06281	1.163	0.00665	1.24636	1.3355
38	4.65570	321.73	11.573	11299.96	0.0065579	0.06457	1.069	0.00657	1.24301	1.2573
40	4.59333	318.87	11.278	10449.08	0.0069532	0.06582	0.989	0.00646	1.23952	1.1994
42	4.52802	314.98	11.008	9616.23	0.0073901	0.06664	0.920	0.00632	1.23586	1.1569
44	4.45952	310.29	10.745	8800.68	0.0078751	0.06708	0.859	0.00616	1.23204	1.1270
46	4.38752	304.60	10.490	7997.99	0.0084251	0.06718	0.805	0.00597	1.22803	1.1077
48	4.31157	298.33	10.233	7225.48	0.0090345	0.06698	0.757	0.00576	1.22381	1.0965
50	4.23158	291.62	9.969	6487.56	0.0097105	0.06652	0.713	0.00555	1.21937	1.0921
52	4.14703	284.09	9.702	5773.66	0.0104868	0.06584	0.672	0.00533	1.21469	1.0945
54	4.05764	276.40	9.432	5113.32	0.0113321	0.06496	0.634	0.00511	1.20976	1.1008
56	3.96302	268.09	9.150	4481.89	0.0123211	0.06363	0.599	0.00486	1.20455	1.1191
58	3.86235	259.77	8.856	3904.22	0.0134131	0.06215	0.565	0.00462	1.19903	1.1411
60	3.75529	250.37	8.550	3346.39	0.0147615	0.06055	0.534	0.00436	1.19317	1.1727
62	3.64084	240.92	8.230	2841.72	0.0163028	0.05884	0.503	0.00411	1.18693	1.2097
64	3.51821	231.46	7.900	2391.44	0.0180525	0.05701	0.474	0.00388	1.18027	1.2515
66	3.38709	222.13	7.560	1994.84	0.0200365	0.05508	0.446	0.00365	1.17318	1.2987
68	3.24716	213.16	7.218	1654.58	0.0222212	0.05338	0.420	0.00347	1.16564	1.3411
70	3.09873	204.77	6.883	1368.80	0.0245537	0.05179	0.395	0.00332	1.15768	1.3788
75	2.70133	188.28	6.102	873.90	0.0301054	0.04768	0.339	0.00311	1.13655	1.4517
80	2.30894	181.95	5.500	640.75	0.0319881	0.04379	0.299	0.00326	1.11595	1.4293
85	1.97771	185.21	5.072	555.03	0.0294045	0.04066	0.273	0.00378	1.09876	1.3178
90	1.72520	194.58	4.803	534.55	0.0251886	0.03858	0.259	0.00456	1.08578	1.1840
95	1.53577	207.28	4.608	535.48	0.0214572	0.03738	0.251	0.00547	1.07612	1.0742
100	1.39004	221.81	4.450	542.97	0.0185299	0.03682	0.247	0.00644	1.06872	0.9916
105	1.27444	237.20	4.322	551.49	0.0162912	0.03666	0.245	0.00744	1.06288	0.9312
110	1.18011	253.39	4.201	559.58	0.0145480	0.03689	0.246	0.00848	1.05813	0.8844
115	1.10133	270.40	4.083	567.27	0.0131520	0.03736	0.248	0.00954	1.05418	0.8486
120	1.03427	288.09	3.967	573.82	0.0120228	0.03796	0.250	0.01060	1.05082	0.8223
125	0.97628	306.60	3.850	579.81	0.0110820	0.03865	0.254	0.01165	1.04792	0.8027
130	0.92487	326.04	3.734	585.16	0.0102811	0.03941	0.257	0.01271	1.04536	0.7881
140	0.84001	366.97	3.502	593.40	0.0090249	0.04076	0.266	0.01465	1.04114	0.7778
150	0.77136	411.30	3.278	599.57	0.0080682	0.04320	0.275	0.01688	1.03773	0.7607
160	0.71435	459.00	3.068	604.25	0.0073143	0.04602	0.285	0.01919	1.03491	0.7476
170	0.66607	509.77	2.877	607.83	0.0067031	0.04888	0.294	0.02148	1.03252	0.7408
180	0.62451	563.09	2.707	610.60	0.0061961	0.05377	0.315	0.02468	1.03047	0.7347
190	0.58844	620.40	2.541	612.47	0.0057579	0.05823	0.331	0.02770	1.02869	0.7319
200	0.55656	676.98	2.416	614.06	0.0053908	0.06239	0.346	0.03072	1.02712	0.7288
220	0.50280	790.94	2.222	616.24	0.0047922	0.06979	0.370	0.03662	1.02448	0.7242
240	0.45908	901.88	2.090	617.51	0.0043228	0.07596	0.390	0.04244	1.02233	0.7207
260	0.42271	1006.40	2.007	618.21	0.0039433	0.08094	0.406	0.04825	1.02055	0.7175
280	0.39192	1102.34	1.960	618.53	0.0036292	0.08483	0.421	0.05410	1.01904	0.7145
300	0.36547	1189.78	1.938	618.60	0.0033643	0.08783	0.434	0.06004	1.01775	0.7117
320	0.34248	1269.18	1.935	618.50	0.0031375	0.09010	0.446	0.06607	1.01663	0.7090
340	0.32230	1341.98	1.944	618.30	0.0029409	0.09187	0.457	0.07222	1.01564	0.7064
360	0.30442	1409.61	1.962	618.02	0.0027685	0.09326	0.467	0.07850	1.01477	0.7040
380	0.28847	1473.29	1.984	617.69	0.0026161	0.09441	0.477	0.08491	1.01399	0.7018
400	0.27415	1534.76	2.009	617.33	0.0024802	0.09544	0.487	0.09145	1.01329	0.6997
420	0.26120	1594.72	2.034	616.96	0.0023583	0.09640	0.497	0.09814	1.01266	0.6979
440	0.24945	1654.06	2.058	616.58	0.0022481	0.09736	0.506	0.10496	1.01209	0.6963
460	0.23872	1713.60	2.079	616.19	0.0021481	0.09835	0.516	0.11192	1.01157	0.6949
480	0.22890	1773.42	2.099	615.81	0.0020569	0.09938	0.525	0.11902	1.01109	0.6936
500	0.21986	1834.01	2.117	615.43	0.0019734	0.10047	0.534	0.12627	1.01065	0.6925
520	0.21151	1895.43	2.131	615.06	0.0018965	0.10163	0.543	0.13367	1.01025	0.6916
540	0.20375	1958.48	2.143	614.92	0.0018241	0.10283	0.552	0.14126	1.00987	0.6905
560	0.19658	2021.82	2.153	614.54	0.0017585	0.10411	0.561	0.14895	1.00952	0.6898
580	0.18991	2085.76	2.162	614.19	0.0016976	0.10543	0.570	0.15679	1.00920	0.6891
600	0.18367	2150.55	2.168	613.84	0.0016408	0.10679	0.579	0.16477	1.00889	0.6886
650	0.16976	2315.39	2.179	613.02	0.0015145	0.11036	0.601	0.18539	1.00822	0.6874
700	0.15781	2483.58	2.184	612.28	0.0014065	0.11409	0.623	0.20696	1.00764	0.6866
800	0.13836	2827.38	2.184	611.00	0.0012315	0.12187	0.666	0.25295	1.00669	0.6855
1000	0.11104	3525.11	2.174	609.05	0.0009869	0.13764	0.752	0.35632	1.00537	0.6843
2000	0.05592	7316.52	2.029	604.71	0.0004962	0.27727	1.149	1.36584	1.00270	0.5414
3000	0.03737	11791.55	1.830	603.16	0.0003316	0.39315	1.501	2.69041	1.00180	0.5375
4000	0.02805	17195.78	1.627	602.08	0.0002491	0.53554	1.824	4.45621	1.00135	0.5252
5000	0.02234	27325.70	1.229	598.36	0.0002005	0.89949	2.131	7.34780	1.00108	0.4673

* TWO-PHASE BOUNDRY

650 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 27.408	0.20178	3350.20	76.9849	-131.893	-107.605	1.21164	1.163	1.528	4517
28	0.20235	3328.49	77.3028	-131.044	-106.689	1.24471	1.179	1.560	4517
30	0.20433	3155.76	77.8423	-128.048	-103.455	1.35624	1.228	1.674	4463
32	0.20646	2981.03	77.7400	-124.849	-99.998	1.46776	1.272	1.784	4401
34	0.20877	2818.87	77.0564	-121.452	-96.323	1.57915	1.310	1.888	4338
36	0.21124	2666.80	75.9276	-117.870	-92.445	1.68997	1.344	1.987	4274
38	0.21387	2504.62	74.6587	-114.112	-88.370	1.80010	1.374	2.091	4201
40	0.21669	2349.39	73.2519	-110.167	-84.085	1.90997	1.402	2.196	4130
42	0.21973	2198.96	71.7070	-106.034	-79.587	2.01969	1.425	2.303	4058
44	0.22300	2049.97	70.0025	-101.711	-74.870	2.12940	1.446	2.414	3982
46	0.22654	1901.09	68.1416	-97.191	-69.924	2.23931	1.464	2.531	3903
48	0.23037	1749.41	66.1071	-92.469	-64.741	2.34960	1.479	2.658	3816
50	0.23455	1508.38	63.9035	-87.532	-59.301	2.46063	1.494	2.787	3729
52	0.23913	1472.96	61.5383	-82.375	-53.593	2.57256	1.505	2.921	3639
54	0.24413	1341.29	59.0366	-76.995	-47.610	2.68544	1.515	3.064	3545
56	0.24965	1214.09	56.4070	-71.377	-41.328	2.79966	1.524	3.218	3446
58	0.25576	1093.50	53.6831	-65.507	-34.723	2.91554	1.532	3.383	3345
60	0.26255	975.80	50.8580	-59.378	-27.777	3.03327	1.539	3.569	3238
62	0.27016	866.30	47.9317	-52.963	-20.446	3.15346	1.546	3.768	3128
64	0.27875	765.52	44.9411	-46.247	-12.696	3.27646	1.553	3.982	3016
66	0.28849	673.45	41.8982	-39.221	-4.498	3.40259	1.560	4.211	2902
68	0.29956	590.91	38.8529	-31.886	4.170	3.53196	1.566	4.453	2790
70	0.31219	517.33	35.8453	-24.250	13.326	3.66465	1.571	4.709	2680
75	0.35186	388.33	28.7759	-4.049	38.302	4.00907	1.587	5.253	2440
80	0.40390	323.62	22.8888	16.785	65.400	4.35877	1.604	5.516	2271
85	0.46557	309.24	18.4258	36.514	92.552	4.68788	1.623	5.369	2177
90	0.53117	326.12	15.2111	54.503	118.436	4.98390	1.627	4.963	2147
95	0.59619	358.73	12.9378	70.407	142.166	5.24061	1.628	4.545	2154
100	0.65912	397.15	11.2835	84.798	164.132	5.46605	1.631	4.210	2179
105	0.71971	437.44	10.0362	97.894	184.520	5.66505	1.636	3.955	2214
110	0.77810	477.85	9.0649	110.143	203.797	5.84444	1.646	3.767	2251
115	0.83461	518.20	8.2824	121.804	222.260	6.00860	1.663	3.626	2288
120	0.88954	557.43	7.6402	133.060	240.128	6.16071	1.685	3.526	2325
125	0.94310	595.98	7.1014	144.049	257.563	6.30307	1.713	3.455	2360
130	0.99552	634.48	6.6412	154.876	274.699	6.43750	1.745	3.404	2394
140	1.09812	709.49	5.8934	176.380	308.552	6.68838	1.823	3.354	2459
150	1.19684	780.97	5.3105	197.993	342.047	6.91946	1.916	3.352	2516
160	1.29313	850.16	4.8434	220.073	375.717	7.13675	2.019	3.386	2570
170	1.38751	917.44	4.4587	242.836	409.840	7.34360	2.128	3.441	2622
180	1.48037	983.15	4.1354	266.410	444.591	7.54221	2.239	3.510	2672
190	1.57148	1046.66	3.8500	291.198	480.345	7.73529	2.361	3.591	2716
200	1.66182	1109.59	3.6110	316.594	516.615	7.92119	2.464	3.666	2765
220	1.83998	1232.68	3.2173	369.862	591.327	8.27715	2.646	3.804	2865
240	2.01554	1352.87	2.9053	425.918	668.513	8.61270	2.783	3.910	2967
260	2.18914	1470.84	2.6513	483.937	747.427	8.92866	2.875	3.978	3070
280	2.36121	1587.08	2.4399	543.163	827.364	9.22475	2.924	4.008	3175
300	2.53209	1701.94	2.2611	602.799	907.567	9.50155	2.940	4.010	3279
320	2.70200	1815.67	2.1075	662.342	987.562	9.75979	2.930	3.988	3384
340	2.87113	1928.48	1.9742	721.393	1066.969	10.00014	2.903	3.952	3487
360	3.03960	2040.53	1.8571	779.703	1145.557	10.22482	2.866	3.907	3590
380	3.20752	2151.93	1.7536	837.143	1223.208	10.43475	2.824	3.858	3691
400	3.37498	2262.79	1.6612	893.664	1299.886	10.63149	2.781	3.810	3790
420	3.54205	2373.17	1.5783	949.286	1375.615	10.81622	2.740	3.764	3886
440	3.70878	2483.15	1.5035	1004.069	1450.466	10.99036	2.701	3.722	3981
460	3.87521	2592.78	1.4355	1058.080	1524.510	11.15495	2.667	3.684	4073
480	4.04138	2702.11	1.3736	1111.412	1597.843	11.31078	2.637	3.650	4163
500	4.20733	2811.16	1.3168	1164.148	1670.553	11.45934	2.610	3.621	4251
520	4.37309	2919.98	1.2647	1216.371	1742.726	11.60101	2.588	3.597	4336
540	4.53955	3030.38	1.2160	1268.455	1814.845	11.73698	2.569	3.574	4420
560	4.70486	3138.65	1.1715	1319.784	1886.072	11.86601	2.553	3.557	4501
580	4.87003	3246.76	1.1302	1370.876	1957.045	11.99039	2.540	3.542	4580
600	5.03509	3354.72	1.0917	1421.752	2027.787	12.11037	2.529	3.530	4657
650	5.44730	3624.11	1.0062	1547.994	2203.644	12.39217	2.510	3.508	4844
700	5.85900	3892.89	0.9333	1673.484	2378.688	12.65187	2.499	3.494	5022
800	6.68134	4429.16	0.8154	1923.114	2727.296	13.11769	2.490	3.483	5357
1000	8.32345	5498.64	0.6512	2421.358	3423.188	13.89361	2.490	3.479	5966
2000	16.51915	10828.67	0.3251	4969.356	6957.641	16.33592	2.644	3.631	8299
3000	24.71013	16153.14	0.2167	7755.445	10729.616	17.85185	2.924	3.910	10004
4000	32.91571	21476.74	0.1625	10850.573	14812.387	19.21969	3.281	4.278	11391
5000	41.32380	26800.09	0.1300	14594.077	19567.908	21.11113	4.332	5.435	12476

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

650 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)/V_P$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.408	4.95583	329.61	13.359	16603.04	0.0046368	0.05172	1.899	0.00683	1.25993	2.0202
28	4.94204	331.95	13.269	16449.52	0.0046994	0.05316	1.824	0.00690	1.25915	1.9264
30	4.89415	332.06	12.949	15444.75	0.0050400	0.05701	1.608	0.00696	1.25644	1.6993
32	4.84345	331.32	12.620	14438.48	0.0053842	0.05975	1.437	0.00692	1.25358	1.5443
34	4.78989	330.85	12.279	13502.07	0.0057070	0.06161	1.298	0.00681	1.25056	1.4322
36	4.73394	330.40	11.933	12624.47	0.0060143	0.06322	1.184	0.00672	1.24741	1.3396
38	4.67579	327.93	11.618	11711.09	0.0063750	0.06504	1.089	0.00665	1.24414	1.2597
40	4.61486	325.01	11.326	10842.11	0.0067562	0.06635	1.007	0.00655	1.24072	1.2003
42	4.55110	321.39	11.058	10007.67	0.0071652	0.06721	0.937	0.00641	1.23715	1.1560
44	4.48431	317.04	10.798	9192.71	0.0076150	0.06771	0.876	0.00625	1.23342	1.1241
46	4.41429	311.74	10.547	8391.95	0.0081199	0.06786	0.821	0.00607	1.22952	1.1027
48	4.34082	305.29	10.295	7593.87	0.0087053	0.06772	0.772	0.00587	1.22543	1.0910
50	4.26342	299.04	10.036	6857.18	0.0093192	0.06732	0.728	0.00567	1.22113	1.0843
52	4.18188	292.38	9.775	6159.73	0.0099904	0.06671	0.687	0.00546	1.21662	1.0825
54	4.09612	285.10	9.514	5494.09	0.0107455	0.06590	0.649	0.00525	1.21188	1.0860
56	4.00558	277.40	9.241	4863.12	0.0115989	0.06465	0.614	0.00502	1.20689	1.0996
58	3.90988	269.47	8.963	4275.47	0.0125561	0.06326	0.581	0.00478	1.20163	1.1178
60	3.80881	260.82	8.676	3716.63	0.0136839	0.06176	0.549	0.00454	1.19610	1.1427
62	3.70147	252.10	8.375	3206.59	0.0149479	0.06016	0.519	0.00431	1.19024	1.1713
64	3.58742	243.34	8.068	2746.23	0.0163647	0.05846	0.491	0.00409	1.18403	1.2040
66	3.46632	234.61	7.751	2334.37	0.0179484	0.05667	0.464	0.00388	1.17746	1.2406
68	3.33818	226.05	7.433	1972.57	0.0196967	0.05481	0.438	0.00369	1.17054	1.2806
70	3.20319	217.70	7.121	1657.12	0.0216310	0.05334	0.413	0.00354	1.16328	1.3138
75	2.84202	201.48	6.380	1103.65	0.0260733	0.04949	0.359	0.00331	1.14400	1.3718
80	2.47584	193.10	5.763	801.24	0.0285667	0.04580	0.317	0.00335	1.12468	1.3752
85	2.14789	193.53	5.285	664.21	0.0277408	0.04270	0.289	0.00370	1.10757	1.3077
90	1.88263	200.31	4.967	613.97	0.0247752	0.04044	0.272	0.00433	1.09386	1.2005
95	1.67731	211.38	4.739	601.71	0.0215017	0.03901	0.262	0.00512	1.08333	1.0979
100	1.51717	224.82	4.559	602.54	0.0187266	0.03824	0.256	0.00599	1.07517	1.0155
105	1.38945	239.50	4.416	607.80	0.0165123	0.03790	0.254	0.00690	1.06869	0.9523
110	1.28519	255.20	4.284	614.13	0.0147606	0.03800	0.253	0.00785	1.06342	0.9024
115	1.19816	271.85	4.157	620.88	0.0133397	0.03836	0.254	0.00883	1.05904	0.8636
120	1.12417	289.22	4.033	626.65	0.0121922	0.03886	0.256	0.00981	1.05532	0.8350
125	1.06033	307.42	3.911	631.93	0.0112376	0.03950	0.258	0.01078	1.05212	0.8136
130	1.00450	326.63	3.789	637.34	0.0104202	0.04021	0.262	0.01176	1.04933	0.7975
140	0.91065	367.67	3.549	646.09	0.0091215	0.04143	0.269	0.01357	1.04465	0.7852
150	0.83554	411.94	3.318	652.53	0.0081382	0.04381	0.278	0.01564	1.04091	0.7660
160	0.77332	459.59	3.102	657.44	0.0073670	0.04659	0.287	0.01779	1.03783	0.7516
170	0.72071	510.35	2.907	661.21	0.0067432	0.04941	0.297	0.01992	1.03522	0.7439
180	0.67551	563.69	2.734	664.13	0.0062269	0.05404	0.316	0.02279	1.03299	0.7384
190	0.63634	621.27	2.563	666.04	0.0057805	0.05845	0.332	0.02558	1.03105	0.7354
200	0.60175	677.92	2.435	667.70	0.0054082	0.06257	0.347	0.02836	1.02935	0.7320
220	0.54348	792.08	2.237	669.94	0.0048023	0.06993	0.371	0.03383	1.02648	0.7268
240	0.49614	903.26	2.104	671.22	0.0043284	0.07607	0.391	0.03922	1.02415	0.7229
260	0.45680	1008.04	2.019	671.86	0.0039460	0.08103	0.407	0.04459	1.02222	0.7194
280	0.42351	1104.25	1.970	672.15	0.0036301	0.08491	0.421	0.05002	1.02059	0.7162
300	0.39493	1191.93	1.948	672.15	0.0033639	0.08790	0.434	0.05551	1.01919	0.7131
320	0.37010	1271.55	1.944	671.97	0.0031363	0.09018	0.446	0.06110	1.01798	0.7102
340	0.34830	1344.55	1.952	671.68	0.0029391	0.09194	0.457	0.06680	1.01691	0.7075
360	0.32899	1412.35	1.970	671.32	0.0027664	0.09334	0.468	0.07261	1.01597	0.7049
380	0.31177	1476.19	1.992	670.90	0.0026138	0.09449	0.478	0.07855	1.01513	0.7026
400	0.29630	1537.79	2.016	670.46	0.0024777	0.09552	0.488	0.08461	1.01437	0.7005
420	0.28232	1597.86	2.040	670.00	0.0023557	0.09649	0.497	0.09080	1.01369	0.6986
440	0.26963	1657.31	2.064	669.53	0.0022456	0.09745	0.507	0.09711	1.01307	0.6969
460	0.25805	1716.94	2.086	669.07	0.0021456	0.09844	0.516	0.10355	1.01251	0.6954
480	0.24744	1776.83	2.105	668.61	0.0020544	0.09947	0.525	0.11013	1.01199	0.6941
500	0.23768	1837.50	2.122	668.16	0.0019709	0.10057	0.535	0.11684	1.01152	0.6929
520	0.22867	1898.99	2.137	667.72	0.0018940	0.10172	0.544	0.12368	1.01108	0.6919
540	0.22029	1962.23	2.149	667.55	0.0018216	0.10293	0.553	0.13072	1.01067	0.6908
560	0.21255	2025.62	2.159	667.11	0.0017561	0.10421	0.562	0.13783	1.01030	0.6901
580	0.20534	2089.60	2.167	666.68	0.0016952	0.10553	0.570	0.14509	1.00995	0.6894
600	0.19861	2154.43	2.173	666.27	0.0016385	0.10690	0.579	0.15247	1.00962	0.6888
650	0.18358	2319.35	2.184	665.30	0.0015124	0.11047	0.601	0.17155	1.00889	0.6876
700	0.17058	2487.62	2.188	664.43	0.0014047	0.11422	0.623	0.19151	1.00826	0.6867
800	0.14967	2831.54	2.188	662.91	0.0012300	0.12200	0.667	0.23406	1.00724	0.6855
1000	0.12014	3529.43	2.177	660.62	0.0009858	0.13781	0.753	0.32968	1.00581	0.6843
2000	0.06054	7321.25	2.031	655.52	0.0004959	0.27727	1.150	1.26157	1.00292	0.5422
3000	0.04047	11796.16	1.831	653.71	0.0003315	0.39312	1.504	2.48447	1.00195	0.5384
4000	0.03038	17178.20	1.630	652.48	0.0002491	0.53435	1.827	4.11119	1.00147	0.5266
5000	0.02420	27113.57	1.240	648.54	0.0002004	0.88843	2.134	6.75513	1.00117	0.4700

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

700 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 27.594	0.20136	3400.65	77.1668	-131.789	-105.689	1.21348	1.166	1.529	4545
28	0.20174	3389.62	77.3950	-131.213	-105.063	1.23597	1.177	1.550	4547
30	0.20368	3215.94	78.0403	-128.247	-101.845	1.34694	1.227	1.663	4494
32	0.20577	3046.22	78.0076	-125.083	-98.412	1.45771	1.271	1.772	4436
34	0.20801	2882.90	77.4300	-121.728	-94.765	1.56822	1.309	1.876	4374
36	0.21041	2738.02	76.4191	-118.187	-90.913	1.67830	1.343	1.973	4316
38	0.21297	2574.07	75.2030	-114.474	-86.869	1.78761	1.373	2.075	4244
40	0.21571	2418.06	73.8346	-110.579	-82.619	1.89660	1.401	2.178	4173
42	0.21865	2268.55	72.3283	-106.503	-78.161	2.00533	1.424	2.281	4103
44	0.22181	2121.36	70.6745	-102.243	-73.491	2.11394	1.445	2.389	4031
46	0.22522	1974.47	68.8659	-97.795	-68.602	2.22259	1.463	2.501	3954
48	0.22890	1829.19	66.8973	-93.154	-63.484	2.33149	1.479	2.619	3873
50	0.23290	1687.35	64.7652	-88.312	-58.123	2.44090	1.494	2.742	3788
52	0.23725	1546.97	62.4810	-83.262	-52.510	2.55096	1.506	2.874	3698
54	0.24199	1417.92	60.0628	-78.003	-46.636	2.66181	1.516	3.006	3609
56	0.24719	1293.00	57.5247	-72.524	-40.484	2.77367	1.525	3.146	3516
58	0.25290	1171.06	54.9074	-66.820	-34.040	2.88673	1.533	3.301	3418
60	0.25921	1058.31	52.1974	-60.873	-27.274	3.00139	1.540	3.462	3320
62	0.26620	947.09	49.4052	-54.683	-20.178	3.11773	1.547	3.643	3215
64	0.27400	843.90	46.5503	-48.228	-12.711	3.23624	1.553	3.838	3108
66	0.28276	753.80	43.6477	-41.499	-4.847	3.35724	1.559	4.029	3004
68	0.29259	669.61	40.7362	-34.507	3.420	3.48062	1.565	4.236	2898
70	0.30366	595.16	37.8519	-27.255	12.107	3.60652	1.569	4.447	2795
75	0.33771	453.96	31.0020	-8.153	35.621	3.93080	1.581	4.935	2562
80	0.38174	374.16	25.1143	11.683	61.165	4.26042	1.597	5.236	2384
85	0.43456	344.50	20.4679	30.911	87.240	4.57642	1.618	5.233	2272
90	0.49238	349.68	16.9774	48.962	112.784	4.86852	1.627	4.957	2222
95	0.55129	373.83	14.4216	65.230	136.688	5.12710	1.630	4.605	2212
100	0.60918	407.84	12.5430	80.037	158.999	5.35608	1.635	4.286	2226
105	0.66539	444.84	11.1234	93.522	179.770	5.55881	1.640	4.034	2252
110	0.71985	484.24	10.0163	106.117	199.425	5.74173	1.650	3.837	2284
115	0.77266	523.19	9.1315	118.072	218.226	5.90889	1.666	3.692	2318
120	0.82405	562.37	8.4046	129.583	236.397	6.06358	1.688	3.584	2352
125	0.87419	600.90	7.7966	140.791	254.105	6.20817	1.716	3.505	2385
130	0.92326	638.74	7.2803	151.809	271.483	6.34449	1.748	3.451	2417
140	1.01872	712.86	6.4470	173.611	305.658	6.59779	1.826	3.395	2478
150	1.11187	785.46	5.7945	195.517	339.640	6.83223	1.918	3.386	2534
160	1.20198	855.14	5.2743	217.810	373.611	7.05146	2.021	3.413	2587
170	1.29023	922.93	4.8489	240.748	407.990	7.25986	2.130	3.465	2637
180	1.37700	989.12	4.4924	264.472	442.960	7.45973	2.241	3.531	2687
190	1.46204	1052.97	4.1774	289.427	478.938	7.65405	2.363	3.610	2730
200	1.54537	1116.29	3.9150	314.938	515.380	7.84083	2.467	3.683	2779
220	1.71255	1240.10	3.4838	368.400	590.382	8.19817	2.648	3.817	2878
240	1.87619	1360.92	3.1430	424.609	667.803	8.53474	2.785	3.921	2979
260	2.03792	1479.45	2.8662	482.756	746.913	8.85149	2.877	3.987	3082
280	2.19816	1596.17	2.6362	542.088	827.015	9.14820	2.925	4.016	3186
300	2.35723	1711.46	2.4418	601.815	907.361	9.42548	2.941	4.016	3291
320	2.51535	1825.57	2.2752	661.437	987.479	9.68412	2.931	3.994	3395
340	2.67270	1938.72	2.1306	720.556	1066.994	9.92480	2.904	3.957	3498
360	2.82940	2051.07	2.0038	778.927	1145.678	10.14975	2.867	3.912	3601
380	2.98557	2162.74	1.8916	836.421	1223.414	10.35992	2.825	3.862	3701
400	3.14129	2273.84	1.7917	892.991	1300.168	10.55685	2.782	3.814	3800
420	3.29661	2384.45	1.7020	948.656	1375.967	10.74175	2.741	3.767	3897
440	3.45161	2494.63	1.6211	1003.479	1450.880	10.91603	2.702	3.725	3991
460	3.60631	2604.44	1.5476	1057.526	1524.980	11.08075	2.668	3.687	4083
480	3.76076	2713.93	1.4807	1110.891	1598.365	11.23669	2.637	3.653	4173
500	3.91499	2823.13	1.4194	1163.657	1671.122	11.38535	2.611	3.624	4260
520	4.06902	2932.09	1.3631	1215.908	1743.339	11.52710	2.589	3.599	4346
540	4.22383	3042.87	1.3105	1268.038	1815.535	11.66319	2.569	3.576	4430
560	4.37742	3151.24	1.2624	1319.392	1886.798	11.79229	2.554	3.559	4510
580	4.53089	3259.45	1.2178	1370.506	1957.805	11.91673	2.541	3.544	4589
600	4.68423	3367.50	1.1763	1421.402	2028.577	12.03676	2.530	3.532	4667
650	5.06716	3637.06	1.0841	1547.689	2204.499	12.31867	2.510	3.509	4853
700	5.44960	3905.99	1.0054	1673.215	2379.597	12.57844	2.499	3.495	5031
800	6.21340	4442.48	0.8783	1922.901	2728.289	13.04437	2.490	3.483	5365
1000	7.73848	5512.22	0.7014	2421.217	3424.286	13.82042	2.490	3.480	5974
2000	15.34915	10842.58	0.3501	4969.324	6958.897	16.26285	2.644	3.631	8305
3000	22.95513	16167.10	0.2333	7755.410	10730.878	17.77879	2.924	3.910	10008
4000	30.57410	21490.70	0.1750	10848.950	14811.996	19.14618	3.276	4.273	11396
5000	38.37435	26814.05	0.1400	14574.870	19548.994	21.03362	4.296	5.395	12485

* TWO-PHASE BOUNDRY

700 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.594	4.96628	334.54	13.329	16888.56	0.0045692	0.05238	1.913	0.00690	1.26052	2.0098
28	4.95699	336.44	13.267	16802.31	0.0046062	0.05337	1.861	0.00695	1.25999	1.9454
30	4.90963	336.51	12.957	15789.08	0.0049427	0.05727	1.639	0.00701	1.25731	1.7138
32	4.85986	336.27	12.632	14804.21	0.0052693	0.06007	1.464	0.00698	1.25450	1.5549
34	4.80748	335.75	12.302	13859.47	0.0055868	0.06198	1.323	0.00687	1.25155	1.4410
36	4.75256	335.90	11.972	13012.59	0.0058727	0.06364	1.206	0.00679	1.24846	1.3457
38	4.69555	333.42	11.662	12086.66	0.0062220	0.06551	1.109	0.00673	1.24525	1.2639
40	4.63587	330.61	11.371	11209.84	0.0065866	0.06686	1.026	0.00662	1.24190	1.2028
42	4.57350	327.26	11.106	10375.20	0.0069713	0.06778	0.954	0.00650	1.23841	1.1566
44	4.50832	323.27	10.848	9563.77	0.0073898	0.06832	0.892	0.00634	1.23476	1.1229
46	4.44014	318.39	10.600	8766.91	0.0078552	0.06852	0.837	0.00617	1.23096	1.0994
48	4.36872	312.80	10.352	7991.19	0.0083714	0.06843	0.787	0.00598	1.22698	1.0844
50	4.29374	306.75	10.098	7245.05	0.0089392	0.06810	0.742	0.00578	1.22282	1.0761
52	4.21503	299.90	9.843	6520.51	0.0095822	0.06754	0.701	0.00558	1.21845	1.0741
54	4.13239	293.21	9.589	5859.38	0.0102507	0.06680	0.663	0.00538	1.21388	1.0745
56	4.04552	286.11	9.325	5230.84	0.0109972	0.06562	0.628	0.00516	1.20909	1.0843
58	3.95420	278.42	9.058	4630.60	0.0118575	0.06431	0.595	0.00493	1.20407	1.1000
60	3.85791	270.77	8.786	4082.85	0.0127845	0.06289	0.564	0.00471	1.19878	1.1178
62	3.75661	262.38	8.502	3557.85	0.0138862	0.06139	0.535	0.00449	1.19324	1.1424
64	3.64959	253.90	8.214	3079.87	0.0151144	0.05980	0.507	0.00427	1.18741	1.1707
66	3.53653	246.06	7.916	2665.83	0.0163730	0.05812	0.480	0.00408	1.18127	1.1978
68	3.41769	237.99	7.617	2288.51	0.0178003	0.05639	0.455	0.00389	1.17483	1.2297
70	3.29311	230.24	7.325	1959.92	0.0193130	0.05474	0.431	0.00374	1.16811	1.2593
75	2.96114	213.97	6.621	1344.23	0.0230630	0.05114	0.377	0.00350	1.15034	1.3100
80	2.61956	204.33	6.005	980.14	0.0256233	0.04763	0.335	0.00347	1.13224	1.3241
85	2.30116	202.68	5.496	792.74	0.0258191	0.04459	0.304	0.00370	1.11554	1.2855
90	2.03096	207.35	5.139	710.18	0.0239058	0.04223	0.285	0.00419	1.10151	1.2027
95	1.81393	216.51	4.877	678.10	0.0212676	0.04062	0.273	0.00486	1.09033	1.1128
100	1.64156	228.75	4.674	669.50	0.0187349	0.03965	0.266	0.00564	1.08151	1.0336
105	1.50289	242.45	4.514	668.55	0.0166381	0.03916	0.262	0.00646	1.07444	0.9709
110	1.38917	257.68	4.370	672.69	0.0148900	0.03913	0.260	0.00734	1.06868	0.9185
115	1.29423	273.80	4.234	677.12	0.0134858	0.03939	0.260	0.00824	1.06388	0.8781
120	1.21351	290.98	4.103	682.44	0.0123155	0.03981	0.261	0.00916	1.05981	0.8470
125	1.14391	309.01	3.973	687.37	0.0113426	0.04037	0.263	0.01007	1.05631	0.8236
130	1.08312	327.90	3.846	691.84	0.0105231	0.04102	0.266	0.01097	1.05327	0.8064
140	0.98153	368.44	3.597	699.76	0.0092132	0.04212	0.273	0.01264	1.04819	0.7926
150	0.89938	412.83	3.358	706.43	0.0082026	0.04443	0.281	0.01459	1.04409	0.7716
160	0.83196	460.44	3.137	711.45	0.0074135	0.04716	0.290	0.01661	1.04074	0.7557
170	0.77505	511.17	2.937	715.32	0.0067786	0.04995	0.299	0.01860	1.03791	0.7470
180	0.72621	564.52	2.760	718.31	0.0062541	0.05432	0.317	0.02119	1.03549	0.7421
190	0.68397	622.35	2.584	720.20	0.0058003	0.05869	0.334	0.02377	1.03341	0.7388
200	0.64668	679.06	2.454	721.88	0.0054233	0.06278	0.348	0.02636	1.03156	0.7350
220	0.58392	793.39	2.253	724.13	0.0048110	0.07008	0.372	0.03144	1.02847	0.7294
240	0.53299	904.80	2.117	725.37	0.0043331	0.07619	0.391	0.03646	1.02596	0.7251
260	0.49070	1009.82	2.031	725.96	0.0039481	0.08113	0.408	0.04147	1.02389	0.7213
280	0.45493	1106.27	1.981	726.14	0.0036304	0.08500	0.422	0.04652	1.02213	0.7178
300	0.42423	1194.19	1.957	726.05	0.0033632	0.08798	0.435	0.05164	1.02063	0.7145
320	0.39756	1274.01	1.953	725.77	0.0031349	0.09026	0.447	0.05685	1.01932	0.7114
340	0.37415	1347.20	1.961	725.38	0.0029372	0.09202	0.458	0.06216	1.01818	0.7085
360	0.35343	1415.16	1.977	724.91	0.0027641	0.09342	0.468	0.06757	1.01716	0.7058
380	0.33494	1479.14	1.999	724.40	0.0026113	0.09457	0.478	0.07310	1.01626	0.7034
400	0.31834	1540.67	2.023	723.86	0.0024752	0.09560	0.488	0.07874	1.01545	0.7012
420	0.30334	1601.04	2.047	723.30	0.0023531	0.09658	0.498	0.08451	1.01472	0.6992
440	0.28972	1660.59	2.071	722.74	0.0022429	0.09754	0.507	0.09039	1.01405	0.6974
460	0.27729	1720.30	2.092	722.19	0.0021430	0.09853	0.517	0.09639	1.01345	0.6959
480	0.26590	1780.28	2.111	721.64	0.0020518	0.09957	0.526	0.10251	1.01289	0.6945
500	0.25543	1841.02	2.128	721.11	0.0019683	0.10067	0.535	0.10876	1.01238	0.6933
520	0.24576	1902.58	2.143	720.59	0.0018916	0.10182	0.544	0.11513	1.01191	0.6923
540	0.23675	1966.00	2.154	720.41	0.0018190	0.10303	0.553	0.12168	1.01147	0.6911
560	0.22844	2029.44	2.164	719.89	0.0017536	0.10431	0.562	0.12831	1.01107	0.6903
580	0.22071	2093.46	2.172	719.38	0.0016928	0.10564	0.571	0.13506	1.01069	0.6896
600	0.21348	2158.33	2.178	718.90	0.0016362	0.10701	0.580	0.14193	1.01034	0.6890
650	0.19735	2323.34	2.188	717.77	0.0015104	0.11059	0.602	0.15969	1.00956	0.6877
700	0.18350	2491.68	2.193	716.75	0.0014028	0.11434	0.624	0.17827	1.00888	0.6868
800	0.16094	2835.71	2.191	714.98	0.0012284	0.12214	0.668	0.21786	1.00779	0.6856
1000	0.12922	3533.75	2.180	712.31	0.0009847	0.13797	0.754	0.30685	1.00625	0.6843
2000	0.06515	7325.98	2.032	706.40	0.0004956	0.27727	1.152	1.17220	1.00315	0.5431
3000	0.04356	11000.86	1.832	704.29	0.0003313	0.39310	1.506	2.30795	1.00210	0.5393
4000	0.03271	17163.12	1.633	702.91	0.0002490	0.53329	1.830	3.81581	1.00158	0.5279
5000	0.02606	26925.16	1.250	698.75	0.0002004	0.87856	2.138	6.24969	1.00126	0.4725

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

750 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 27.780	0.20094	3450.52	77.3640	-131.682	-103.776	1.21531	1.169	1.529	4573
28	0.20114	3452.42	77.4864	-131.372	-103.438	1.22742	1.175	1.540	4578
30	0.20304	3278.02	76.2135	-128.439	-100.241	1.33768	1.225	1.653	4526
32	0.20508	3110.60	78.2653	-125.310	-96.828	1.44776	1.270	1.760	4470
34	0.20727	2945.47	77.7952	-121.990	-93.205	1.55757	1.308	1.864	4409
36	0.20961	2807.46	76.8983	-118.488	-89.378	1.66693	1.342	1.959	4357
38	0.21210	2641.70	75.7331	-114.818	-85.362	1.77547	1.372	2.060	4286
40	0.21476	2484.80	74.4010	-110.971	-81.145	1.88361	1.400	2.161	4215
42	0.21762	2340.20	72.9257	-106.945	-76.721	1.99152	1.423	2.260	4149
44	0.22068	2193.56	71.3207	-102.745	-72.097	2.09907	1.445	2.365	4079
46	0.22396	2045.20	69.5640	-98.367	-67.264	2.20648	1.463	2.474	4003
48	0.22750	1901.20	67.6570	-93.802	-62.206	2.31409	1.479	2.587	3925
50	0.23133	1760.55	65.5886	-89.045	-56.918	2.42203	1.494	2.705	3843
52	0.23549	1525.34	63.3762	-84.092	-51.388	2.53046	1.507	2.826	3758
54	0.24000	1495.93	61.0353	-78.943	-45.612	2.63944	1.517	2.951	3672
56	0.24491	1366.52	58.5836	-73.589	-39.576	2.74920	1.526	3.088	3579
58	0.25029	1250.46	56.0434	-68.025	-33.265	2.85991	1.534	3.224	3489
60	0.25618	1137.22	53.4382	-62.243	-26.665	2.97178	1.541	3.372	3395
62	0.26266	1027.56	50.7653	-56.242	-19.764	3.08491	1.548	3.534	3297
64	0.26983	925.17	48.0200	-50.005	-12.531	3.19973	1.554	3.704	3197
66	0.27780	832.22	45.2455	-43.528	-4.947	3.31641	1.560	3.880	3097
68	0.28667	746.87	42.4498	-36.816	2.996	3.43497	1.565	4.061	2997
70	0.29653	669.78	39.6742	-29.879	11.303	3.55536	1.568	4.247	2899
75	0.32635	519.36	33.0331	-11.676	33.647	3.86351	1.578	4.686	2673
80	0.36437	428.38	27.1829	7.292	57.896	4.17642	1.591	4.984	2493
85	0.41010	384.98	22.4184	25.946	82.900	4.47942	1.614	5.070	2367
90	0.46114	378.32	18.7208	43.874	107.917	4.76545	1.626	4.909	2300
95	0.51435	393.98	15.9241	60.340	131.772	5.02348	1.632	4.627	2275
100	0.56750	422.59	13.8295	75.466	154.280	5.25447	1.638	4.337	2277
105	0.61962	456.25	12.2388	89.282	175.335	5.45998	1.643	4.094	2295
110	0.67042	492.82	10.9958	102.185	195.293	5.64570	1.653	3.899	2320
115	0.71989	530.99	10.0000	114.417	214.394	5.81555	1.669	3.748	2350
120	0.76808	568.68	9.1875	126.166	232.838	5.97255	1.691	3.637	2380
125	0.81518	606.83	8.5089	137.586	250.798	6.11920	1.718	3.553	2411
130	0.86128	644.45	7.9332	148.790	268.404	6.25732	1.750	3.494	2441
140	0.95099	717.79	7.0070	170.901	302.974	6.51354	1.828	3.432	2498
150	1.03792	790.07	6.2924	193.038	337.185	6.74958	1.921	3.420	2553
160	1.12329	860.81	5.7135	215.571	371.573	6.97150	2.023	3.441	2604
170	1.20619	929.00	5.2447	238.683	406.199	7.18141	2.132	3.488	2654
180	1.28766	995.61	4.8540	262.553	441.383	7.38250	2.243	3.551	2702
190	1.36741	1059.74	4.5085	287.675	477.581	7.57802	2.366	3.628	2744
200	1.44649	1123.42	4.2221	313.301	514.189	7.76566	2.469	3.699	2792
220	1.60226	1247.87	3.7525	366.952	589.473	8.12435	2.650	3.830	2891
240	1.75555	1369.27	3.3825	423.314	667.124	8.46192	2.787	3.931	2991
260	1.90697	1488.30	3.0824	481.586	746.425	8.77943	2.878	3.996	3094
280	2.05693	1605.48	2.8335	541.023	826.690	9.07674	2.927	4.024	3198
300	2.20575	1721.16	2.6235	600.840	907.175	9.35451	2.942	4.023	3302
320	2.35365	1835.63	2.4435	660.540	987.413	9.61354	2.932	4.000	3406
340	2.50078	1949.10	2.2875	719.727	1067.035	9.85453	2.905	3.962	3509
360	2.64728	2061.74	2.1508	778.158	1145.812	10.07976	2.868	3.916	3611
380	2.79326	2173.67	2.0300	835.705	1223.632	10.29015	2.826	3.866	3712
400	2.93879	2285.00	1.9224	892.323	1300.461	10.48727	2.783	3.818	3811
420	3.08394	2395.81	1.8259	948.031	1376.327	10.67234	2.741	3.771	3907
440	3.22875	2506.18	1.7389	1002.894	1451.302	10.84676	2.703	3.728	4002
460	3.37329	2616.17	1.6599	1056.977	1525.458	11.01160	2.668	3.689	4093
480	3.51757	2725.82	1.5880	1110.374	1598.893	11.16765	2.638	3.655	4183
500	3.66164	2835.17	1.5221	1163.170	1671.697	11.31641	2.612	3.626	4270
520	3.80551	2944.26	1.4616	1215.449	1743.957	11.45824	2.589	3.601	4355
540	3.95023	3055.42	1.4050	1267.625	1816.231	11.59446	2.570	3.578	4439
560	4.09367	3163.90	1.3534	1319.003	1887.530	11.72362	2.554	3.561	4520
580	4.23697	3272.19	1.3055	1370.139	1958.569	11.84812	2.541	3.545	4599
600	4.38017	3380.32	1.2610	1421.055	2029.371	11.96820	2.530	3.533	4676
650	4.73772	3650.06	1.1620	1547.386	2205.359	12.25021	2.511	3.510	4862
700	5.09478	3919.12	1.0776	1672.948	2380.510	12.51007	2.499	3.496	5040
800	5.80786	4455.82	0.9412	1922.691	2729.284	12.97611	2.491	3.484	5374
1000	7.23149	5525.81	0.7516	2421.077	3425.385	13.75227	2.490	3.480	5981
2000	14.33513	10856.47	0.3751	4969.294	6960.152	16.19482	2.644	3.631	8310
3000	21.43411	16181.03	0.2500	7755.379	10732.142	17.71076	2.924	3.910	10012
4000	28.54474	21504.64	0.1875	10847.493	14811.778	19.07776	3.271	4.268	11401
5000	35.81889	26827.98	0.1500	14557.619	19532.136	20.96161	4.264	5.358	12494

* TWO-PHASE BOUNDRY

750 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 27.780	4.97661	339.38	13.301	17171.91	0.0045053	0.05304	1.928	0.00697	1.26110	2.0005
28	4.97168	341.03	13.267	17164.35	0.0045144	0.05357	1.899	0.00700	1.26082	1.9646
30	4.92511	341.13	12.961	16144.63	0.0048446	0.05754	1.672	0.00707	1.25819	1.7285
32	4.87616	341.15	12.643	15167.76	0.0051600	0.06038	1.492	0.00703	1.25542	1.5660
34	4.82467	340.52	12.324	14210.92	0.0054743	0.06234	1.347	0.00693	1.25252	1.4502
36	4.77071	341.25	12.008	13393.56	0.0057414	0.06404	1.228	0.00685	1.24948	1.3523
38	4.71479	338.75	11.703	12455.04	0.0060805	0.06597	1.129	0.00679	1.24633	1.2687
40	4.65630	336.03	11.415	11569.99	0.0064305	0.06736	1.044	0.00670	1.24305	1.2059
42	4.59509	333.30	11.150	10753.40	0.0067816	0.06832	0.971	0.00658	1.23962	1.1571
44	4.53142	329.56	10.896	9939.95	0.0071752	0.06891	0.908	0.00643	1.23605	1.1218
46	4.46505	324.75	10.650	9131.90	0.0076177	0.06917	0.852	0.00626	1.23235	1.0972
48	4.39553	319.50	10.407	8356.79	0.0080961	0.06913	0.802	0.00608	1.22847	1.0805
50	4.32276	313.82	10.156	7610.42	0.0086183	0.06884	0.757	0.00589	1.22443	1.0704
52	4.24652	307.78	9.906	6902.05	0.0091822	0.06835	0.715	0.00570	1.22020	1.0650
54	4.16675	301.35	9.659	6233.15	0.0097921	0.06767	0.677	0.00550	1.21578	1.0636
56	4.08312	294.11	9.403	5579.66	0.0104995	0.06654	0.642	0.00528	1.21116	1.0729
58	3.99544	287.42	9.143	4996.21	0.0112172	0.06530	0.609	0.00507	1.20633	1.0830
60	3.90350	280.12	8.883	4439.14	0.0120380	0.06395	0.578	0.00486	1.20128	1.0978
62	3.80722	272.36	8.615	3912.12	0.0129764	0.06254	0.549	0.00465	1.19601	1.1175
64	3.70600	264.49	8.340	3428.68	0.0140054	0.06104	0.522	0.00445	1.19048	1.1396
66	3.59969	256.87	8.059	2995.75	0.0151032	0.05946	0.495	0.00426	1.18470	1.1634
68	3.48839	249.25	7.778	2605.37	0.0162932	0.05783	0.470	0.00408	1.17866	1.1891
70	3.37229	241.78	7.501	2258.70	0.0175651	0.05617	0.447	0.00392	1.17238	1.2162
75	3.06418	225.74	6.831	1591.42	0.0207570	0.05266	0.394	0.00367	1.15583	1.2619
80	2.74443	215.56	6.224	1175.65	0.0231217	0.04930	0.351	0.00360	1.13883	1.2776
85	2.43845	212.30	5.695	938.75	0.0238812	0.04633	0.319	0.00375	1.12272	1.2573
90	2.16654	215.11	5.310	820.41	0.0228187	0.04393	0.297	0.00413	1.10864	1.1963
95	1.94422	222.58	5.019	765.99	0.0207889	0.04219	0.284	0.00469	1.09703	1.1196
100	1.76213	233.52	4.792	744.66	0.0185715	0.04106	0.275	0.00537	1.08767	1.0460
105	1.61390	246.30	4.615	736.35	0.0166209	0.04042	0.270	0.00612	1.08010	0.9850
110	1.49160	260.69	4.459	735.09	0.0149583	0.04027	0.268	0.00692	1.07387	0.9330
115	1.38910	276.44	4.312	737.60	0.0135575	0.04042	0.267	0.00776	1.06867	0.8906
120	1.30194	293.10	4.173	740.39	0.0124090	0.04076	0.267	0.00861	1.06427	0.8586
125	1.22673	310.88	4.037	744.42	0.0114303	0.04124	0.269	0.00946	1.06048	0.8337
130	1.16106	329.58	3.903	748.25	0.0106023	0.04183	0.271	0.01031	1.05718	0.8150
140	1.05154	369.68	3.645	754.78	0.0092835	0.04281	0.277	0.01186	1.05168	0.7997
150	0.96346	413.74	3.401	761.20	0.0082664	0.04506	0.285	0.01368	1.04728	0.7775
160	0.89024	461.51	3.172	766.33	0.0074557	0.04774	0.293	0.01558	1.04364	0.7599
170	0.82905	512.22	2.967	770.19	0.0068095	0.05049	0.302	0.01746	1.04059	0.7502
180	0.77660	565.56	2.787	773.19	0.0062779	0.05462	0.319	0.01981	1.03799	0.7457
190	0.73131	623.63	2.606	775.00	0.0058174	0.05894	0.335	0.02221	1.03575	0.7422
200	0.69133	680.38	2.473	776.65	0.0054363	0.06299	0.349	0.02463	1.03377	0.7381
220	0.62412	794.87	2.269	778.82	0.0048182	0.07024	0.373	0.02939	1.03045	0.7319
240	0.56952	906.48	2.131	779.97	0.0043367	0.07632	0.392	0.03408	1.02777	0.7272
260	0.52439	1011.73	2.042	780.46	0.0039495	0.08124	0.408	0.03877	1.02554	0.7232
280	0.48616	1108.40	1.991	780.52	0.0036303	0.08509	0.423	0.04350	1.02366	0.7194
300	0.45336	1196.54	1.967	780.31	0.0033621	0.08807	0.435	0.04829	1.02205	0.7159
320	0.42487	1276.56	1.962	779.91	0.0031331	0.09035	0.447	0.05317	1.02066	0.7126
340	0.39988	1349.92	1.969	779.40	0.0029350	0.09211	0.458	0.05814	1.01943	0.7096
360	0.37775	1418.04	1.985	778.81	0.0027617	0.09350	0.469	0.06321	1.01835	0.7068
380	0.35800	1482.15	2.007	778.18	0.0026087	0.09466	0.479	0.06838	1.01739	0.7042
400	0.34028	1543.99	2.030	777.53	0.0024725	0.09569	0.489	0.07367	1.01652	0.7019
420	0.32426	1604.27	2.054	776.87	0.0023504	0.09667	0.498	0.07906	1.01574	0.6998
440	0.30972	1663.91	2.077	776.21	0.0022402	0.09763	0.508	0.08456	1.01503	0.6980
460	0.29645	1723.71	2.098	775.55	0.0021403	0.09863	0.517	0.09018	1.01438	0.6963
480	0.28429	1783.76	2.118	774.91	0.0020492	0.09966	0.526	0.09591	1.01379	0.6949
500	0.27310	1844.57	2.134	774.29	0.0019658	0.10076	0.535	0.10175	1.01324	0.6937
520	0.26278	1906.18	2.148	773.68	0.0018891	0.10192	0.545	0.10771	1.01274	0.6926
540	0.25315	1969.80	2.160	773.48	0.0018165	0.10313	0.554	0.11385	1.01227	0.6914
560	0.24428	2033.28	2.169	772.88	0.0017511	0.10442	0.563	0.12005	1.01184	0.6906
580	0.23602	2097.34	2.177	772.29	0.0016905	0.10574	0.571	0.12637	1.01144	0.6898
600	0.22830	2162.25	2.183	771.73	0.0016339	0.10712	0.580	0.13280	1.01106	0.6892
650	0.21107	2327.34	2.193	770.43	0.0015083	0.11070	0.603	0.14941	1.01022	0.6879
700	0.19628	2495.75	2.197	769.24	0.0014009	0.11446	0.625	0.16679	1.00951	0.6869
800	0.17218	2839.89	2.195	767.21	0.0012268	0.12227	0.668	0.20383	1.00833	0.6857
1000	0.13828	3538.07	2.183	764.13	0.0009836	0.13814	0.755	0.28706	1.00669	0.6843
2000	0.06976	7330.71	2.033	757.33	0.0004953	0.27727	1.154	1.09474	1.00337	0.5439
3000	0.04665	11805.58	1.833	754.92	0.0003312	0.39307	1.509	2.15497	1.00225	0.5402
4000	0.03503	17150.14	1.636	753.37	0.0002489	0.53234	1.833	3.56009	1.00169	0.5292
5000	0.02792	26756.48	1.260	748.99	0.0002003	0.86970	2.141	5.81367	1.00135	0.4749

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

800 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 27.964	0.20053	3499.42	77.5733	-131.572	-101.866	1.21713	1.172	1.530	4601
28	0.20056	3512.49	77.5944	-131.522	-101.812	1.21909	1.173	1.530	4608
30	0.20242	3338.93	78.3834	-128.621	-98.635	1.32863	1.224	1.642	4557
32	0.20441	3173.68	78.5180	-125.525	-95.244	1.43804	1.268	1.749	4503
34	0.20655	3006.67	78.1523	-122.240	-91.642	1.54718	1.307	1.853	4443
36	0.20883	2861.76	77.3415	-118.777	-87.841	1.65581	1.342	1.949	4389
38	0.21128	2716.23	76.2032	-115.138	-83.840	1.76396	1.372	2.043	4329
40	0.21386	2559.55	74.9229	-111.340	-79.659	1.87116	1.399	2.142	4261
42	0.21663	2408.70	73.4970	-107.369	-75.278	1.97803	1.423	2.241	4193
44	0.21959	2262.86	71.9340	-103.225	-70.695	2.08461	1.444	2.342	4124
46	0.22277	2119.46	70.2252	-98.906	-65.905	2.19106	1.463	2.446	4052
48	0.22618	1976.83	68.3763	-94.411	-60.905	2.29744	1.479	2.554	3977
50	0.22986	1836.80	66.3733	-89.734	-55.683	2.40403	1.494	2.667	3898
52	0.23383	1696.47	64.2319	-84.873	-50.234	2.51088	1.507	2.787	3813
54	0.23813	1568.78	61.9598	-79.822	-44.545	2.61821	1.517	2.905	3730
56	0.24280	1445.33	59.5837	-74.580	-38.613	2.72608	1.527	3.029	3644
58	0.24787	1326.87	57.1155	-69.144	-32.424	2.83466	1.535	3.158	3556
60	0.25341	1211.97	54.6030	-63.510	-25.970	2.94405	1.542	3.297	3465
62	0.25947	1105.93	52.0250	-57.668	-19.231	3.05453	1.549	3.441	3373
64	0.26611	1002.23	49.3875	-51.620	-12.199	3.16616	1.555	3.597	3278
66	0.27344	909.53	46.7136	-45.354	-4.847	3.27926	1.560	3.753	3183
68	0.28152	822.31	44.0252	-38.880	2.823	3.39375	1.565	3.917	3088
70	0.29044	743.54	41.3444	-32.205	10.820	3.50964	1.568	4.082	2994
75	0.31700	567.58	34.8863	-14.742	32.218	3.80476	1.576	4.467	2777
80	0.35037	485.00	29.1066	3.467	55.370	4.10351	1.588	4.765	2596
85	0.39043	429.75	24.2712	21.547	79.384	4.39449	1.611	4.900	2461
90	0.43568	411.80	20.4199	39.231	103.772	4.67330	1.624	4.828	2381
95	0.48372	418.62	17.4266	55.760	127.417	4.92904	1.633	4.619	2342
100	0.53246	440.82	15.1346	71.107	149.985	5.16065	1.640	4.368	2332
105	0.58079	470.98	13.3737	85.196	171.234	5.36804	1.646	4.137	2342
110	0.62820	504.79	11.9943	98.367	191.427	5.55595	1.657	3.947	2361
115	0.67454	540.56	10.8906	110.846	210.771	5.72795	1.672	3.798	2385
120	0.71985	577.69	9.9863	122.821	229.458	5.88703	1.694	3.682	2412
125	0.76416	614.29	9.2350	134.439	247.641	6.03549	1.721	3.598	2439
130	0.80760	651.52	8.5988	145.820	265.457	6.17526	1.753	3.535	2467
140	0.89218	724.60	7.5771	168.230	300.396	6.43422	1.830	3.465	2521
150	0.97416	796.36	6.7923	190.609	334.919	6.67241	1.923	3.450	2573
160	1.05409	866.42	6.1660	213.330	369.481	6.89548	2.025	3.470	2622
170	1.13291	935.66	5.6461	236.641	404.468	7.10757	2.134	3.510	2670
180	1.20971	1002.62	5.2200	260.656	439.859	7.30985	2.244	3.570	2718
190	1.28480	1066.97	4.8430	285.943	476.271	7.50655	2.369	3.645	2758
200	1.35927	1130.95	4.5321	311.681	513.042	7.69502	2.472	3.714	2806
220	1.50589	1255.98	4.0235	365.520	588.601	8.05502	2.652	3.842	2904
240	1.65010	1377.90	3.6236	422.033	666.475	8.39357	2.788	3.942	3004
260	1.79248	1497.40	3.2999	480.428	745.963	8.71183	2.880	4.005	3106
280	1.93344	1614.99	3.0318	539.969	826.386	9.00973	2.928	4.031	3209
300	2.07326	1731.05	2.8059	599.875	907.007	9.28796	2.943	4.029	3313
320	2.21221	1845.85	2.6125	659.651	987.365	9.54738	2.933	4.005	3417
340	2.35040	1959.62	2.4450	718.906	1067.090	9.78869	2.906	3.967	3520
360	2.48797	2072.53	2.2984	777.396	1145.960	10.01418	2.869	3.921	3622
380	2.62502	2184.70	2.1689	834.996	1223.862	10.22479	2.826	3.870	3723
400	2.76163	2296.25	2.0535	891.661	1300.765	10.42210	2.784	3.821	3821
420	2.89787	2407.27	1.9502	947.412	1376.697	10.60733	2.742	3.774	3918
440	3.03378	2517.82	1.8569	1002.313	1451.732	10.78190	2.703	3.730	4012
460	3.16941	2627.97	1.7724	1056.431	1525.943	10.94686	2.669	3.692	4104
480	3.30480	2737.77	1.6954	1109.862	1599.429	11.10302	2.639	3.658	4193
500	3.43997	2847.26	1.6249	1162.687	1672.279	11.25186	2.612	3.628	4280
520	3.57495	2956.48	1.5602	1214.994	1744.582	11.39378	2.590	3.603	4365
540	3.71084	3068.05	1.4997	1267.214	1816.932	11.53012	2.571	3.580	4449
560	3.84539	3176.61	1.4445	1318.616	1888.266	11.65935	2.555	3.562	4530
580	3.97981	3284.99	1.3933	1369.774	1959.337	11.78390	2.542	3.547	4609
600	4.11412	3393.20	1.3457	1420.710	2030.170	11.90403	2.531	3.534	4686
650	4.44947	3663.10	1.2400	1547.085	2206.222	12.18615	2.511	3.511	4871
700	4.78433	3932.30	1.1498	1672.684	2381.426	12.44608	2.500	3.497	5049
800	5.45301	4469.19	1.0042	1922.482	2730.282	12.91223	2.491	3.485	5382
1000	6.78788	5539.41	0.8018	2420.940	3426.485	13.68851	2.490	3.480	5989
2000	13.44786	10870.35	0.4001	4969.265	6961.408	16.13118	2.644	3.631	8315
3000	20.10321	16194.93	0.2667	7755.352	10733.407	17.64713	2.923	3.910	10017
4000	26.76908	21518.54	0.2000	10846.176	14811.703	19.01377	3.268	4.264	11406
5000	33.58344	26841.87	0.1600	14542.014	19517.007	20.89438	4.235	5.326	12502

* TWO-PHASE BOUNDRY

800 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 27.964	4.98683	344.11	13.277	17451.01	0.0044452	0.05368	1.942	0.00704	1.26168	1.9920
28	4.98607	345.34	13.272	17513.55	0.0044305	0.05377	1.937	0.00705	1.26164	1.9845
30	4.94030	345.65	12.966	16495.31	0.0047519	0.05779	1.704	0.00712	1.25905	1.7435
32	4.89213	345.91	12.654	15526.08	0.0050572	0.06069	1.520	0.00709	1.25632	1.5775
34	4.84148	345.17	12.346	14556.75	0.0053688	0.06270	1.372	0.00699	1.25346	1.4598
36	4.78850	345.38	12.039	13703.56	0.0056439	0.06445	1.250	0.00690	1.25048	1.3612
38	4.73305	344.71	11.737	12856.07	0.0059274	0.06640	1.148	0.00687	1.24736	1.2719
40	4.67590	342.17	11.453	11968.20	0.0062602	0.06785	1.062	0.00677	1.24415	1.2075
42	4.61619	339.05	11.191	11119.02	0.0066100	0.06886	0.989	0.00666	1.24080	1.1584
44	4.55391	335.56	10.939	10304.85	0.0069806	0.06949	0.924	0.00651	1.23731	1.1215
46	4.48894	331.41	10.696	9514.11	0.0073812	0.06979	0.867	0.00636	1.23368	1.0945
48	4.42122	326.51	10.457	8739.99	0.0078234	0.06980	0.817	0.00618	1.22990	1.0761
50	4.35047	321.14	10.211	7990.96	0.0083061	0.06957	0.771	0.00599	1.22597	1.0644
52	4.27663	314.85	9.966	7255.17	0.0088533	0.06913	0.730	0.00580	1.22187	1.0590
54	4.19937	308.87	9.724	6587.88	0.0094051	0.06850	0.691	0.00562	1.21759	1.0554
56	4.11865	302.57	9.474	5952.82	0.0100093	0.06743	0.656	0.00541	1.21312	1.0606
58	4.03430	295.95	9.221	5352.98	0.0106699	0.06625	0.623	0.00520	1.20847	1.0691
60	3.94621	288.83	8.971	4782.69	0.0114168	0.06497	0.592	0.00499	1.20363	1.0821
62	3.85406	281.89	8.714	4262.32	0.0122058	0.06362	0.563	0.00480	1.19857	1.0966
64	3.75785	274.32	8.453	3766.23	0.0131132	0.06220	0.536	0.00460	1.19331	1.1156
66	3.65713	267.22	8.186	3326.27	0.0140439	0.06071	0.510	0.00442	1.18782	1.1346
68	3.55220	259.90	7.919	2921.00	0.0150720	0.05916	0.485	0.00425	1.18212	1.1565
70	3.44308	252.76	7.656	2560.06	0.0161498	0.05759	0.462	0.00410	1.17621	1.1787
75	3.15453	237.34	7.015	1853.53	0.0188216	0.05404	0.410	0.00384	1.16067	1.2188
80	2.85410	226.60	6.421	1384.23	0.0210272	0.05083	0.367	0.00374	1.14464	1.2368
85	2.56129	222.21	5.882	1100.72	0.0220503	0.04794	0.333	0.00382	1.12917	1.2271
90	2.29527	223.45	5.477	945.19	0.0216041	0.04553	0.310	0.00411	1.11524	1.1833
95	2.06731	229.38	5.162	865.41	0.0201368	0.04370	0.294	0.00458	1.10339	1.1201
100	1.87807	238.94	4.913	827.88	0.0182811	0.04245	0.284	0.00517	1.09363	1.0540
105	1.72179	250.83	4.719	810.93	0.0164917	0.04167	0.278	0.00585	1.08561	0.9951
110	1.59165	264.45	4.549	803.56	0.0149265	0.04140	0.275	0.00659	1.07897	0.9440
115	1.48249	279.50	4.392	801.37	0.0135900	0.04145	0.273	0.00736	1.07341	0.9021
120	1.38918	295.88	4.243	802.52	0.0124437	0.04171	0.273	0.00815	1.06868	0.8685
125	1.30862	313.15	4.101	803.87	0.0114882	0.04212	0.274	0.00895	1.06461	0.8431
130	1.23823	331.63	3.962	806.73	0.0106588	0.04264	0.276	0.00974	1.06106	0.8233
140	1.12085	371.45	3.693	812.17	0.0093295	0.04351	0.281	0.01120	1.05516	0.8062
150	1.02653	415.18	3.442	817.49	0.0083087	0.04570	0.288	0.01290	1.05043	0.7826
160	0.94868	462.53	3.209	821.96	0.0075016	0.04832	0.296	0.01468	1.04655	0.7646
170	0.88269	513.47	2.998	825.90	0.0068363	0.05103	0.304	0.01647	1.04326	0.7533
180	0.82665	566.80	2.814	828.81	0.0062982	0.05493	0.320	0.01861	1.04047	0.7493
190	0.77833	625.10	2.627	830.46	0.0058318	0.05920	0.336	0.02087	1.03808	0.7455
200	0.73569	681.90	2.492	832.03	0.0054471	0.06322	0.350	0.02314	1.03596	0.7411
220	0.66406	796.52	2.285	834.04	0.0048241	0.07042	0.374	0.02760	1.03242	0.7344
240	0.60602	908.31	2.144	835.04	0.0043394	0.07646	0.393	0.03201	1.02956	0.7294
260	0.55769	1013.77	2.054	835.38	0.0039501	0.08135	0.409	0.03642	1.02719	0.7250
280	0.51721	1110.65	2.002	835.29	0.0036297	0.08520	0.423	0.04086	1.02519	0.7210
300	0.48233	1198.98	1.976	834.93	0.0033606	0.08817	0.436	0.04537	1.02347	0.7173
320	0.45204	1279.18	1.971	834.39	0.0031311	0.09044	0.448	0.04995	1.02199	0.7138
340	0.42546	1352.71	1.978	833.74	0.0029326	0.09220	0.459	0.05463	1.02069	0.7106
360	0.40193	1420.97	1.993	833.02	0.0027591	0.09359	0.469	0.05939	1.01953	0.7077
380	0.38095	1485.21	2.014	832.26	0.0026060	0.09474	0.479	0.06426	1.01851	0.7050
400	0.36210	1547.16	2.037	831.48	0.0024697	0.09578	0.489	0.06923	1.01759	0.7026
420	0.34508	1607.54	2.061	830.70	0.0023476	0.09676	0.499	0.07430	1.01675	0.7004
440	0.32962	1667.26	2.084	829.93	0.0022375	0.09772	0.508	0.07947	1.01600	0.6985
460	0.31552	1727.14	2.105	829.17	0.0021376	0.09872	0.518	0.08475	1.01531	0.6968
480	0.30259	1787.26	2.124	828.42	0.0020466	0.09976	0.527	0.09013	1.01468	0.6953
500	0.29070	1848.13	2.140	827.70	0.0019632	0.10086	0.536	0.09563	1.01410	0.6941
520	0.27972	1909.81	2.154	827.00	0.0018866	0.10202	0.545	0.10123	1.01357	0.6929
540	0.26948	1973.62	2.165	826.78	0.0018139	0.10323	0.554	0.10701	1.01307	0.6917
560	0.26005	2037.14	2.174	826.08	0.0017486	0.10452	0.563	0.11283	1.01261	0.6908
580	0.25127	2101.24	2.182	825.41	0.0016880	0.10585	0.572	0.11877	1.01218	0.6900
600	0.24307	2166.19	2.188	824.77	0.0016316	0.10723	0.581	0.12481	1.01178	0.6894
650	0.22475	2331.36	2.197	823.27	0.0015062	0.11082	0.603	0.14042	1.01089	0.6880
700	0.20902	2499.83	2.201	821.91	0.0013990	0.11458	0.625	0.15675	1.01012	0.6870
800	0.18338	2844.08	2.198	819.58	0.0012253	0.12241	0.669	0.19155	1.00888	0.6857
1000	0.14732	3542.40	2.186	816.07	0.0009825	0.13831	0.755	0.26975	1.00713	0.6843
2000	0.07436	7335.43	2.035	808.33	0.0004950	0.27727	1.155	1.02697	1.00359	0.5447
3000	0.04974	11810.34	1.834	805.59	0.0003310	0.39306	1.511	2.02111	1.00240	0.5411
4000	0.03736	17138.91	1.638	803.86	0.0002488	0.53148	1.836	3.33655	1.00180	0.5304
5000	0.02978	26604.38	1.269	799.26	0.0002002	0.86168	2.145	5.43377	1.00144	0.4772

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

850 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 28.147	0.20012	3547.49	77.7866	-131.460	-99.961	1.21893	1.174	1.530	4628
30	0.20181	3398.71	78.5502	-128.793	-97.029	1.31978	1.222	1.633	4587
32	0.20376	3235.55	78.7657	-125.729	-93.658	1.42854	1.267	1.739	4535
34	0.20585	3074.72	78.4613	-122.478	-90.077	1.53706	1.307	1.841	4480
36	0.20808	2921.64	77.7241	-119.051	-86.300	1.64501	1.341	1.938	4423
38	0.21047	2784.81	76.6633	-115.452	-82.325	1.75243	1.371	2.029	4369
40	0.21298	2626.90	75.4384	-111.697	-78.174	1.85888	1.398	2.126	4302
42	0.21567	2475.31	74.0524	-107.772	-73.826	1.96493	1.422	2.223	4234
44	0.21854	2330.07	72.5290	-103.681	-69.282	2.07062	1.444	2.322	4167
46	0.22162	2188.39	70.8684	-99.421	-64.538	2.17605	1.462	2.422	4098
48	0.22491	2047.15	69.0691	-94.992	-59.591	2.28132	1.479	2.527	4025
50	0.22846	1908.54	67.1281	-90.387	-54.429	2.38666	1.494	2.635	3949
52	0.23227	1773.51	65.0474	-85.607	-49.049	2.49217	1.508	2.747	3869
54	0.23638	1644.35	62.8432	-80.648	-43.443	2.59795	1.518	2.860	3788
56	0.24082	1516.59	60.5337	-75.508	-37.603	2.70413	1.528	2.981	3702
58	0.24564	1399.13	58.1421	-70.186	-31.524	2.81080	1.537	3.102	3618
60	0.25086	1288.04	55.6933	-64.679	-25.194	2.91808	1.544	3.228	3532
62	0.25655	1179.31	53.2018	-58.986	-18.606	3.02609	1.550	3.364	3443
64	0.26275	1078.96	50.6612	-53.097	-11.741	3.13505	1.556	3.502	3354
66	0.26954	982.69	48.0740	-47.018	-4.594	3.24502	1.562	3.650	3262
68	0.27697	896.56	45.4835	-40.745	2.850	3.35612	1.566	3.795	3173
70	0.28513	816.60	42.8882	-34.291	10.587	3.46826	1.569	3.943	3083
75	0.30910	654.23	36.6053	-17.460	31.191	3.75244	1.576	4.294	2874
80	0.33879	541.42	30.9014	0.089	53.413	4.03918	1.586	4.585	2693
85	0.37431	477.61	26.0282	17.632	76.547	4.31949	1.609	4.737	2552
90	0.41466	449.17	22.0608	35.008	100.275	4.59074	1.623	4.728	2462
95	0.45812	447.17	18.9101	51.494	123.600	4.84300	1.634	4.586	2412
100	0.50284	463.21	16.4450	66.978	146.123	5.07414	1.642	4.376	2391
105	0.54764	488.67	14.5201	81.277	167.474	5.28252	1.649	4.164	2391
110	0.59185	518.80	13.0090	94.670	187.825	5.47190	1.659	3.987	2403
115	0.63536	552.95	11.7931	107.374	207.377	5.64574	1.675	3.837	2422
120	0.67796	588.09	10.8025	119.551	226.261	5.80650	1.697	3.723	2445
125	0.71975	624.34	9.9746	131.356	244.643	5.95659	1.724	3.634	2470
130	0.76076	659.97	9.2758	142.904	262.646	6.09782	1.755	3.572	2494
140	0.84071	732.43	8.1568	165.602	297.927	6.35932	1.833	3.497	2545
150	0.91824	803.90	7.2998	188.214	332.743	6.59954	1.925	3.477	2594
160	0.99398	873.62	6.6161	211.135	367.584	6.82439	2.027	3.494	2641
170	1.06847	942.89	6.0574	234.618	402.791	7.03781	2.135	3.534	2689
180	1.14112	1010.13	5.5903	258.780	438.388	7.24125	2.246	3.588	2735
190	1.21208	1074.65	5.1809	284.231	475.009	7.43911	2.371	3.662	2773
200	1.28247	1138.88	4.8450	310.081	511.938	7.62839	2.474	3.730	2820
220	1.42099	1264.42	4.2965	364.104	587.763	7.98967	2.654	3.855	2917
240	1.55716	1386.80	3.8662	420.764	665.856	8.32916	2.790	3.952	3016
260	1.69155	1506.73	3.5186	479.282	745.527	8.64815	2.881	4.013	3118
280	1.82455	1624.70	3.2311	538.926	826.105	8.94663	2.929	4.039	3221
300	1.95646	1741.11	2.9891	598.919	906.859	9.22532	2.944	4.036	3325
320	2.08747	1856.23	2.7822	658.771	987.333	9.48511	2.934	4.011	3429
340	2.21776	1970.28	2.6030	718.092	1067.160	9.72674	2.907	3.972	3532
360	2.34744	2083.44	2.4464	776.640	1146.120	9.95248	2.870	3.925	3633
380	2.47661	2195.84	2.3080	834.292	1224.103	10.16331	2.827	3.874	3734
400	2.60535	2307.60	2.1849	891.004	1301.078	10.36081	2.784	3.825	3832
420	2.73372	2418.81	2.0747	946.797	1377.077	10.54620	2.743	3.777	3928
440	2.86177	2529.54	1.9752	1001.737	1452.171	10.72091	2.704	3.733	4022
460	2.98955	2639.85	1.8851	1055.891	1526.436	10.88599	2.670	3.695	4114
480	3.11708	2749.79	1.8030	1109.353	1599.972	11.04225	2.639	3.660	4203
500	3.24440	2859.42	1.7279	1162.208	1672.867	11.19119	2.613	3.630	4290
520	3.37153	2968.76	1.6590	1214.542	1745.211	11.33319	2.590	3.605	4375
540	3.49963	3080.73	1.5945	1266.807	1817.639	11.46965	2.571	3.582	4459
560	3.62634	3189.39	1.5357	1318.233	1889.008	11.59894	2.555	3.564	4539
580	3.75292	3297.84	1.4812	1369.413	1960.111	11.72355	2.542	3.549	4618
600	3.87939	3406.12	1.4305	1420.369	2030.973	11.84373	2.531	3.536	4695
650	4.19513	3676.18	1.3180	1546.787	2207.088	12.12595	2.512	3.513	4880
700	4.51040	3945.51	1.2221	1672.422	2382.345	12.38596	2.500	3.498	5057
800	5.13991	4482.59	1.0672	1922.275	2731.282	12.85222	2.491	3.485	5390
1000	6.39646	5553.02	0.8520	2420.804	3427.587	13.62861	2.490	3.481	5996
2000	12.66496	10884.21	0.4251	4969.237	6962.663	16.07140	2.644	3.631	8320
3000	18.92887	16208.81	0.2833	7755.328	10734.675	17.58736	2.923	3.909	10021
4000	25.20234	21532.41	0.2125	10844.979	14811.750	18.95366	3.264	4.260	11411
5000	31.61143	26855.74	0.1700	14527.808	19503.351	20.83132	4.208	5.296	12509

* TWO-PHASE BOUNDRY

850 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 28.147	4.99694	348.75	13.256	17726.61	0.0043881	0.05432	1.956	0.00710	1.26225	1.9841
30	4.95520	350.05	12.973	16841.32	0.0046641	0.05805	1.737	0.00717	1.25989	1.7590
32	4.90780	350.55	12.666	15879.42	0.0049602	0.06100	1.549	0.00715	1.25721	1.5894
34	4.85789	350.42	12.362	14936.64	0.0052529	0.06304	1.397	0.00705	1.25439	1.4682
36	4.80581	350.04	12.061	14040.88	0.0055356	0.06484	1.272	0.00696	1.25145	1.3688
38	4.75136	350.17	11.768	13231.66	0.0057939	0.06684	1.168	0.00693	1.24839	1.2767
40	4.69527	347.64	11.490	12333.99	0.0061163	0.06833	1.081	0.00684	1.24523	1.2109
42	4.63672	344.62	11.231	11477.29	0.0064521	0.06938	1.006	0.00673	1.24195	1.1603
44	4.57572	341.35	10.980	10661.76	0.0068027	0.07006	0.940	0.00659	1.23853	1.1220
46	4.51222	337.54	10.740	9874.48	0.0071769	0.07041	0.883	0.00644	1.23498	1.0933
48	4.44613	332.98	10.504	9101.90	0.0075884	0.07046	0.831	0.00627	1.23129	1.0734
50	4.37722	327.96	10.262	8354.12	0.0080353	0.07027	0.785	0.00609	1.22746	1.0601
52	4.30541	322.45	10.022	7635.70	0.0085189	0.06988	0.743	0.00591	1.22346	1.0519
54	4.23053	316.60	9.784	6956.45	0.0090338	0.06938	0.705	0.00573	1.21931	1.0472
56	4.15241	310.14	9.540	6297.50	0.0096123	0.06829	0.669	0.00552	1.21499	1.0520
58	4.07103	303.93	9.294	5695.88	0.0102077	0.06715	0.636	0.00532	1.21050	1.0585
60	3.98622	297.55	9.050	5134.39	0.0108471	0.06593	0.606	0.00512	1.20583	1.0673
62	3.89793	290.66	8.803	4596.87	0.0115735	0.06465	0.577	0.00493	1.20098	1.0804
64	3.80588	283.89	8.554	4106.39	0.0123372	0.06329	0.550	0.00475	1.19594	1.0947
66	3.71009	276.80	8.297	3645.87	0.0131859	0.06187	0.524	0.00457	1.19071	1.1122
68	3.61044	270.09	8.044	3236.97	0.0140513	0.06041	0.499	0.00441	1.18528	1.1293
70	3.50717	263.29	7.793	2863.94	0.0149753	0.05891	0.476	0.00426	1.17967	1.1476
75	3.23524	248.26	7.180	2116.58	0.0172946	0.05535	0.424	0.00398	1.16500	1.1852
80	2.95170	237.13	6.600	1598.12	0.0193361	0.05228	0.381	0.00386	1.14983	1.2039
85	2.67159	232.21	6.056	1275.99	0.0203985	0.04944	0.347	0.00391	1.13498	1.1980
90	2.41159	232.16	5.635	1083.21	0.0203662	0.04704	0.322	0.00413	1.12131	1.1666
95	2.18285	236.72	5.303	976.10	0.0193732	0.04515	0.305	0.00451	1.10938	1.1158
100	1.98871	245.11	5.035	921.18	0.0178520	0.04380	0.294	0.00503	1.09933	1.0569
105	1.82602	255.92	4.823	892.33	0.0162722	0.04290	0.287	0.00564	1.09095	1.0018
110	1.68963	268.64	4.640	876.57	0.0148408	0.04253	0.282	0.00631	1.08396	0.9531
115	1.57392	283.19	4.472	870.31	0.0135505	0.04249	0.280	0.00703	1.07806	0.9109
120	1.47501	298.99	4.316	867.43	0.0124535	0.04266	0.279	0.00777	1.07303	0.8777
125	1.38937	316.06	4.165	867.44	0.0114989	0.04300	0.280	0.00852	1.06869	0.8511
130	1.31447	334.04	4.020	867.51	0.0106924	0.04346	0.281	0.00926	1.06490	0.8310
140	1.18947	373.51	3.742	871.20	0.0093628	0.04421	0.285	0.01063	1.05860	0.8125
150	1.08904	417.00	3.483	875.48	0.0083380	0.04633	0.292	0.01224	1.05356	0.7876
160	1.00606	464.12	3.244	878.91	0.0075277	0.04891	0.299	0.01392	1.04941	0.7665
170	0.93592	514.84	3.031	882.47	0.0068641	0.05157	0.307	0.01559	1.04591	0.7570
180	0.87633	568.23	2.841	885.21	0.0063152	0.05525	0.322	0.01757	1.04294	0.7527
190	0.82503	626.76	2.648	886.61	0.0058435	0.05948	0.338	0.01968	1.04039	0.7487
200	0.77974	683.58	2.511	888.04	0.0054558	0.06346	0.352	0.02182	1.03815	0.7440
220	0.70374	798.32	2.301	889.82	0.0048285	0.07061	0.375	0.02603	1.03438	0.7369
240	0.64220	910.27	2.158	890.60	0.0043412	0.07661	0.394	0.03019	1.03134	0.7315
260	0.59117	1015.92	2.066	890.74	0.0039502	0.08148	0.410	0.03435	1.02883	0.7268
280	0.54808	1113.00	2.012	890.47	0.0036286	0.08531	0.424	0.03854	1.02671	0.7226
300	0.51113	1201.51	1.986	889.93	0.0033588	0.08827	0.437	0.04279	1.02489	0.7187
320	0.47905	1281.89	1.979	889.22	0.0031288	0.09053	0.448	0.04712	1.02331	0.7150
340	0.45091	1355.57	1.986	888.41	0.0029300	0.09229	0.459	0.05153	1.02193	0.7117
360	0.42600	1423.97	2.001	887.54	0.0027563	0.09368	0.470	0.05603	1.02071	0.7086
380	0.40378	1488.32	2.022	886.63	0.0026031	0.09484	0.480	0.06062	1.01962	0.7058
400	0.38383	1550.38	2.044	885.72	0.0024669	0.09587	0.490	0.06531	1.01865	0.7033
420	0.36580	1610.85	2.068	884.81	0.0023448	0.09685	0.499	0.07010	1.01777	0.7010
440	0.34943	1670.65	2.090	883.91	0.0022347	0.09782	0.509	0.07498	1.01697	0.6990
460	0.33450	1730.60	2.111	883.03	0.0021348	0.09882	0.518	0.07996	1.01624	0.6973
480	0.32081	1790.79	2.130	882.17	0.0020439	0.09986	0.527	0.08504	1.01557	0.6958
500	0.30822	1851.73	2.146	881.34	0.0019606	0.10096	0.536	0.09022	1.01496	0.6944
520	0.29660	1913.46	2.159	880.54	0.0018841	0.10213	0.546	0.09551	1.01439	0.6933
540	0.28574	1977.47	2.170	880.30	0.0018113	0.10333	0.555	0.10096	1.01386	0.6920
560	0.27576	2041.03	2.179	879.50	0.0017461	0.10463	0.564	0.10646	1.01337	0.6911
580	0.26646	2105.17	2.187	878.74	0.0016856	0.10596	0.573	0.11206	1.01292	0.6903
600	0.25777	2170.15	2.192	878.01	0.0016293	0.10734	0.581	0.11776	1.01250	0.6896
650	0.23837	2335.39	2.201	876.30	0.0015041	0.11093	0.604	0.13249	1.01155	0.6882
700	0.22171	2503.93	2.205	874.76	0.0013971	0.11470	0.626	0.14789	1.01074	0.6871
800	0.19456	2848.28	2.202	872.11	0.0012237	0.12255	0.670	0.18072	1.00942	0.6858
1000	0.15634	3546.73	2.188	868.14	0.0009814	0.13847	0.756	0.25447	1.00757	0.6844
2000	0.07896	7340.15	2.036	859.40	0.0004946	0.27727	1.157	0.96716	1.00382	0.5455
3000	0.05283	11815.12	1.835	856.30	0.0003309	0.39304	1.514	1.90301	1.00255	0.5420
4000	0.03968	17129.17	1.641	854.38	0.0002487	0.53070	1.840	3.13948	1.00192	0.5316
5000	0.03153	26466.40	1.277	849.56	0.0002001	0.85438	2.149	5.09990	1.00153	0.4794

* TWO-PHASE BOUNDRY

900 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 28.328	0.19972	3594.67	78.0036	-131.344	-98.059	1.22073	1.177	1.531	4654
30	0.20121	3457.43	78.7140	-128.956	-95.423	1.31113	1.220	1.623	4616
32	0.20313	3296.22	78.9918	-125.920	-92.067	1.41940	1.266	1.729	4567
34	0.20517	3136.44	78.7533	-122.704	-88.511	1.52715	1.306	1.830	4513
36	0.20735	2980.20	78.0982	-119.312	-84.756	1.63448	1.340	1.927	4455
38	0.20968	2851.79	77.1127	-115.751	-80.807	1.74119	1.370	2.015	4408
40	0.21213	2692.56	75.9410	-112.037	-76.684	1.84693	1.398	2.112	4341
42	0.21476	2545.36	74.5848	-108.151	-72.360	1.95240	1.422	2.205	4277
44	0.21755	2399.86	73.1007	-104.112	-67.857	2.05714	1.443	2.302	4211
46	0.22053	2258.17	71.4843	-99.907	-63.155	2.16163	1.462	2.400	4144
48	0.22371	2118.76	69.7322	-95.538	-58.255	2.26589	1.479	2.500	4073
50	0.22712	1977.65	67.8552	-91.006	-53.156	2.36995	1.495	2.606	3997
52	0.23078	1843.17	65.8307	-86.301	-47.839	2.47421	1.508	2.714	3920
54	0.23473	1714.66	63.6873	-81.425	-42.306	2.57861	1.519	2.822	3842
56	0.23897	1592.24	61.4409	-76.378	-36.551	2.68325	1.529	2.933	3762
58	0.24356	1474.39	59.1155	-71.160	-30.570	2.78820	1.538	3.048	3679
60	0.24851	1358.51	56.7238	-65.769	-24.354	2.89355	1.545	3.170	3593
62	0.25387	1253.59	54.3089	-60.203	-17.894	2.99947	1.552	3.293	3510
64	0.25969	1153.65	51.8510	-54.459	-11.180	3.10604	1.558	3.420	3426
66	0.26602	1056.69	49.3511	-48.540	-4.205	3.21334	1.563	3.557	3337
68	0.27292	970.04	46.8378	-42.444	3.041	3.32149	1.567	3.689	3252
70	0.28044	888.16	44.3256	-36.182	10.554	3.43039	1.570	3.825	3166
75	0.30229	720.83	38.2012	-19.891	30.488	3.70533	1.576	4.146	2964
80	0.32905	601.82	32.5792	-2.912	51.925	3.98195	1.586	4.414	2786
85	0.36086	527.70	27.6900	14.128	74.267	4.25265	1.607	4.586	2641
90	0.39710	489.61	23.6373	31.169	97.348	4.51649	1.623	4.621	2542
95	0.43652	479.26	20.3623	47.537	120.285	4.76454	1.634	4.534	2482
100	0.47759	488.60	17.7475	63.082	142.675	4.99430	1.644	4.367	2452
105	0.51911	509.12	15.6793	77.528	164.040	5.20282	1.651	4.181	2444
110	0.56044	536.32	14.0355	91.113	184.513	5.39333	1.662	4.012	2449
115	0.60123	567.34	12.7128	104.004	204.202	5.56639	1.678	3.871	2462
120	0.64137	600.42	11.6291	116.366	223.253	5.73057	1.699	3.758	2480
125	0.68084	635.43	10.7275	128.342	241.808	5.88207	1.726	3.669	2502
130	0.71963	670.92	9.9641	140.048	259.978	6.02461	1.758	3.602	2524
140	0.79536	741.35	8.7452	163.018	295.568	6.28840	1.835	3.526	2569
150	0.86887	812.49	7.8143	185.856	330.659	6.53051	1.927	3.502	2616
160	0.94069	881.28	7.0741	208.965	365.736	6.75690	2.029	3.518	2661
170	1.01095	950.26	6.4733	232.595	401.075	6.97113	2.137	3.556	2706
180	1.08033	1018.12	5.9692	256.922	436.965	7.17625	2.247	3.609	2752
190	1.14760	1082.75	5.5220	282.541	473.795	7.37526	2.374	3.679	2788
200	1.21435	1147.20	5.1605	308.498	510.876	7.56532	2.476	3.744	2835
220	1.34563	1273.17	4.5715	362.703	586.961	7.92783	2.656	3.867	2930
240	1.47464	1395.97	4.1104	419.510	665.267	8.26826	2.792	3.962	3029
260	1.60191	1516.29	3.7384	478.148	745.115	8.58796	2.883	4.021	3130
280	1.72783	1634.62	3.4313	537.892	825.844	8.88700	2.931	4.046	3233
300	1.85267	1751.34	3.1730	597.972	906.729	9.16615	2.946	4.042	3337
320	1.97664	1866.75	2.9524	657.898	987.317	9.42630	2.935	4.016	3440
340	2.09990	1981.07	2.7616	717.285	1067.245	9.66823	2.908	3.977	3543
360	2.22256	2094.47	2.5947	775.891	1146.293	9.89423	2.871	3.929	3644
380	2.34472	2207.09	2.4476	833.595	1224.356	10.10527	2.828	3.878	3744
400	2.46646	2319.05	2.3166	890.353	1301.402	10.30296	2.785	3.828	3843
420	2.58783	2430.44	2.1994	946.188	1377.465	10.48850	2.744	3.780	3939
440	2.70889	2541.33	2.0937	1001.166	1452.618	10.66334	2.705	3.736	4033
460	2.82968	2651.80	1.9980	1055.354	1526.936	10.82854	2.670	3.697	4124
480	2.95023	2761.88	1.9108	1108.848	1600.521	10.98491	2.640	3.663	4213
500	3.07057	2871.63	1.8311	1161.733	1673.461	11.13394	2.613	3.633	4300
520	3.19073	2981.09	1.7579	1214.094	1745.846	11.27602	2.591	3.607	4385
540	3.31191	3093.48	1.6894	1266.403	1818.351	11.41261	2.572	3.584	4469
560	3.43164	3202.22	1.6270	1317.852	1889.755	11.54196	2.556	3.566	4549
580	3.55125	3310.75	1.5692	1369.054	1960.890	11.66663	2.543	3.550	4628
600	3.67075	3419.10	1.5154	1420.030	2031.780	11.78685	2.532	3.537	4704
650	3.96907	3689.31	1.3961	1546.491	2207.959	12.06917	2.512	3.514	4890
700	4.26692	3958.75	1.2944	1672.162	2383.268	12.32926	2.500	3.499	5066
800	4.86160	4496.01	1.1302	1922.071	2732.284	12.79563	2.491	3.486	5399
1000	6.04852	5566.65	0.9022	2420.669	3428.690	13.57213	2.491	3.481	6004
2000	11.96904	10898.06	0.4501	4969.211	6963.918	16.01504	2.645	3.631	8326
3000	17.88500	16222.66	0.3000	7755.307	10735.943	17.53100	2.923	3.909	10025
4000	23.80969	21546.25	0.2250	10843.885	14811.903	18.69701	3.261	4.257	11415
5000	29.85890	26869.57	0.1800	14514.804	19490.958	20.77196	4.184	5.269	12517

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

900 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(DH/DV)_P$	$V(DP/DU)_V$	$-V(DP/DV)_T$	$(DV/DT)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 28.328	5.00695	353.31	13.236	17998.29	0.0043339	0.05494	1.971	0.00717	1.26282	1.9770
30	4.96984	354.35	12.980	17182.90	0.0045810	0.05830	1.770	0.00723	1.26072	1.7747
32	4.92292	355.11	12.676	16227.01	0.0048679	0.06129	1.577	0.00720	1.25806	1.6013
34	4.87401	355.16	12.376	15287.01	0.0051516	0.06339	1.422	0.00711	1.25530	1.4776
36	4.82274	354.59	12.083	14372.73	0.0054338	0.06522	1.295	0.00702	1.25241	1.3768
38	4.76925	353.48	11.798	13600.88	0.0056697	0.06727	1.189	0.00700	1.24939	1.2820
40	4.71415	352.95	11.525	12693.14	0.0059828	0.06881	1.099	0.00691	1.24630	1.2147
42	4.65638	350.47	11.268	11852.17	0.0062929	0.06989	1.023	0.00681	1.24305	1.1617
44	4.59675	347.36	11.019	11031.53	0.0066265	0.07061	0.956	0.00667	1.23971	1.1221
46	4.53459	343.72	10.782	10239.90	0.0069810	0.07100	0.898	0.00653	1.23623	1.0923
48	4.46999	339.53	10.548	9470.82	0.0073628	0.07109	0.846	0.00636	1.23262	1.0707
50	4.40300	334.48	10.311	8707.58	0.0077927	0.07095	0.799	0.00618	1.22889	1.0570
52	4.33307	329.25	10.074	7986.56	0.0082427	0.07061	0.757	0.00600	1.22500	1.0474
54	4.26029	323.71	9.842	7304.95	0.0087184	0.07008	0.718	0.00583	1.22096	1.0413
56	4.18454	318.07	9.602	6662.79	0.0092215	0.06911	0.683	0.00563	1.21677	1.0429
58	4.10583	312.12	9.362	6053.59	0.0097654	0.06803	0.650	0.00544	1.21242	1.0477
60	4.02403	305.53	9.123	5466.70	0.0103762	0.06686	0.619	0.00524	1.20791	1.0562
62	3.93899	299.40	8.884	4937.88	0.0109984	0.06563	0.590	0.00506	1.20323	1.0655
64	3.85068	293.03	8.645	4442.32	0.0116720	0.06433	0.563	0.00488	1.19839	1.0770
66	3.75907	286.26	8.399	3972.19	0.0124242	0.06298	0.537	0.00471	1.19338	1.0920
68	3.66404	279.91	8.155	3554.28	0.0131779	0.06158	0.513	0.00456	1.18820	1.1060
70	3.56583	273.32	7.916	3167.01	0.0139960	0.06014	0.490	0.00441	1.18286	1.1219
75	3.30805	258.77	7.326	2384.53	0.0160204	0.05657	0.438	0.00413	1.16892	1.1567
80	3.03910	247.82	6.761	1828.99	0.0178127	0.05361	0.395	0.00400	1.15449	1.1718
85	2.77115	242.17	6.216	1462.33	0.0189355	0.05085	0.361	0.00400	1.14024	1.1709
90	2.51826	241.06	5.785	1232.95	0.0191713	0.04847	0.335	0.00416	1.12691	1.1483
95	2.29086	244.48	5.439	1097.93	0.0185461	0.04655	0.316	0.00448	1.11501	1.1077
100	2.09383	251.72	5.156	1023.05	0.0173476	0.04511	0.303	0.00493	1.10477	1.0566
105	1.92639	261.52	4.930	980.76	0.0159869	0.04412	0.295	0.00548	1.09611	1.0062
110	1.78432	273.54	4.733	956.97	0.0146666	0.04365	0.290	0.00610	1.08881	0.9589
115	1.66326	287.31	4.555	943.63	0.0134723	0.04352	0.287	0.00676	1.08261	0.9184
120	1.55917	302.54	4.389	936.16	0.0124222	0.04361	0.285	0.00744	1.07731	0.8854
125	1.46878	319.22	4.231	933.31	0.0114941	0.04388	0.285	0.00814	1.07271	0.8586
130	1.38961	337.08	4.079	932.32	0.0106874	0.04429	0.286	0.00885	1.06870	0.8376
140	1.25730	375.86	3.791	932.09	0.0093823	0.04492	0.290	0.01013	1.06202	0.8185
150	1.15092	419.13	3.524	935.11	0.0083566	0.04697	0.295	0.01165	1.05667	0.7923
160	1.06305	465.84	3.280	936.84	0.0075510	0.04950	0.302	0.01324	1.05226	0.7726
170	0.98917	516.34	3.062	939.97	0.0068867	0.05212	0.310	0.01482	1.04857	0.7604
180	0.92564	569.74	2.870	942.42	0.0063340	0.05559	0.324	0.01664	1.04540	0.7565
190	0.87138	628.60	2.669	943.49	0.0058527	0.05977	0.339	0.01865	1.04270	0.7518
200	0.82349	685.44	2.530	944.71	0.0054626	0.06372	0.353	0.02067	1.04032	0.7469
220	0.74314	800.26	2.316	946.15	0.0048317	0.07081	0.376	0.02464	1.03633	0.7394
240	0.67813	912.37	2.171	946.65	0.0043420	0.07677	0.395	0.02858	1.03312	0.7336
260	0.62425	1018.19	2.077	946.55	0.0039495	0.08162	0.411	0.03251	1.03046	0.7287
280	0.57876	1115.45	2.023	946.05	0.0036270	0.08543	0.425	0.03648	1.02822	0.7242
300	0.53976	1204.14	1.996	945.31	0.0033566	0.08838	0.437	0.04051	1.02630	0.7201
320	0.50591	1284.67	1.988	944.41	0.0031262	0.09063	0.449	0.04461	1.02463	0.7162
340	0.47621	1358.50	1.994	943.41	0.0029272	0.09239	0.460	0.04879	1.02317	0.7127
360	0.44993	1427.02	2.009	942.37	0.0027534	0.09378	0.470	0.05305	1.02189	0.7095
380	0.42649	1491.48	2.029	941.30	0.0026002	0.09493	0.480	0.05740	1.02074	0.7066
400	0.40544	1553.64	2.052	940.23	0.0024639	0.09597	0.490	0.06184	1.01971	0.7040
420	0.38642	1614.19	2.075	939.18	0.0023418	0.09695	0.500	0.06637	1.01878	0.7016
440	0.36915	1674.07	2.097	938.14	0.0022318	0.09791	0.509	0.07099	1.01793	0.6996
460	0.35340	1734.09	2.117	937.14	0.0021320	0.09892	0.519	0.07571	1.01716	0.6978
480	0.33896	1794.34	2.136	936.16	0.0020411	0.09996	0.528	0.08052	1.01646	0.6962
500	0.32567	1855.34	2.151	935.21	0.0019579	0.10106	0.537	0.08542	1.01581	0.6948
520	0.31341	1917.13	2.165	934.30	0.0018815	0.10223	0.546	0.09043	1.01521	0.6936
540	0.30194	1981.34	2.176	934.05	0.0018087	0.10344	0.555	0.09560	1.01465	0.6923
560	0.29141	2044.94	2.184	933.14	0.0017436	0.10473	0.564	0.10080	1.01414	0.6913
580	0.28159	2109.11	2.192	932.28	0.0016832	0.10607	0.573	0.10610	1.01366	0.6905
600	0.27242	2174.13	2.197	931.45	0.0016270	0.10745	0.582	0.11150	1.01321	0.6898
650	0.25195	2339.44	2.206	929.52	0.0015019	0.11105	0.604	0.12544	1.01221	0.6883
700	0.23436	2508.04	2.209	927.78	0.0013952	0.11482	0.626	0.14002	1.01136	0.6872
800	0.20569	2852.49	2.206	924.80	0.0012221	0.12268	0.670	0.17109	1.00996	0.6858
1000	0.16533	3551.07	2.191	920.33	0.0009803	0.13864	0.757	0.24089	1.00800	0.6844
2000	0.08355	7344.87	2.037	910.52	0.0004943	0.27727	1.159	0.91400	1.00404	0.5463
3000	0.05591	11819.92	1.835	907.05	0.0003307	0.39302	1.516	1.79803	1.00270	0.5429
4000	0.04200	17120.71	1.643	904.94	0.0002486	0.52998	1.843	2.96444	1.00203	0.5328
5000	0.03349	26340.55	1.285	899.88	0.0002000	0.84769	2.152	4.80420	1.00162	0.4816

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

950 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 28.508	0.19933	3640.86	78.2239	-131.226	-96.161	1.22251	1.180	1.532	4681
30	0.20065	3522.24	78.8771	-129.108	-93.811	1.30285	1.218	1.613	4648
32	0.20251	3356.14	79.2172	-126.105	-90.480	1.41030	1.264	1.719	4597
34	0.20451	3196.93	79.0395	-122.920	-86.944	1.51747	1.305	1.819	4544
36	0.20664	3037.50	78.4643	-119.560	-83.209	1.62419	1.339	1.916	4487
38	0.20891	2903.33	77.5418	-116.037	-79.286	1.73024	1.370	2.006	4438
40	0.21132	2763.52	76.3909	-112.353	-75.178	1.83558	1.397	2.096	4382
42	0.21386	2612.43	75.0924	-108.519	-70.897	1.94000	1.421	2.189	4318
44	0.21657	2466.32	73.6503	-104.526	-66.427	2.04395	1.443	2.283	4252
46	0.21947	2325.16	72.0756	-100.373	-61.765	2.14755	1.462	2.379	4186
48	0.22255	2187.45	70.3708	-96.062	-56.911	2.25084	1.479	2.476	4119
50	0.22585	2050.72	68.5398	-91.589	-51.859	2.35395	1.495	2.577	4047
52	0.22938	1917.71	66.5786	-86.955	-46.605	2.45698	1.509	2.680	3973
54	0.23316	1788.43	64.4963	-82.159	-41.142	2.56006	1.520	2.784	3896
56	0.23723	1660.93	62.3086	-77.197	-35.465	2.66329	1.530	2.894	3815
58	0.24161	1544.39	60.0437	-72.074	-29.572	2.76668	1.539	3.003	3736
60	0.24631	1432.86	57.7164	-66.788	-23.457	2.87032	1.547	3.114	3656
62	0.25140	1326.58	55.3560	-61.337	-17.113	2.97433	1.554	3.230	3574
64	0.25688	1223.98	52.9673	-55.723	-10.533	3.07877	1.559	3.352	3491
66	0.26283	1130.08	50.5492	-49.943	-3.708	3.18378	1.565	3.474	3409
68	0.26927	1041.95	48.1006	-44.003	3.365	3.28936	1.569	3.596	3326
70	0.27624	958.96	45.6696	-37.911	10.685	3.39544	1.572	3.723	3244
75	0.29635	786.91	39.6926	-22.088	30.044	3.66246	1.577	4.019	3048
80	0.32068	661.21	34.1555	-5.614	50.798	3.93027	1.586	4.273	2873
85	0.34944	578.79	29.2759	10.965	72.437	4.19244	1.607	4.453	2726
90	0.38222	532.09	25.1569	27.670	94.908	4.44931	1.622	4.518	2620
95	0.41812	514.05	21.7721	43.874	117.427	4.69283	1.635	4.471	2552
100	0.45589	515.76	19.0347	59.412	139.609	4.92045	1.646	4.349	2513
105	0.49447	532.48	16.8327	73.966	160.951	5.12874	1.653	4.183	2498
110	0.53305	555.68	15.0684	87.691	181.462	5.31960	1.664	4.029	2496
115	0.57137	584.07	13.6391	100.746	201.258	5.49562	1.681	3.895	2504
120	0.60926	615.48	12.4645	113.274	220.451	5.65900	1.702	3.784	2518
125	0.64654	648.29	11.4891	125.403	239.139	5.81158	1.728	3.699	2535
130	0.68328	682.61	10.6627	137.254	257.454	5.95526	1.760	3.632	2555
140	0.75512	752.24	9.3425	160.479	293.315	6.22106	1.837	3.552	2596
150	0.82500	821.98	8.3354	183.536	328.666	6.46497	1.928	3.526	2639
160	0.89327	890.72	7.5374	206.827	363.966	6.69280	2.031	3.538	2682
170	0.96007	958.85	6.8902	230.614	399.503	6.90823	2.139	3.576	2725
180	1.02573	1026.20	6.3520	255.065	435.505	7.11400	2.249	3.628	2769
190	1.09006	1091.27	5.8870	280.857	472.615	7.31455	2.377	3.704	2807
200	1.15352	1155.90	5.4786	306.935	509.856	7.50544	2.479	3.759	2849
220	1.27832	1282.24	4.8484	361.319	586.193	7.86916	2.658	3.878	2944
240	1.40090	1405.40	4.3560	418.269	664.706	8.21048	2.794	3.971	3042
260	1.52178	1526.07	3.9594	477.025	744.728	8.53088	2.884	4.030	3143
280	1.64135	1644.72	3.6324	536.869	825.606	8.83047	2.932	4.053	3245
300	1.75986	1761.74	3.3577	597.034	906.618	9.11006	2.947	4.048	3348
320	1.87752	1877.42	3.1232	657.034	987.317	9.37057	2.936	4.021	3451
340	1.99448	1991.99	2.9206	716.485	1067.343	9.61280	2.909	3.981	3554
360	2.11086	2105.61	2.7436	775.149	1146.479	9.83905	2.872	3.933	3655
380	2.22674	2218.44	2.5874	832.904	1224.620	10.05030	2.829	3.882	3755
400	2.34221	2330.59	2.4486	889.708	1301.736	10.24817	2.786	3.831	3853
420	2.45732	2442.15	2.3244	945.584	1377.862	10.43387	2.744	3.783	3949
440	2.57213	2553.20	2.2125	1000.599	1453.073	10.60884	2.706	3.739	4043
460	2.68666	2663.81	2.1111	1054.822	1527.444	10.77416	2.671	3.700	4134
480	2.80096	2774.03	2.0188	1108.347	1601.076	10.93063	2.640	3.665	4223
500	2.91505	2883.90	1.9344	1161.261	1674.060	11.07975	2.614	3.635	4310
520	3.02896	2993.47	1.8569	1213.649	1746.487	11.22191	2.591	3.609	4395
540	3.14396	3106.29	1.7844	1266.002	1819.069	11.35861	2.572	3.585	4479
560	3.25745	3215.11	1.7184	1317.474	1890.507	11.48803	2.557	3.567	4559
580	3.37082	3323.71	1.6573	1368.698	1961.673	11.61275	2.543	3.552	4637
600	3.48408	3432.13	1.6004	1419.693	2032.592	11.73303	2.532	3.539	4714
650	3.76681	3702.48	1.4742	1546.198	2208.833	12.01545	2.512	3.515	4899
700	4.04907	3972.03	1.3667	1671.904	2384.194	12.27561	2.501	3.500	5075
800	4.61259	4509.45	1.1933	1921.868	2733.288	12.74208	2.492	3.487	5407
1000	5.73721	5580.28	0.9524	2420.536	3429.794	13.51870	2.491	3.481	6011
2000	11.34636	10911.89	0.4751	4969.186	6965.172	15.96173	2.645	3.631	8331
3000	16.95100	16236.49	0.3167	7755.289	10737.212	17.47769	2.923	3.909	10030
4000	22.56364	21560.07	0.2375	10842.880	14812.147	18.84343	3.258	4.253	11420
5000	28.29116	26883.37	0.1900	14502.843	19479.661	20.71589	4.162	5.243	12524

* TWO-PHASE BOUNDRY

950 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 28.508	5.01684	357.79	13.217	18265.63	0.0042826	0.05556	1.985	0.00723	1.26338	1.9706
30	4.98390	359.08	12.989	17554.48	0.0044933	0.05854	1.803	0.00728	1.26151	1.7895
32	4.93801	359.59	12.687	16572.64	0.0047800	0.06158	1.606	0.00726	1.25892	1.6137
34	4.88980	359.79	12.390	15632.36	0.0050561	0.06372	1.447	0.00716	1.25619	1.4874
36	4.83930	359.01	12.105	14699.40	0.0053379	0.06560	1.317	0.00707	1.25334	1.3851
38	4.78671	359.50	11.826	13897.44	0.0055796	0.06769	1.209	0.00705	1.25038	1.2895
40	4.73210	358.76	11.554	13077.26	0.0058415	0.06926	1.118	0.00698	1.24730	1.2173
42	4.67586	356.07	11.301	12215.36	0.0061474	0.07040	1.040	0.00688	1.24414	1.1639
44	4.61735	353.05	11.055	11387.85	0.0064674	0.07116	0.972	0.00675	1.24086	1.1231
46	4.55648	349.63	10.820	10594.54	0.0068031	0.07158	0.913	0.00661	1.23746	1.0920
48	4.49329	345.77	10.589	9828.86	0.0071596	0.07172	0.860	0.00645	1.23392	1.0690
50	4.42759	341.35	10.356	9079.97	0.0075485	0.07161	0.813	0.00628	1.23027	1.0531
52	4.35960	336.48	10.124	8360.47	0.0079635	0.07131	0.770	0.00610	1.22648	1.0421
54	4.28884	331.10	9.895	7670.30	0.0084086	0.07083	0.731	0.00593	1.22254	1.0349
56	4.21528	325.21	9.661	7001.29	0.0088996	0.06990	0.696	0.00573	1.21847	1.0367
58	4.13897	319.66	9.425	6392.17	0.0093933	0.06887	0.662	0.00554	1.21425	1.0396
60	4.05985	313.83	9.192	5817.18	0.0099217	0.06775	0.631	0.00536	1.20988	1.0449
62	3.97778	307.86	8.958	5276.85	0.0104903	0.06657	0.603	0.00518	1.20536	1.0525
64	3.89280	301.52	8.726	4764.70	0.0111166	0.06532	0.576	0.00501	1.20070	1.0631
66	3.80478	295.47	8.491	4299.70	0.0117564	0.06402	0.550	0.00484	1.19588	1.0743
68	3.71379	289.31	8.255	3869.58	0.0124305	0.06268	0.526	0.00469	1.19091	1.0862
70	3.61938	283.00	8.027	3471.41	0.0131559	0.06131	0.503	0.00455	1.18580	1.0999
75	3.37442	268.87	7.458	2655.37	0.0149481	0.05782	0.452	0.00426	1.17250	1.1308
80	3.11839	257.98	6.907	2061.91	0.0165650	0.05487	0.409	0.00412	1.15873	1.1458
85	2.86172	251.94	6.366	1656.35	0.0176750	0.05218	0.374	0.00410	1.14505	1.1475
90	2.61628	250.02	5.927	1392.09	0.0180713	0.04983	0.346	0.00422	1.13206	1.1308
95	2.39166	252.46	5.568	1229.44	0.0177089	0.04788	0.326	0.00448	1.12027	1.0975
100	2.19352	258.49	5.273	1131.33	0.0168250	0.04639	0.313	0.00486	1.10994	1.0549
105	2.02236	267.60	5.035	1076.86	0.0156313	0.04530	0.303	0.00536	1.10107	1.0077
110	1.87600	278.76	4.826	1042.46	0.0144547	0.04475	0.297	0.00592	1.09352	0.9632
115	1.75017	291.90	4.637	1022.21	0.0133427	0.04454	0.293	0.00653	1.08706	0.9238
120	1.64135	306.68	4.462	1010.21	0.0123385	0.04456	0.292	0.00717	1.08150	0.8911
125	1.54670	322.78	4.298	1002.70	0.0114581	0.04477	0.291	0.00783	1.07667	0.8650
130	1.46352	340.28	4.140	999.01	0.0106732	0.04511	0.291	0.00849	1.07245	0.8439
140	1.32430	378.74	3.841	996.18	0.0093783	0.04563	0.294	0.00970	1.06540	0.8238
150	1.21212	421.51	3.566	996.33	0.0083661	0.04762	0.299	0.01114	1.05974	0.7969
160	1.11948	468.12	3.316	997.15	0.0075590	0.05009	0.305	0.01265	1.05509	0.7762
170	1.04159	518.27	3.093	998.73	0.0068990	0.05267	0.312	0.01414	1.05119	0.7636
180	0.97492	571.38	2.897	1000.46	0.0063491	0.05593	0.326	0.01582	1.04786	0.7601
190	0.91736	629.92	2.700	1001.11	0.0058805	0.06008	0.341	0.01768	1.04499	0.7568
200	0.86691	687.45	2.549	1002.06	0.0054674	0.06399	0.355	0.01964	1.04247	0.7497
220	0.78228	802.35	2.332	1003.06	0.0048336	0.07102	0.377	0.02341	1.03827	0.7418
240	0.71383	914.59	2.184	1003.22	0.0043420	0.07694	0.396	0.02714	1.03488	0.7357
260	0.65712	1020.57	2.089	1002.82	0.0039483	0.08176	0.412	0.03088	1.03208	0.7305
280	0.60926	1117.99	2.033	1002.05	0.0036250	0.08555	0.426	0.03465	1.02972	0.7258
300	0.56823	1206.84	2.005	1001.07	0.0033541	0.08849	0.438	0.03847	1.02770	0.7214
320	0.53262	1287.53	1.997	999.95	0.0031234	0.09074	0.450	0.04236	1.02594	0.7174
340	0.50138	1361.48	2.003	998.75	0.0029243	0.09249	0.461	0.04633	1.02441	0.7137
360	0.47374	1430.12	2.017	997.51	0.0027504	0.09388	0.471	0.05038	1.02305	0.7104
380	0.44909	1494.69	2.037	996.27	0.0025971	0.09503	0.481	0.05451	1.02184	0.7073
400	0.42695	1556.94	2.059	995.04	0.0024609	0.09607	0.491	0.05873	1.02076	0.7046
420	0.40695	1617.57	2.081	993.83	0.0023388	0.09704	0.500	0.06303	1.01978	0.7022
440	0.38878	1677.53	2.103	992.64	0.0022289	0.09801	0.510	0.06742	1.01889	0.7001
460	0.37221	1737.61	2.123	991.50	0.0021292	0.09901	0.519	0.07190	1.01808	0.6982
480	0.35702	1797.92	2.142	990.38	0.0020384	0.10006	0.528	0.07647	1.01734	0.6966
500	0.34305	1858.98	2.157	989.31	0.0019553	0.10116	0.537	0.08113	1.01666	0.6952
520	0.33015	1920.82	2.170	988.28	0.0018789	0.10233	0.547	0.08588	1.01603	0.6939
540	0.31807	1985.23	2.181	988.02	0.0018060	0.10354	0.556	0.09080	1.01544	0.6925
560	0.30699	2048.87	2.190	987.00	0.0017411	0.10484	0.565	0.09574	1.01490	0.6916
580	0.29666	2113.07	2.197	986.03	0.0016807	0.10617	0.574	0.10077	1.01439	0.6907
600	0.28702	2178.12	2.202	985.09	0.0016246	0.10756	0.583	0.10590	1.01392	0.6900
650	0.26548	2343.50	2.210	982.92	0.0014998	0.11116	0.605	0.11913	1.01287	0.6884
700	0.24637	2512.16	2.213	980.97	0.0013932	0.11494	0.627	0.13298	1.01197	0.6874
800	0.21680	2856.70	2.209	977.64	0.0012206	0.12282	0.671	0.16247	1.01050	0.6859
1000	0.17430	3555.42	2.194	972.65	0.0009792	0.13881	0.758	0.22874	1.00844	0.6844
2000	0.08813	7349.58	2.038	961.71	0.0004940	0.27727	1.161	0.86644	1.00426	0.5472
3000	0.05899	11824.75	1.836	957.85	0.0003306	0.39301	1.519	1.70410	1.00285	0.5438
4000	0.04432	17113.35	1.645	955.52	0.0002485	0.52932	1.846	2.80795	1.00214	0.5340
5000	0.03535	26225.22	1.292	950.24	0.0001999	0.84154	2.156	4.54054	1.00171	0.4836

* TWO-PHASE BOUNDRY

1000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 28.688	0.19894	3686.01	78.4473	-131.105	-94.267	1.22428	1.182	1.533	4706
30	0.20008	3581.69	79.0419	-129.254	-92.205	1.29454	1.217	1.604	4678
32	0.20190	3414.99	79.4386	-126.280	-88.893	1.40140	1.263	1.709	4627
34	0.20386	3256.26	79.3201	-123.125	-85.376	1.50800	1.304	1.809	4576
36	0.20594	3106.46	78.8058	-119.801	-81.666	1.61399	1.339	1.904	4524
38	0.20817	2960.76	77.9334	-116.309	-77.762	1.71953	1.369	1.995	4470
40	0.21052	2829.64	76.8309	-112.663	-73.680	1.82421	1.397	2.082	4420
42	0.21300	2677.85	75.5874	-108.869	-69.428	1.92793	1.421	2.173	4357
44	0.21564	2531.02	74.1854	-104.921	-64.991	2.03112	1.443	2.266	4292
46	0.21845	2390.24	72.6500	-100.817	-60.366	2.13389	1.462	2.359	4228
48	0.22144	2254.04	70.9898	-96.560	-55.555	2.23627	1.479	2.453	4162
50	0.22463	2118.26	69.2059	-92.147	-50.552	2.33839	1.495	2.551	4092
52	0.22804	1986.32	67.2998	-87.578	-45.351	2.44036	1.509	2.651	4021
54	0.23168	1857.43	65.2717	-82.852	-39.951	2.54226	1.520	2.752	3946
56	0.23559	1734.48	63.1410	-77.970	-34.345	2.64419	1.531	2.854	3870
58	0.23977	1617.39	60.9316	-72.933	-28.533	2.74616	1.540	2.958	3793
60	0.24426	1505.05	58.6625	-67.743	-22.512	2.84823	1.548	3.064	3715
62	0.24909	1395.12	56.3496	-62.398	-16.272	2.95052	1.555	3.176	3633
64	0.25429	1295.86	54.0259	-56.898	-9.810	3.05310	1.561	3.287	3556
66	0.25990	1201.45	51.6766	-51.245	-3.120	3.15603	1.566	3.401	3476
68	0.26593	1110.64	49.3013	-45.444	3.800	3.25931	1.571	3.520	3395
70	0.27246	1029.13	46.9280	-39.500	10.952	3.36297	1.573	3.632	3318
75	0.29109	853.09	41.0931	-24.089	29.813	3.62312	1.578	3.908	3128
80	0.31340	720.85	35.6386	-8.061	49.972	3.88326	1.586	4.150	2956
85	0.33962	630.44	30.7780	8.097	70.985	4.13784	1.607	4.335	2807
90	0.36949	577.31	26.6096	24.478	92.896	4.38831	1.622	4.413	2697
95	0.40230	550.86	23.1472	40.482	114.978	4.62709	1.636	4.405	2622
100	0.43714	546.78	20.3008	55.971	136.916	4.85220	1.647	4.314	2576
105	0.47298	557.57	17.9837	70.575	158.158	5.05951	1.655	4.178	2553
110	0.50914	577.86	16.1014	84.422	178.701	5.25067	1.667	4.036	2546
115	0.54518	603.15	14.5693	97.610	198.562	5.42725	1.683	3.910	2548
120	0.58088	632.13	13.3099	110.275	217.837	5.59133	1.704	3.806	2557
125	0.61615	662.95	12.2579	122.543	236.638	5.74484	1.731	3.722	2570
130	0.65101	695.89	11.3684	134.527	255.076	5.88948	1.762	3.657	2587
140	0.71929	763.89	9.9463	157.993	291.186	6.15712	1.839	3.576	2623
150	0.78580	832.42	8.8625	181.255	326.764	6.40260	1.930	3.549	2663
160	0.85084	900.78	8.0056	204.722	362.274	6.63178	2.032	3.558	2703
170	0.91449	968.64	7.3111	228.660	397.998	6.84835	2.141	3.593	2745
180	0.97707	1035.54	6.7342	253.243	434.169	7.05509	2.251	3.644	2787
190	1.03872	1101.58	6.2475	279.169	471.512	7.25689	2.378	3.723	2827
200	1.09990	1164.95	5.8177	305.382	508.869	7.44839	2.481	3.781	2868
220	1.21783	1291.60	5.1271	359.950	585.459	7.81332	2.660	3.890	2958
240	1.33461	1415.09	4.6030	417.041	664.174	8.15552	2.795	3.981	3055
260	1.44973	1536.06	4.1815	475.914	744.365	8.47660	2.886	4.038	3155
280	1.56357	1655.01	3.8344	535.856	825.387	8.77672	2.933	4.060	3257
300	1.67636	1772.31	3.5431	596.105	906.525	9.05675	2.948	4.054	3360
320	1.78836	1888.24	3.2946	656.179	987.333	9.31761	2.937	4.027	3463
340	1.89964	2003.03	3.0801	715.693	1067.456	9.56013	2.910	3.986	3565
360	2.01036	2116.87	2.8928	774.414	1146.677	9.78662	2.873	3.938	3666
380	2.12059	2229.90	2.7276	832.219	1224.895	9.99809	2.830	3.886	3766
400	2.23041	2342.22	2.5809	889.068	1302.080	10.19613	2.787	3.835	3864
420	2.33989	2453.95	2.4496	944.985	1378.269	10.38198	2.745	3.786	3960
440	2.44905	2565.15	2.3314	1000.037	1453.536	10.55709	2.706	3.742	4053
460	2.55796	2675.89	2.2243	1054.294	1527.958	10.72252	2.672	3.702	4145
480	2.66663	2786.24	2.1269	1107.851	1601.638	10.87909	2.641	3.667	4234
500	2.77510	2896.23	2.0378	1160.793	1674.666	11.02830	2.615	3.637	4320
520	2.88339	3005.90	1.9560	1213.207	1747.132	11.17054	2.592	3.611	4405
540	2.99282	3119.16	1.8795	1265.604	1819.792	11.30737	2.573	3.587	4489
560	3.10069	3228.06	1.8099	1317.100	1891.264	11.43684	2.557	3.569	4569
580	3.20844	3336.73	1.7454	1368.344	1962.461	11.56162	2.544	3.553	4647
600	3.31608	3445.21	1.6854	1419.360	2033.408	11.68194	2.533	3.540	4723
650	3.58478	3715.69	1.5524	1545.907	2209.711	11.96446	2.513	3.516	4908
700	3.85301	3985.35	1.4391	1671.649	2385.122	12.22470	2.501	3.501	5084
800	4.38848	4522.92	1.2563	1921.667	2734.295	12.69128	2.492	3.487	5415
1000	5.45703	5593.92	1.0026	2420.405	3430.899	13.46800	2.491	3.482	6019
2000	10.78595	10925.70	0.5001	4969.162	6966.426	15.91114	2.645	3.631	8336
3000	16.11039	16250.29	0.3333	7755.273	10738.482	17.42712	2.923	3.909	10034
4000	21.44221	21573.85	0.2500	10841.954	14812.470	18.79260	3.255	4.250	11424
5000	26.88043	26897.14	0.2000	14491.793	19469.320	20.66276	4.141	5.220	12531

* TWO-PHASE BOUNDRY

1000 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(DH/DV)_P$	$V(DP/DU)_V$	$-V(DP/DV)_T$	$(DV/DT)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 28.688	5.02654	362.18	13.198	18528.25	0.0042339	0.05617	1.999	0.00729	1.26394	1.9649
30	4.99805	363.38	12.999	17901.46	0.0044154	0.05878	1.937	0.00733	1.26232	1.8057
32	4.95284	363.96	12.699	16913.89	0.0046966	0.06188	1.635	0.00731	1.25976	1.6265
34	4.90530	364.31	12.405	15972.91	0.0049659	0.06406	1.473	0.00722	1.25707	1.4974
36	4.85576	364.42	12.123	15084.22	0.0052244	0.06598	1.340	0.00714	1.25427	1.3920
38	4.80382	364.05	11.848	14222.94	0.0054794	0.06811	1.229	0.00711	1.25134	1.2961
40	4.75011	364.15	11.580	13441.08	0.0057161	0.06972	1.136	0.00705	1.24832	1.2212
42	4.69485	361.51	11.333	12572.12	0.0060123	0.07089	1.057	0.00695	1.24521	1.1665
44	4.63741	358.57	11.090	11737.39	0.0063204	0.07169	0.988	0.00682	1.24199	1.1246
46	4.57774	355.34	10.857	10941.91	0.0066396	0.07216	0.928	0.00668	1.23865	1.0923
48	4.51588	351.79	10.629	10178.97	0.0069742	0.07233	0.875	0.00653	1.23519	1.0680
50	4.45175	347.84	10.398	9429.98	0.0073389	0.07226	0.827	0.00636	1.23161	1.0509
52	4.38525	343.08	10.170	8710.51	0.0077263	0.07200	0.784	0.00619	1.22790	1.0386
54	4.31627	337.96	9.946	8017.16	0.0081415	0.07156	0.744	0.00603	1.22407	1.0303
56	4.24469	332.77	9.716	7362.32	0.0085762	0.07067	0.708	0.00583	1.22010	1.0296
58	4.17060	327.43	9.485	6745.47	0.0090330	0.06968	0.675	0.00565	1.21599	1.0314
60	4.09392	321.79	9.257	6161.56	0.0095207	0.06860	0.644	0.00547	1.21176	1.0354
62	4.01455	315.71	9.026	5600.76	0.0100611	0.06747	0.615	0.00529	1.20738	1.0425
64	3.93248	310.05	8.801	5095.96	0.0106017	0.06627	0.588	0.00513	1.20287	1.0499
66	3.84770	304.27	8.574	4622.83	0.0111786	0.06502	0.562	0.00497	1.19823	1.0593
68	3.76032	298.15	8.347	4176.35	0.0118049	0.06373	0.538	0.00482	1.19345	1.0706
70	3.67030	292.37	8.126	3777.24	0.0124239	0.06241	0.516	0.00468	1.18854	1.0808
75	3.43541	278.70	7.578	2930.73	0.0140215	0.05905	0.465	0.00440	1.17579	1.1072
80	3.19080	267.84	7.041	2300.07	0.0154946	0.05606	0.421	0.00423	1.16261	1.1233
85	2.94451	261.46	6.504	1856.32	0.0165801	0.05345	0.386	0.00419	1.14945	1.1269
90	2.70646	259.12	6.060	1562.47	0.0170305	0.05111	0.358	0.00428	1.13682	1.1127
95	2.48568	260.57	5.694	1369.27	0.0169048	0.04916	0.337	0.00449	1.12520	1.0870
100	2.28752	265.81	5.388	1250.83	0.0162298	0.04761	0.322	0.00482	1.11484	1.0498
105	2.11426	273.90	5.138	1178.85	0.0152552	0.04647	0.311	0.00526	1.10582	1.0080
110	1.96408	284.48	4.918	1134.96	0.0141867	0.04583	0.304	0.00578	1.09806	0.9652
115	1.83427	296.95	4.719	1106.35	0.0131688	0.04555	0.300	0.00635	1.09137	0.9275
120	1.72154	311.15	4.536	1088.24	0.0122307	0.04550	0.298	0.00695	1.08559	0.8959
125	1.62297	326.74	4.364	1075.94	0.0113927	0.04564	0.296	0.00756	1.08056	0.8702
130	1.53606	343.86	4.200	1068.94	0.0106352	0.04593	0.296	0.00818	1.07613	0.8492
140	1.39026	381.80	3.891	1062.01	0.0093656	0.04635	0.298	0.00932	1.06873	0.8288
150	1.27258	424.16	3.608	1059.32	0.0083661	0.04827	0.303	0.01069	1.06279	0.8013
160	1.17531	470.58	3.351	1058.70	0.0075618	0.05069	0.309	0.01212	1.05789	0.7798
170	1.09351	520.59	3.123	1059.22	0.0069023	0.05323	0.315	0.01355	1.05379	0.7665
180	1.02347	573.51	2.924	1059.85	0.0063540	0.05629	0.327	0.01509	1.05028	0.7632
190	0.96272	632.03	2.729	1060.51	0.0058910	0.06040	0.343	0.01685	1.04725	0.7605
200	0.91000	688.90	2.577	1060.11	0.0054879	0.06427	0.356	0.01868	1.04462	0.7541
220	0.82113	804.58	2.347	1060.57	0.0048343	0.07124	0.379	0.02231	1.04020	0.7441
240	0.74928	916.93	2.198	1060.30	0.0043412	0.07712	0.397	0.02586	1.03664	0.7377
260	0.68978	1023.05	2.101	1059.55	0.0039465	0.08191	0.413	0.02941	1.03369	0.7323
280	0.63956	1120.63	2.044	1058.48	0.0036226	0.08568	0.426	0.03300	1.03121	0.7273
300	0.59652	1209.63	2.015	1057.22	0.0033513	0.08861	0.439	0.03664	1.02909	0.7228
320	0.55917	1290.46	2.006	1055.85	0.0031204	0.09085	0.450	0.04035	1.02725	0.7186
340	0.52641	1364.54	2.011	1054.43	0.0029211	0.09259	0.461	0.04413	1.02564	0.7148
360	0.49742	1433.28	2.025	1052.98	0.0027472	0.09398	0.472	0.04798	1.02422	0.7113
380	0.47157	1497.95	2.044	1051.54	0.0025939	0.09513	0.482	0.05192	1.02295	0.7081
400	0.44835	1560.28	2.066	1050.13	0.0024577	0.09617	0.491	0.05593	1.02181	0.7053
420	0.42737	1620.99	2.088	1048.75	0.0023358	0.09714	0.501	0.06003	1.02078	0.7028
440	0.40832	1681.01	2.110	1047.40	0.0022259	0.09811	0.510	0.06422	1.01985	0.7006
460	0.39094	1741.16	2.130	1046.11	0.0021263	0.09912	0.520	0.06848	1.01900	0.6987
480	0.37501	1801.53	2.148	1044.85	0.0020356	0.10016	0.529	0.07283	1.01822	0.6970
500	0.36035	1862.63	2.163	1043.65	0.0019526	0.10127	0.538	0.07727	1.01750	0.6955
520	0.34681	1924.53	2.176	1042.49	0.0018763	0.10244	0.547	0.08179	1.01684	0.6942
540	0.33413	1989.15	2.186	1042.22	0.0018034	0.10365	0.556	0.08648	1.01622	0.6928
560	0.32251	2052.82	2.195	1041.08	0.0017385	0.10495	0.565	0.09118	1.01565	0.6918
580	0.31158	2117.06	2.202	1039.98	0.0016783	0.10628	0.574	0.09598	1.01512	0.6909
600	0.30156	2182.13	2.207	1038.94	0.0016222	0.10767	0.583	0.10086	1.01463	0.6901
650	0.27896	2347.58	2.215	1036.52	0.0014977	0.11128	0.605	0.11346	1.01353	0.6886
700	0.25954	2516.29	2.217	1034.35	0.0013913	0.11507	0.628	0.12664	1.01258	0.6875
800	0.22787	2860.93	2.213	1030.64	0.0012190	0.12295	0.672	0.15472	1.01104	0.6860
1000	0.18325	3559.76	2.197	1025.09	0.0009781	0.13897	0.759	0.21781	1.00887	0.6844
2000	0.09271	7354.29	2.040	1012.96	0.0004937	0.27727	1.162	0.82363	1.00448	0.5480
3000	0.06207	11829.59	1.837	1008.68	0.0003305	0.39299	1.521	1.61957	1.00300	0.5447
4000	0.04654	17106.96	1.647	1006.14	0.0002485	0.52871	1.849	2.66720	1.00225	0.5352
5000	0.03720	26119.06	1.298	1000.62	0.0001999	0.83585	2.160	4.30401	1.00180	0.4856

* TWO-PHASE BOUNDRY

1200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 29.393	0.19741	3849.54	81.5134	-130.620	-86.755	1.23025	1.196	1.562	4826
30	0.19791	3803.80	81.4350	-129.776	-85.799	1.26245	1.211	1.590	4811
32	0.19963	3655.75	80.2787	-126.895	-82.536	1.36772	1.257	1.673	4748
34	0.20143	3493.80	80.3737	-123.853	-79.094	1.47203	1.299	1.771	4698
36	0.20334	3347.04	80.0450	-120.648	-75.463	1.57578	1.335	1.863	4651
38	0.20538	3197.79	79.3918	-117.284	-71.646	1.67898	1.367	1.952	4600
40	0.20754	3055.82	78.4684	-113.771	-67.654	1.78135	1.395	2.038	4548
42	0.20981	2935.88	77.3537	-110.116	-63.494	1.88283	1.419	2.117	4504
44	0.21220	2790.00	76.1400	-106.328	-59.176	1.98324	1.442	2.204	4445
46	0.21474	2652.04	74.7530	-102.393	-54.677	2.08324	1.461	2.289	4387
48	0.21741	2516.09	73.2469	-98.325	-50.016	2.18241	1.479	2.375	4326
50	0.22024	2384.58	71.6295	-94.117	-45.178	2.28114	1.496	2.462	4264
52	0.22324	2256.61	69.9086	-89.773	-40.168	2.37938	1.511	2.550	4201
54	0.22642	2130.67	68.0854	-85.292	-34.980	2.47728	1.523	2.638	4135
56	0.22980	2008.81	66.1579	-80.674	-29.610	2.57491	1.535	2.728	4067
58	0.23338	1891.27	64.1501	-75.927	-24.067	2.67217	1.545	2.818	3998
60	0.23719	1775.27	62.0740	-71.048	-18.342	2.76920	1.553	2.910	3925
62	0.24124	1669.16	59.9547	-66.043	-12.437	2.86602	1.561	3.000	3855
64	0.24555	1568.71	57.8059	-60.913	-6.350	2.96264	1.567	3.090	3785
66	0.25013	1471.41	55.6481	-55.662	-0.081	3.05910	1.573	3.183	3713
68	0.25502	1382.05	53.4911	-50.290	6.376	3.15548	1.578	3.274	3644
70	0.26022	1297.59	51.3355	-44.806	13.016	3.25171	1.581	3.363	3576
75	0.27471	1108.79	45.9776	-30.656	30.387	3.49134	1.586	3.584	3407
80	0.29154	961.84	40.8401	-15.988	48.794	3.72887	1.593	3.776	3250
85	0.31085	848.98	36.1055	-1.169	67.903	3.96037	1.612	3.947	3103
90	0.33261	768.12	31.8865	14.051	87.961	4.18964	1.627	4.067	2983
95	0.35664	717.12	28.2142	29.213	108.460	4.41129	1.641	4.124	2890
100	0.38251	688.14	25.0752	44.226	129.222	4.62432	1.654	4.129	2821
105	0.40976	677.66	22.4172	58.720	149.772	4.82486	1.664	4.085	2776
110	0.43789	681.66	20.1778	72.718	170.020	5.01326	1.677	4.009	2748
115	0.46645	695.08	18.2929	86.218	189.866	5.18971	1.693	3.924	2732
120	0.49513	714.84	16.7096	99.266	209.288	5.35504	1.714	3.842	2724
125	0.52373	738.17	15.3751	111.937	228.315	5.51038	1.740	3.773	2723
130	0.55219	763.54	14.2381	124.325	247.026	5.65716	1.771	3.720	2726
140	0.60860	821.90	12.4114	148.580	283.816	5.92983	1.847	3.647	2742
150	0.66402	883.48	11.0165	172.553	320.102	6.18020	1.938	3.620	2765
160	0.71843	948.99	9.9180	196.645	356.285	6.41372	2.039	3.624	2795
170	0.77193	1013.88	9.0295	221.139	392.668	6.63428	2.147	3.656	2828
180	0.82455	1079.46	8.2948	246.209	429.430	6.84440	2.257	3.701	2864
190	0.87641	1144.54	7.6766	272.569	467.315	7.04913	2.365	3.776	2898
200	0.92762	1208.98	7.1491	299.203	505.326	7.24398	2.468	3.835	2938
220	1.02835	1336.12	6.2953	354.581	583.088	7.61450	2.667	3.945	3026
240	1.12532	1456.21	5.6095	412.265	662.320	7.95900	2.802	4.019	3110
260	1.22211	1578.09	5.0799	471.587	743.149	8.28263	2.892	4.068	3207
280	1.31773	1697.94	4.6503	531.906	824.716	8.58478	2.939	4.086	3307
300	1.41241	1816.11	4.2910	592.480	906.328	8.86643	2.953	4.076	3408
320	1.50632	1932.86	3.9856	652.835	987.551	9.12864	2.942	4.047	3510
340	1.59960	2048.43	3.7225	712.598	1068.041	9.37227	2.914	4.004	3611
360	1.69235	2162.98	3.4933	771.537	1147.589	9.59970	2.876	3.953	3711
380	1.78465	2276.67	3.2916	829.537	1226.100	9.81196	2.833	3.900	3810
400	1.87657	2389.61	3.1127	886.562	1303.550	10.01068	2.790	3.848	3907
420	1.96816	2501.91	2.9528	942.639	1379.978	10.19711	2.748	3.798	4002
440	2.05946	2613.64	2.8091	997.836	1455.463	10.37273	2.709	3.752	4095
460	2.15051	2724.87	2.6790	1052.225	1530.085	10.53861	2.674	3.712	4186
480	2.24135	2835.66	2.5608	1105.903	1603.948	10.69557	2.643	3.676	4274
500	2.33200	2946.07	2.4528	1158.957	1677.144	10.84512	2.617	3.645	4360
520	2.42247	3056.13	2.3537	1211.475	1749.766	10.98766	2.594	3.619	4444
540	2.51430	3171.24	2.2608	1264.041	1822.736	11.12496	2.575	3.594	4528
560	2.60437	3280.40	2.1766	1315.629	1894.339	11.25468	2.559	3.575	4608
580	2.69432	3389.31	2.0986	1366.957	1965.656	11.37967	2.546	3.559	4685
600	2.78417	3498.00	2.0262	1418.051	2036.715	11.50018	2.534	3.545	4761
650	3.00841	3768.93	1.8656	1544.767	2213.258	11.78308	2.514	3.520	4944
700	3.23220	4038.95	1.7289	1670.649	2388.867	12.04362	2.502	3.505	5119
800	3.67882	4577.03	1.5088	1920.884	2738.345	12.51060	2.493	3.490	5448
1000	4.56977	5648.59	1.2036	2419.897	3435.334	13.28776	2.491	3.483	6049
2000	9.01123	10980.79	0.6001	4969.079	6971.441	15.73135	2.645	3.631	8357
3000	13.44839	16305.26	0.4000	7755.233	10743.566	17.24736	2.923	3.909	10051
4000	17.89102	21628.70	0.3000	10838.864	14814.384	18.61198	3.246	4.240	11441
5000	22.41473	26951.90	0.2400	14454.751	19435.471	20.47444	4.071	5.142	12556

* TWO-PHASE BOUNDRY

1200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 29.393	5.06571	373.76	13.451	19500.67	0.0041800	0.05853	2.059	0.00740	1.26615	1.9784
30	5.05279	375.25	13.313	19219.84	0.0042370	0.05972	1.979	0.00743	1.26542	1.8970
32	5.00933	381.70	12.749	18312.86	0.0043837	0.06299	1.755	0.00752	1.26296	1.6783
34	4.96454	382.25	12.463	17345.11	0.0046338	0.06534	1.577	0.00743	1.26042	1.5392
36	4.91779	383.08	12.190	16460.06	0.0048630	0.06742	1.432	0.00736	1.25777	1.4249
38	4.86893	382.80	11.929	15569.81	0.0050991	0.06972	1.312	0.00734	1.25501	1.3226
40	4.81833	382.38	11.674	14723.95	0.0053293	0.07147	1.211	0.00728	1.25216	1.2433
42	4.76611	382.95	11.436	13992.71	0.0055281	0.07278	1.126	0.00721	1.24922	1.1786
44	4.71259	380.56	11.208	13148.13	0.0057909	0.07373	1.052	0.00710	1.24621	1.1321
46	4.65687	378.16	10.985	12350.20	0.0060528	0.07433	0.988	0.00697	1.24308	1.0950
48	4.59966	375.25	10.766	11573.15	0.0063290	0.07464	0.931	0.00683	1.23987	1.0668
50	4.54051	372.18	10.546	10827.22	0.0066157	0.07471	0.881	0.00668	1.23656	1.0452
52	4.47955	368.72	10.330	10108.62	0.0069157	0.07459	0.836	0.00653	1.23316	1.0286
54	4.41660	364.65	10.122	9410.31	0.0072352	0.07429	0.795	0.00638	1.22965	1.0163
56	4.35151	360.41	9.907	8741.54	0.0075682	0.07354	0.758	0.00620	1.22603	1.0116
58	4.28481	355.93	9.692	8103.74	0.0079161	0.07269	0.723	0.00602	1.22232	1.0095
60	4.21598	350.86	9.479	7484.53	0.0082936	0.07175	0.692	0.00585	1.21851	1.0100
62	4.14519	346.20	9.266	6918.99	0.0086652	0.07077	0.662	0.00569	1.21459	1.0110
64	4.07247	341.45	9.056	6388.53	0.0090484	0.06972	0.635	0.00554	1.21058	1.0131
66	3.99786	336.45	8.846	5882.48	0.0094600	0.06863	0.609	0.00539	1.20647	1.0176
68	3.92130	331.65	8.644	5419.42	0.0098703	0.06750	0.585	0.00526	1.20226	1.0221
70	3.84297	326.72	8.449	4986.61	0.0102947	0.06634	0.563	0.00513	1.19797	1.0273
75	3.64017	314.63	7.965	4036.17	0.0113914	0.06338	0.512	0.00486	1.18690	1.0422
80	3.43007	305.03	7.476	3299.17	0.0123789	0.06045	0.468	0.00467	1.17550	1.0533
85	3.21703	298.60	6.962	2731.20	0.0132197	0.05790	0.432	0.00456	1.16402	1.0595
90	3.00648	294.57	6.520	2309.35	0.0138076	0.05570	0.401	0.00456	1.15275	1.0552
95	2.80398	293.93	6.134	2010.78	0.0140315	0.05376	0.377	0.00465	1.14198	1.0418
100	2.61434	296.26	5.799	1799.05	0.0139381	0.05213	0.358	0.00483	1.13196	1.0220
105	2.44043	301.36	5.520	1653.79	0.0135550	0.05082	0.344	0.00510	1.12282	0.9962
110	2.28369	309.32	5.270	1556.70	0.0129619	0.04997	0.334	0.00546	1.11463	0.9646
115	2.14386	319.62	5.040	1490.15	0.0122759	0.04945	0.327	0.00588	1.10736	0.9330
120	2.01965	331.95	4.827	1443.72	0.0115740	0.04916	0.322	0.00634	1.10093	0.9049
125	1.90937	345.91	4.627	1409.44	0.0109087	0.04908	0.319	0.00681	1.09524	0.8816
130	1.81097	361.27	4.439	1382.75	0.0102969	0.04917	0.317	0.00730	1.09018	0.8627
140	1.64311	396.77	4.090	1350.47	0.0091904	0.04922	0.316	0.00821	1.08159	0.8434
150	1.50598	437.20	3.775	1330.51	0.0082799	0.05087	0.318	0.00933	1.07460	0.8155
160	1.39193	482.71	3.494	1320.92	0.0075084	0.05309	0.322	0.01052	1.06882	0.7921
170	1.29545	531.74	3.246	1313.43	0.0068747	0.05545	0.328	0.01171	1.06394	0.7773
180	1.21279	584.17	3.030	1309.15	0.0063360	0.05784	0.336	0.01289	1.05978	0.7742
190	1.14101	642.36	2.821	1305.94	0.0058782	0.06176	0.350	0.01434	1.05617	0.7710
200	1.07803	699.09	2.666	1303.31	0.0054853	0.06551	0.363	0.01585	1.05301	0.7652
220	0.97243	814.21	2.427	1299.29	0.0048452	0.07224	0.384	0.01883	1.04773	0.7558
240	0.88863	927.02	2.253	1294.04	0.0043349	0.07794	0.402	0.02183	1.04356	0.7462
260	0.81826	1033.98	2.147	1291.29	0.0039340	0.08260	0.417	0.02482	1.04006	0.7392
280	0.75888	1132.05	2.085	1288.54	0.0036090	0.08628	0.430	0.02783	1.03711	0.7334
300	0.70801	1221.54	2.052	1285.83	0.0033372	0.08915	0.442	0.03089	1.03459	0.7281
320	0.66387	1302.82	2.041	1283.17	0.0031061	0.09134	0.453	0.03400	1.03241	0.7232
340	0.62516	1377.31	2.043	1280.59	0.0029069	0.09306	0.464	0.03718	1.03050	0.7188
360	0.59089	1446.42	2.055	1278.10	0.0027332	0.09442	0.474	0.04042	1.02881	0.7148
380	0.56033	1511.40	2.073	1275.70	0.0025802	0.09556	0.484	0.04373	1.02731	0.7112
400	0.53289	1574.02	2.094	1273.40	0.0024444	0.09659	0.494	0.04711	1.02596	0.7080
420	0.50809	1634.99	2.115	1271.19	0.0023229	0.09756	0.503	0.05056	1.02474	0.7052
440	0.48556	1695.24	2.136	1269.09	0.0022135	0.09853	0.513	0.05408	1.02363	0.7027
460	0.46501	1755.60	2.154	1267.08	0.0021143	0.09953	0.522	0.05767	1.02262	0.7005
480	0.44616	1816.17	2.171	1265.16	0.0020241	0.10058	0.531	0.06132	1.02170	0.6986
500	0.42882	1877.46	2.186	1263.32	0.0019415	0.10169	0.540	0.06506	1.02085	0.6970
520	0.41280	1939.53	2.198	1261.57	0.0018657	0.10286	0.549	0.06886	1.02007	0.6955
540	0.39773	2005.03	2.207	1261.28	0.0017925	0.10408	0.558	0.07281	1.01933	0.6939
560	0.38397	2068.82	2.215	1259.57	0.0017281	0.10538	0.567	0.07677	1.01866	0.6928
580	0.37115	2133.17	2.221	1257.94	0.0016683	0.10673	0.576	0.08080	1.01803	0.6918
600	0.35917	2198.35	2.226	1256.39	0.0016127	0.10812	0.585	0.08491	1.01744	0.6909
650	0.33240	2364.03	2.232	1252.80	0.0014891	0.11175	0.608	0.09550	1.01614	0.6892
700	0.30939	2532.94	2.233	1249.60	0.0013836	0.11556	0.630	0.10658	1.01501	0.6879
800	0.27183	2877.91	2.227	1244.16	0.0012127	0.12349	0.675	0.13018	1.01318	0.6862
1000	0.21883	3577.20	2.208	1236.08	0.0009737	0.13964	0.762	0.18319	1.01060	0.6845
2000	0.11097	7373.11	2.045	1218.57	0.0004925	0.27727	1.169	0.68807	1.00537	0.5513
3000	0.07436	11649.06	1.840	1212.43	0.0003299	0.39295	1.531	1.35187	1.00359	0.5483
4000	0.05589	17088.99	1.653	1208.91	0.0002481	0.52667	1.862	2.22212	1.00270	0.5397
5000	0.04461	25766.64	1.321	1202.42	0.0001996	0.81676	2.175	3.56006	1.00215	0.4929

* TWO-PHASE BOUNDRY

1400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 30.083	0.19599	4021.09	82.3088	-130.088	-79.278	1.23674	1.210	1.570	4917
32	0.19754	3881.09	82.0930	-127.397	-76.187	1.33633	1.252	1.654	4873
34	0.19921	3732.08	81.3356	-124.449	-72.805	1.43880	1.294	1.737	4817
36	0.20099	3582.84	81.1919	-121.347	-69.242	1.54062	1.331	1.827	4772
38	0.20287	3434.10	80.6932	-118.095	-65.503	1.64169	1.364	1.913	4724
40	0.20486	3288.21	79.9293	-114.700	-61.593	1.74198	1.393	1.997	4673
42	0.20695	3148.90	78.9511	-111.167	-57.516	1.84142	1.418	2.077	4623
44	0.20915	3036.78	77.8036	-107.506	-53.285	1.93983	1.441	2.151	4583
46	0.21146	2900.68	76.5889	-103.716	-48.896	2.03737	1.461	2.231	4530
48	0.21388	2766.56	75.2341	-99.804	-44.356	2.13397	1.479	2.311	4475
50	0.21644	2634.90	73.7606	-95.764	-39.654	2.22992	1.497	2.392	4417
52	0.21913	2508.17	72.1847	-91.598	-34.791	2.32529	1.512	2.473	4359
54	0.22196	2386.09	70.5158	-87.308	-29.766	2.42011	1.525	2.552	4300
56	0.22496	2265.39	68.7628	-82.899	-24.581	2.51439	1.538	2.633	4239
58	0.22811	2150.53	66.9296	-78.372	-19.236	2.60816	1.549	2.713	4178
60	0.23143	2038.06	65.0239	-73.730	-13.733	2.70145	1.558	2.792	4114
62	0.23494	1931.20	63.0619	-68.977	-8.070	2.79429	1.566	2.871	4050
64	0.23865	1829.45	61.0643	-64.117	-2.251	2.88667	1.573	2.949	3986
66	0.24255	1732.34	59.0473	-59.154	3.725	2.97860	1.580	3.027	3921
68	0.24667	1640.39	57.0205	-54.091	9.856	3.07011	1.585	3.104	3857
70	0.25101	1551.20	55.0059	-48.935	16.138	3.16117	1.589	3.182	3794
75	0.26297	1358.43	50.0153	-35.660	32.513	3.38706	1.594	3.363	3643
80	0.27555	1197.45	45.1663	-21.931	49.762	3.60966	1.601	3.531	3498
85	0.29184	1069.92	40.5954	-8.064	67.593	3.82568	1.620	3.685	3358
90	0.30887	971.12	36.4147	6.261	86.333	4.03987	1.634	3.805	3237
95	0.32757	899.57	32.6721	20.662	105.582	4.24801	1.648	3.888	3136
100	0.34776	851.08	29.3772	35.101	125.256	4.44986	1.662	3.933	3055
105	0.36920	822.74	26.5098	49.225	144.936	4.64190	1.673	3.936	2995
110	0.39161	808.14	24.0350	63.065	164.586	4.82473	1.686	3.919	2950
115	0.41470	807.68	21.9000	76.580	184.087	4.99812	1.703	3.878	2919
120	0.43820	815.98	20.0631	89.767	203.367	5.16223	1.724	3.829	2897
125	0.46189	830.90	18.4837	102.652	222.392	5.31756	1.750	3.781	2884
130	0.48561	850.57	17.1224	115.286	241.178	5.46493	1.781	3.737	2876
140	0.53296	897.07	14.9160	140.060	278.225	5.73950	1.855	3.681	2872
150	0.57996	951.29	13.2182	164.561	314.912	5.99262	1.945	3.661	2880
160	0.62640	1009.48	11.8766	189.151	351.539	6.22900	2.046	3.670	2896
170	0.67225	1069.98	10.7903	214.103	388.377	6.45233	2.154	3.702	2919
180	0.71749	1132.91	9.8934	239.592	425.594	6.66504	2.263	3.746	2947
190	0.76219	1195.24	9.1401	266.333	463.925	6.87218	2.391	3.819	2974
200	0.80633	1258.43	8.4991	293.313	502.347	7.06913	2.493	3.876	3010
220	0.89322	1384.01	7.4626	349.296	580.857	7.44322	2.673	3.981	3090
240	0.97853	1508.53	6.6604	407.587	661.262	7.79278	2.808	4.060	3178
260	1.06018	1623.12	6.0347	467.393	742.236	8.11710	2.898	4.112	3266
280	1.14268	1743.48	5.4775	528.119	824.350	8.42136	2.944	4.109	3358
300	1.22433	1862.19	5.0482	588.997	906.395	8.70451	2.958	4.097	3457
320	1.30527	1979.51	4.6842	649.619	988.001	8.96796	2.946	4.065	3557
340	1.38563	2095.62	4.3712	709.615	1068.830	9.21262	2.918	4.020	3657
360	1.46550	2210.70	4.0991	768.762	1148.682	9.44091	2.880	3.968	3757
380	1.54495	2324.89	3.8601	826.949	1227.466	9.65391	2.837	3.913	3855
400	1.62405	2438.30	3.6484	884.142	1305.163	9.85326	2.793	3.860	3951
420	1.70283	2551.04	3.4594	940.370	1381.816	10.04025	2.751	3.809	4045
440	1.78135	2663.18	3.2896	995.706	1457.506	10.21634	2.712	3.762	4137
460	1.85963	2774.81	3.1362	1050.221	1532.316	10.38263	2.677	3.721	4227
480	1.93771	2885.96	2.9969	1104.016	1606.352	10.53996	2.646	3.685	4315
500	2.01560	2996.71	2.8697	1157.178	1679.707	10.68984	2.619	3.653	4400
520	2.09334	3107.09	2.7531	1209.795	1752.477	10.83268	2.597	3.626	4483
540	2.17263	3224.24	2.6436	1262.524	1825.761	10.97044	2.577	3.601	4568
560	2.24997	3333.59	2.5446	1314.202	1897.489	11.10038	2.561	3.581	4647
580	2.32720	3442.68	2.4530	1365.613	1968.921	11.22557	2.548	3.564	4724
600	2.40433	3551.53	2.3678	1416.782	2040.086	11.34627	2.536	3.550	4799
650	2.59678	3822.79	2.1794	1543.664	2216.859	11.62954	2.516	3.524	4981
700	2.78880	4093.06	2.0193	1669.683	2392.658	11.89035	2.504	3.508	5154
800	3.17193	4631.51	1.7615	1920.130	2742.429	12.35773	2.494	3.492	5482
1000	3.93599	5703.42	1.4047	2419.414	3439.788	13.13531	2.492	3.485	6078
2000	7.74348	11035.61	0.7001	4969.018	6976.453	15.57933	2.645	3.631	8378
3000	11.54684	16359.83	0.4666	7755.226	10748.652	17.09537	2.923	3.909	10068
4000	15.35445	21683.09	0.3500	10836.495	14817.013	18.45934	3.239	4.233	11458
5000	19.22649	27006.15	0.2800	14425.994	19410.308	20.31580	4.017	5.082	12578

* TWO-PHASE BOUNDRY

1400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 30.083	5.10218	391.40	13.335	20516.31	0.0040119	0.06076	2.115	0.00758	1.26823	1.9680
32	5.06229	395.84	12.948	19647.17	0.0041784	0.06405	1.880	0.00765	1.26596	1.7476
34	5.01984	400.02	12.523	18734.45	0.0043415	0.06656	1.686	0.00763	1.26355	1.5834
36	4.97543	401.09	12.257	17826.17	0.0045546	0.06878	1.528	0.00757	1.26103	1.4606
38	4.92931	401.32	12.002	16927.73	0.0047669	0.07123	1.397	0.00755	1.25842	1.3509
40	4.88146	401.02	11.755	16051.29	0.0049796	0.07313	1.288	0.00750	1.25572	1.2662
42	4.83202	400.34	11.523	15215.55	0.0051888	0.07457	1.195	0.00743	1.25293	1.1989
44	4.78123	401.44	11.295	14519.54	0.0053585	0.07563	1.116	0.00735	1.25007	1.1430
46	4.72895	399.61	11.086	13717.19	0.0055834	0.07635	1.048	0.00724	1.24713	1.1021
48	4.67544	397.37	10.877	12934.88	0.0058164	0.07678	0.988	0.00711	1.24412	1.0702
50	4.62032	394.85	10.665	12174.09	0.0060588	0.07698	0.934	0.00696	1.24103	1.0454
52	4.56360	392.11	10.459	11446.28	0.0063064	0.07697	0.887	0.00682	1.23785	1.0257
54	4.50525	389.05	10.261	10749.94	0.0065596	0.07679	0.844	0.00668	1.23459	1.0098
56	4.44533	385.60	10.060	10070.39	0.0068282	0.07615	0.805	0.00651	1.23125	1.0023
58	4.38389	382.11	9.859	9427.70	0.0070993	0.07540	0.770	0.00634	1.22783	0.9969
60	4.32090	378.17	9.660	8806.24	0.0073838	0.07457	0.737	0.00618	1.22432	0.9936
62	4.25635	374.26	9.459	8219.86	0.0076719	0.07370	0.707	0.00603	1.22074	0.9916
64	4.19032	370.22	9.262	7665.99	0.0079656	0.07277	0.679	0.00589	1.21708	0.9907
66	4.12286	366.15	9.065	7142.22	0.0082674	0.07179	0.653	0.00575	1.21336	0.9912
68	4.05401	361.98	8.873	6650.15	0.0085743	0.07077	0.629	0.00562	1.20956	0.9924
70	3.98383	357.44	8.692	6179.71	0.0089010	0.06974	0.606	0.00550	1.20570	0.9950
75	3.80275	347.32	8.250	5165.77	0.0096821	0.06705	0.554	0.00524	1.19577	1.0010
80	3.61602	336.54	7.801	4330.01	0.0104310	0.06437	0.510	0.00504	1.18558	1.0078
85	3.42654	332.80	7.312	3666.12	0.0110731	0.06181	0.473	0.00489	1.17531	1.0145
90	3.23763	328.56	6.882	3144.14	0.0115818	0.05961	0.441	0.00484	1.16513	1.0134
95	3.05278	326.79	6.494	2746.17	0.0118973	0.05772	0.415	0.00486	1.15522	1.0055
100	2.87553	327.61	6.148	2447.29	0.0120039	0.05608	0.393	0.00496	1.14578	0.9930
105	2.70859	330.90	5.851	2228.46	0.0118960	0.05469	0.376	0.00513	1.13694	0.9754
110	2.55359	336.49	5.582	2063.65	0.0116468	0.05373	0.363	0.00537	1.12876	0.9538
115	2.41139	344.87	5.332	1947.62	0.0112445	0.05307	0.353	0.00568	1.12130	0.9293
120	2.28206	355.40	5.098	1862.11	0.0107744	0.05263	0.346	0.00602	1.11455	0.9063
125	2.16504	367.95	4.878	1798.92	0.0102749	0.05237	0.341	0.00640	1.10846	0.8855
130	2.05925	382.31	4.670	1751.54	0.0097756	0.05229	0.337	0.00679	1.10297	0.8677
140	1.87632	415.43	4.285	1683.19	0.0088618	0.05205	0.334	0.00753	1.09354	0.8502
150	1.72425	454.30	3.941	1640.26	0.0080586	0.05345	0.334	0.00847	1.08573	0.8235
160	1.59644	498.06	3.636	1611.56	0.0073696	0.05548	0.336	0.00947	1.07920	0.8009
170	1.48755	546.02	3.368	1591.65	0.0067793	0.05768	0.340	0.01047	1.07367	0.7858
180	1.39375	597.79	3.137	1579.00	0.0062656	0.05953	0.346	0.01140	1.06891	0.7831
190	1.31201	655.25	2.914	1568.17	0.0058285	0.06332	0.359	0.01264	1.06478	0.7801
200	1.24019	711.68	2.748	1560.70	0.0054457	0.06690	0.371	0.01392	1.06116	0.7741
220	1.11954	826.55	2.494	1549.46	0.0048163	0.07340	0.391	0.01647	1.05509	0.7641
240	1.02194	939.69	2.321	1541.63	0.0043204	0.07890	0.408	0.01902	1.05020	0.7555
260	0.94324	1043.22	2.208	1530.98	0.0039417	0.08342	0.422	0.02151	1.04628	0.7490
280	0.87513	1144.69	2.126	1525.78	0.0035900	0.08699	0.435	0.02419	1.04288	0.7393
300	0.81677	1234.52	2.090	1520.99	0.0033190	0.08977	0.446	0.02682	1.03998	0.7332
320	0.76612	1316.12	2.075	1516.54	0.0030887	0.09191	0.457	0.02951	1.03747	0.7277
340	0.72169	1390.90	2.076	1512.39	0.0028903	0.09358	0.467	0.03225	1.03527	0.7227
360	0.68236	1460.27	2.086	1508.49	0.0027174	0.09492	0.477	0.03506	1.03333	0.7182
380	0.64727	1525.49	2.102	1504.83	0.0025651	0.09604	0.487	0.03792	1.03159	0.7142
400	0.61575	1588.31	2.121	1501.37	0.0024300	0.09705	0.496	0.04084	1.03004	0.7106
420	0.58726	1649.47	2.141	1498.12	0.0023092	0.09802	0.506	0.04382	1.02863	0.7075
440	0.56137	1709.90	2.161	1495.04	0.0022004	0.09898	0.515	0.04686	1.02736	0.7047
460	0.53774	1770.42	2.179	1492.13	0.0021018	0.09998	0.524	0.04996	1.02620	0.7023
480	0.51607	1831.14	2.195	1489.37	0.0020122	0.10102	0.533	0.05313	1.02513	0.7002
500	0.49613	1892.59	2.208	1486.75	0.0019302	0.10213	0.542	0.05635	1.02415	0.6984
520	0.47771	1954.80	2.220	1484.27	0.0018549	0.10330	0.551	0.05964	1.02325	0.6968
540	0.46027	2021.23	2.228	1484.03	0.0017814	0.10452	0.560	0.06307	1.02239	0.6950
560	0.44445	2085.12	2.235	1481.62	0.0017175	0.10583	0.570	0.06649	1.02162	0.6938
580	0.42970	2149.55	2.241	1479.32	0.0016582	0.10718	0.579	0.06998	1.02089	0.6927
600	0.41592	2214.82	2.245	1477.14	0.0016030	0.10857	0.588	0.07353	1.02022	0.6917
650	0.38509	2380.69	2.249	1472.13	0.0014804	0.11222	0.610	0.08268	1.01871	0.6897
700	0.35858	2549.77	2.249	1467.68	0.0013758	0.11605	0.633	0.09226	1.01741	0.6883
800	0.31527	2895.03	2.240	1460.15	0.0012064	0.12404	0.677	0.11265	1.01530	0.6865
1000	0.25407	3594.70	2.218	1449.04	0.0009694	0.14029	0.766	0.15847	1.01232	0.6846
2000	0.12914	7391.88	2.050	1425.15	0.0004913	0.27727	1.176	0.59124	1.00625	0.5546
3000	0.08650	11868.64	1.843	1416.82	0.0003293	0.39291	1.541	1.16067	1.00419	0.5520
4000	0.06513	17079.76	1.659	1412.17	0.0002478	0.52508	1.875	1.90483	1.00315	0.5441
5000	0.05201	25497.72	1.340	1404.63	0.0001993	0.80192	2.190	3.03385	1.00251	0.4996

* TWO-PHASE BOUNDRY

1600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 30.757	0.19465	4188.10	83.1021	-129.520	-71.848	1.24317	1.222	1.578	5005
32	0.19560	4099.93	83.0149	-127.807	-69.854	1.30672	1.249	1.631	4979
34	0.19719	3958.13	82.7525	-124.932	-66.510	1.40809	1.290	1.714	4935
36	0.19883	3808.93	82.2369	-121.924	-63.016	1.50792	1.327	1.795	4885
38	0.20058	3666.24	81.9018	-118.770	-59.344	1.60718	1.361	1.879	4843
40	0.20242	3521.82	81.2735	-115.478	-55.506	1.70562	1.391	1.960	4795
42	0.20436	3377.83	80.4176	-112.054	-51.507	1.80317	1.416	2.038	4745
44	0.20640	3241.46	79.3887	-108.505	-47.354	1.89975	1.440	2.115	4696
46	0.20852	3127.14	78.2169	-104.838	-43.057	1.99526	1.461	2.185	4656
48	0.21076	3005.02	76.9840	-101.052	-38.610	2.08989	1.480	2.258	4610
50	0.21309	2876.75	75.6563	-97.151	-34.019	2.18359	1.498	2.334	4558
52	0.21553	2749.24	74.2128	-93.134	-29.277	2.27657	1.514	2.410	4503
54	0.21810	2626.50	72.6727	-89.003	-24.385	2.36888	1.527	2.484	4448
56	0.22079	2509.75	71.0519	-84.761	-19.346	2.46051	1.540	2.557	4393
58	0.22362	2398.36	69.3598	-80.411	-14.158	2.55154	1.552	2.629	4339
60	0.22658	2287.86	67.6029	-75.957	-8.826	2.64192	1.562	2.701	4282
62	0.22969	2182.05	65.7865	-71.404	-3.352	2.73166	1.571	2.772	4224
64	0.23295	2079.54	63.9238	-66.755	2.264	2.82080	1.579	2.842	4165
66	0.23637	1981.93	62.0302	-62.012	8.018	2.90934	1.586	2.911	4106
68	0.23995	1888.64	60.1225	-57.182	13.910	2.99727	1.592	2.979	4047
70	0.24370	1799.95	58.2112	-52.270	19.934	3.08458	1.595	3.045	3989
75	0.25390	1595.42	53.4789	-39.659	35.566	3.30024	1.602	3.207	3846
80	0.26533	1427.06	48.8698	-26.628	51.984	3.51211	1.610	3.355	3712
85	0.27804	1289.05	44.4672	-13.471	68.905	3.71710	1.629	3.496	3579
90	0.29202	1177.46	40.3642	0.164	86.682	3.92030	1.643	3.610	3462
95	0.30726	1089.61	36.6182	13.931	104.965	4.11798	1.657	3.701	3358
100	0.32369	1026.41	33.2498	27.839	123.741	4.31062	1.670	3.760	3272
105	0.34117	981.49	30.2599	41.556	142.635	4.49498	1.682	3.793	3202
110	0.35951	953.32	27.6220	55.115	161.630	4.67171	1.696	3.803	3147
115	0.37857	936.18	25.3061	68.480	180.643	4.84075	1.713	3.801	3102
120	0.39816	931.91	23.2816	81.633	199.597	5.00209	1.735	3.783	3069
125	0.41809	938.19	21.5087	94.576	218.445	5.15597	1.760	3.755	3045
130	0.43823	949.52	19.9602	107.332	237.168	5.30284	1.791	3.730	3027
140	0.47872	985.56	17.4088	132.436	274.270	5.57781	1.864	3.691	3007
150	0.51911	1030.79	15.4279	157.294	311.095	5.83188	1.953	3.681	3000
160	0.55931	1081.70	13.8525	182.255	347.966	6.06983	2.053	3.697	3004
170	0.59919	1136.71	12.5740	207.568	385.094	6.29490	2.160	3.732	3016
180	0.63869	1194.61	11.5156	233.402	422.630	6.50944	2.269	3.779	3036
190	0.67778	1254.59	10.6282	260.464	461.274	6.71828	2.397	3.852	3056
200	0.71647	1315.70	9.8710	287.744	500.017	6.91687	2.499	3.907	3087
220	0.79279	1438.31	8.6485	344.269	579.154	7.29395	2.679	4.010	3158
240	0.86781	1560.76	7.7056	403.029	660.141	7.64605	2.814	4.087	3241
260	0.94160	1681.90	6.9539	463.316	742.290	7.97498	2.904	4.131	3329
280	1.01445	1801.98	6.3411	524.458	825.015	8.28141	2.950	4.141	3423
300	1.08364	1910.32	5.8384	585.634	906.691	8.56339	2.963	4.127	3511
320	1.15480	2027.95	5.3893	646.524	988.665	8.82807	2.951	4.082	3605
340	1.22543	2144.42	5.0255	706.742	1069.808	9.07368	2.922	4.035	3704
360	1.29560	2259.85	4.7096	766.086	1149.943	9.30279	2.884	3.982	3802
380	1.36538	2374.40	4.4325	824.450	1228.982	9.51647	2.840	3.926	3899
400	1.43483	2488.16	4.1874	881.803	1306.910	9.71642	2.796	3.871	3995
420	1.50399	2601.23	3.9689	938.176	1383.774	9.90392	2.754	3.819	4088
440	1.57290	2713.70	3.7727	993.644	1459.657	10.08046	2.715	3.772	4179
460	1.64158	2825.63	3.5956	1048.281	1534.645	10.24715	2.680	3.730	4269
480	1.71008	2937.07	3.4349	1102.188	1608.844	10.40482	2.649	3.693	4356
500	1.77840	3048.09	3.2883	1155.453	1682.350	10.55501	2.622	3.660	4440
520	1.84656	3158.72	3.1540	1208.166	1755.260	10.69812	2.599	3.633	4523
540	1.91647	3278.10	3.0276	1261.054	1828.860	10.83635	2.580	3.607	4608
560	1.98426	3387.58	2.9136	1312.819	1900.709	10.96651	2.564	3.587	4686
580	2.05194	3496.79	2.8082	1364.311	1972.251	11.09189	2.550	3.570	4762
600	2.11952	3505.75	2.7103	1415.554	2043.517	11.21276	2.538	3.555	4837
650	2.28811	3877.23	2.4938	1542.598	2220.511	11.49636	2.518	3.528	5017
700	2.45630	4147.67	2.3100	1668.751	2396.493	11.75747	2.505	3.511	5190
800	2.79178	4686.33	2.0144	1919.406	2746.545	12.22522	2.495	3.495	5515
1000	3.46063	5758.39	1.6058	2418.956	3444.260	13.00320	2.493	3.486	6108
2000	6.79258	11090.19	0.8001	4968.976	6981.460	15.44763	2.645	3.632	8399
3000	10.12058	16414.01	0.5332	7755.246	10753.736	16.96371	2.923	3.909	10084
4000	13.45197	21737.01	0.3999	10834.618	14820.123	18.32715	3.233	4.226	11474
5000	16.83519	27059.90	0.3199	14402.849	19391.018	20.17879	3.974	5.033	12599

* TWO-PHASE BOUNDRY

1600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^3	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 30.757	5.13732	408.56	13.236	21515.64	0.0038624	0.06290	2.172	0.00776	1.27022	1.9613
32	5.11241	411.70	12.996	20960.50	0.0039605	0.06506	2.011	0.00780	1.26881	1.8144
34	5.07126	415.70	12.647	20072.68	0.0041226	0.06770	1.797	0.00779	1.26647	1.6376
36	5.02951	418.12	12.322	19157.06	0.0042928	0.07008	1.626	0.00776	1.26410	1.4994
38	4.98565	419.26	12.073	18278.61	0.0044807	0.07267	1.485	0.00776	1.26161	1.3817
40	4.94022	419.53	11.831	17398.56	0.0046713	0.07470	1.367	0.00772	1.25904	1.2908
42	4.89331	418.92	11.603	16528.75	0.0048653	0.07627	1.267	0.00765	1.25639	1.2189
44	4.84502	418.32	11.381	15704.95	0.0050550	0.07744	1.182	0.00756	1.25366	1.1617
46	4.79559	418.96	11.167	14996.51	0.0052157	0.07827	1.108	0.00747	1.25088	1.1138
48	4.74481	418.24	10.966	14258.25	0.0053993	0.07880	1.044	0.00735	1.24802	1.0771
50	4.69294	416.49	10.765	13500.44	0.0056040	0.07910	0.988	0.00722	1.24510	1.0491
52	4.63971	414.18	10.567	12755.67	0.0058180	0.07919	0.937	0.00708	1.24212	1.0269
54	4.58509	411.59	10.377	12042.72	0.0060346	0.07911	0.892	0.00695	1.23906	1.0086
56	4.52914	409.10	10.185	11366.99	0.0062507	0.07855	0.852	0.00678	1.23593	0.9981
58	4.47186	406.56	9.994	10725.12	0.0064670	0.07789	0.815	0.00662	1.23273	0.9899
60	4.41336	403.47	9.807	10097.14	0.0066953	0.07715	0.781	0.00647	1.22947	0.9841
62	4.35355	400.34	9.619	9499.86	0.0069250	0.07636	0.750	0.00633	1.22614	0.9797
64	4.29274	396.94	9.433	8926.91	0.0071608	0.07552	0.721	0.00619	1.22276	0.9767
66	4.23068	393.56	9.246	8384.89	0.0073979	0.07463	0.694	0.00606	1.21932	0.9748
68	4.16752	390.01	9.064	7870.92	0.0076386	0.07370	0.669	0.00594	1.21582	0.9738
70	4.10333	386.30	8.892	7385.79	0.0078815	0.07275	0.646	0.00582	1.21228	0.9731
75	3.93853	376.84	8.474	6283.60	0.0085109	0.07028	0.594	0.00556	1.20321	0.9754
80	3.76884	369.28	8.054	5378.37	0.0090863	0.06778	0.549	0.00536	1.19391	0.9781
85	3.59665	364.48	7.588	4636.27	0.0095912	0.06537	0.510	0.00520	1.18453	0.9823
90	3.42442	360.60	7.173	4032.12	0.0100107	0.06313	0.477	0.00511	1.17520	0.9827
95	3.25455	358.38	6.791	3546.20	0.0103260	0.06120	0.450	0.00508	1.16604	0.9787
100	3.08937	358.60	6.443	3170.95	0.0104858	0.05957	0.426	0.00513	1.15718	0.9689
105	2.93113	360.60	6.139	2876.87	0.0105183	0.05816	0.407	0.00523	1.14874	0.9565
110	2.78154	365.04	5.857	2651.70	0.0104167	0.05715	0.392	0.00540	1.14079	0.9392
115	2.64149	371.41	5.593	2472.92	0.0102333	0.05641	0.380	0.00562	1.13339	0.9214
120	2.51158	380.36	5.344	2340.56	0.0099470	0.05586	0.370	0.00588	1.12656	0.9032
125	2.39185	391.80	5.108	2244.01	0.0095850	0.05548	0.363	0.00618	1.12028	0.8851
130	2.28193	404.94	4.885	2166.74	0.0092121	0.05527	0.358	0.00649	1.11454	0.8697
140	2.08890	436.50	4.471	2058.74	0.0084560	0.05480	0.352	0.00711	1.10451	0.8529
150	1.92636	473.82	4.101	1985.68	0.0077696	0.05599	0.350	0.00789	1.09611	0.8276
160	1.78791	516.21	3.773	1933.99	0.0071627	0.05784	0.350	0.00875	1.08899	0.8060
170	1.66892	563.08	3.488	1897.07	0.0066281	0.05988	0.353	0.00961	1.08290	0.7914
180	1.56571	613.74	3.241	1870.41	0.0061567	0.06131	0.356	0.01036	1.07764	0.7902
190	1.47541	670.83	3.006	1851.04	0.0057418	0.06497	0.369	0.01143	1.07305	0.7875
200	1.39573	726.88	2.830	1836.36	0.0053753	0.06843	0.380	0.01255	1.06901	0.7816
220	1.26136	841.25	2.560	1814.23	0.0047670	0.07468	0.399	0.01476	1.06222	0.7715
240	1.15233	954.00	2.376	1798.51	0.0042845	0.07998	0.415	0.01698	1.05674	0.7626
260	1.06202	1061.07	2.255	1786.22	0.0038931	0.08434	0.428	0.01922	1.05221	0.7544
280	0.98576	1159.88	2.181	1776.31	0.0035698	0.08778	0.440	0.02151	1.04840	0.7467
300	0.92282	1246.08	2.135	1762.88	0.0033119	0.09047	0.451	0.02376	1.04526	0.7401
320	0.86595	1330.22	2.109	1756.10	0.0030689	0.09254	0.461	0.02618	1.04243	0.7321
340	0.81604	1405.20	2.108	1749.93	0.0028718	0.09416	0.471	0.02859	1.03995	0.7266
360	0.77184	1474.74	2.116	1744.25	0.0027001	0.09546	0.481	0.03106	1.03775	0.7216
380	0.73239	1540.11	2.131	1739.00	0.0025489	0.09655	0.490	0.03358	1.03580	0.7171
400	0.69695	1603.08	2.149	1734.11	0.0024147	0.09755	0.499	0.03616	1.03405	0.7132
420	0.66490	1664.36	2.167	1729.55	0.0022947	0.09850	0.508	0.03879	1.03246	0.7097
440	0.63577	1724.91	2.186	1725.29	0.0021867	0.09945	0.518	0.04147	1.03102	0.7067
460	0.60917	1785.56	2.203	1721.28	0.0020889	0.10044	0.527	0.04421	1.02971	0.7041
480	0.58477	1846.40	2.218	1717.51	0.0019999	0.10148	0.536	0.04699	1.02851	0.7018
500	0.56230	1907.96	2.231	1713.95	0.0019185	0.10259	0.545	0.04984	1.02740	0.6998
520	0.54155	1970.29	2.241	1710.60	0.0018438	0.10376	0.554	0.05274	1.02638	0.6980
540	0.52179	2037.72	2.249	1710.48	0.0017700	0.10498	0.563	0.05578	1.02541	0.6961
560	0.50397	2101.68	2.255	1707.23	0.0017067	0.10629	0.572	0.05880	1.02454	0.6947
580	0.48734	2166.18	2.260	1704.14	0.0016479	0.10764	0.581	0.06187	1.02372	0.6935
600	0.47181	2231.51	2.263	1701.21	0.0015932	0.10904	0.590	0.06500	1.02296	0.6924
650	0.43704	2397.54	2.266	1694.51	0.0014717	0.11270	0.612	0.07308	1.02125	0.6903
700	0.40712	2566.76	2.265	1688.59	0.0013680	0.11654	0.635	0.08153	1.01979	0.6888
800	0.35819	2912.26	2.254	1678.62	0.0012000	0.12458	0.680	0.09952	1.01740	0.6867
1000	0.28896	3512.26	2.229	1663.97	0.0009650	0.14095	0.769	0.13993	1.01402	0.6846
2000	0.14722	7410.61	2.055	1632.69	0.0004901	0.27727	1.183	0.51861	1.00712	0.5579
3000	0.09881	11888.27	1.846	1621.85	0.0003288	0.39288	1.551	1.01726	1.00478	0.5557
4000	0.07434	17076.39	1.664	1615.90	0.0002475	0.52380	1.888	1.66722	1.00359	0.5484
5000	0.05940	25285.26	1.355	1607.25	0.0001991	0.78994	2.206	2.64234	1.00287	0.5059

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

1800 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 31.418	0.19338	4351.08	83.8912	-128.921	-64.466	1.24953	1.234	1.586	5090
32	0.19380	4310.85	83.8715	-128.131	-63.536	1.27887	1.246	1.610	5078
34	0.19530	4172.71	83.7055	-125.329	-60.235	1.37889	1.287	1.690	5038
36	0.19686	4034.74	83.3840	-122.391	-56.775	1.47776	1.324	1.769	4998
38	0.19850	3897.24	82.9083	-119.322	-53.160	1.57549	1.357	1.846	4956
40	0.20019	3749.45	82.5184	-116.129	-49.403	1.67181	1.388	1.927	4911
42	0.20200	3609.66	81.7888	-112.801	-45.473	1.76769	1.414	2.002	4866
44	0.20389	3467.10	80.8603	-109.353	-41.393	1.86257	1.438	2.077	4816
46	0.20586	3346.85	79.7912	-105.791	-37.174	1.95634	1.460	2.147	4775
48	0.20793	3223.83	78.5956	-102.115	-32.808	2.04925	1.479	2.216	4730
50	0.21009	3105.82	77.3395	-98.331	-28.305	2.14115	1.498	2.285	4685
52	0.21234	2983.28	76.0319	-94.439	-23.664	2.23216	1.515	2.356	4636
54	0.21469	2864.70	74.6145	-90.442	-18.884	2.32236	1.529	2.425	4588
56	0.21715	2746.99	73.1048	-86.340	-13.963	2.41184	1.543	2.494	4536
58	0.21971	2633.67	71.5273	-82.140	-8.908	2.50054	1.555	2.562	4484
60	0.22239	2524.49	69.8901	-77.842	-3.717	2.58853	1.565	2.629	4432
62	0.22519	2417.80	68.2003	-73.452	1.607	2.67580	1.575	2.695	4378
64	0.22811	2317.22	66.4617	-68.971	7.061	2.76239	1.583	2.759	4325
66	0.23116	2218.64	64.6864	-64.407	12.642	2.84825	1.591	2.823	4270
68	0.23434	2124.89	62.8840	-59.761	18.348	2.93342	1.597	2.884	4216
70	0.23766	2035.00	61.0691	-55.042	24.173	3.01785	1.602	2.943	4162
75	0.24658	1831.54	56.5474	-42.949	39.239	3.22569	1.610	3.084	4032
80	0.25647	1646.13	52.1257	-30.469	55.016	3.42930	1.618	3.227	3899
85	0.26736	1504.27	47.8801	-17.872	71.242	3.62586	1.638	3.353	3777
90	0.27925	1381.02	43.8632	-4.781	88.294	3.82076	1.653	3.463	3662
95	0.29211	1284.46	40.1473	8.470	105.834	4.01042	1.666	3.550	3561
100	0.30590	1205.44	36.7536	21.913	123.874	4.19551	1.680	3.621	3470
105	0.32057	1148.50	33.6934	35.241	142.092	4.37328	1.691	3.666	3397
110	0.33600	1107.68	30.9501	48.499	160.492	4.54447	1.705	3.693	3334
115	0.35207	1080.56	28.5068	61.649	179.000	4.70901	1.722	3.708	3283
120	0.36867	1064.63	26.3392	74.673	197.554	4.86695	1.744	3.712	3240
125	0.38567	1058.01	24.4189	87.566	216.115	5.01849	1.770	3.711	3205
130	0.40298	1059.81	22.7166	100.341	234.658	5.16395	1.800	3.704	3178
140	0.43806	1082.20	19.8688	125.610	271.621	5.43788	1.873	3.688	3142
150	0.47335	1118.85	17.6220	150.718	308.489	5.69224	1.961	3.689	3122
160	0.50860	1163.52	15.8237	175.949	345.471	5.93091	2.061	3.710	3115
170	0.54371	1212.41	14.3603	201.537	382.760	6.15695	2.167	3.750	3118
180	0.57858	1265.39	13.1482	227.642	420.487	6.37258	2.276	3.800	3129
190	0.61321	1320.62	12.1259	254.970	459.358	6.58264	2.403	3.876	3141
200	0.64756	1378.86	11.2560	282.505	498.345	6.78248	2.505	3.932	3166
220	0.71546	1497.35	9.8487	339.500	577.971	7.16188	2.684	4.035	3229
240	0.78232	1617.39	8.7621	398.682	659.438	7.51608	2.820	4.111	3305
260	0.84816	1737.03	7.8979	459.347	742.048	7.84685	2.909	4.153	3389
280	0.91318	1856.66	7.1934	520.827	825.201	8.15487	2.956	4.161	3480
300	0.97746	1975.03	6.6072	582.393	908.191	8.44128	2.968	4.142	3573
320	1.04109	2092.07	6.1123	643.590	990.599	8.70731	2.956	4.102	3668
340	1.10104	2194.66	5.6962	703.972	1070.960	8.95061	2.926	4.055	3753
360	1.16364	2310.31	5.3241	763.506	1151.360	9.18050	2.887	3.995	3848
380	1.22588	2425.09	5.0084	822.038	1230.636	9.39483	2.844	3.937	3944
400	1.28780	2539.08	4.7294	879.543	1308.782	9.59533	2.800	3.882	4039
420	1.34945	2652.40	4.4809	936.055	1385.844	9.78331	2.757	3.829	4131
440	1.41087	2765.09	4.2580	991.650	1461.909	9.96028	2.717	3.781	4222
460	1.47208	2877.25	4.0570	1046.403	1537.064	10.12734	2.682	3.738	4310
480	1.53310	2988.91	3.8746	1100.417	1611.418	10.28534	2.651	3.700	4396
500	1.59396	3100.14	3.7083	1153.781	1685.068	10.43582	2.624	3.668	4480
520	1.65468	3210.98	3.5562	1206.587	1758.110	10.57919	2.601	3.639	4562
540	1.71733	3332.78	3.4127	1259.627	1832.031	10.71788	2.582	3.613	4648
560	1.77767	3442.34	3.2836	1311.478	1903.995	10.84825	2.566	3.592	4725
580	1.83791	3551.61	3.1643	1363.048	1975.643	10.97382	2.552	3.575	4801
600	1.89805	3660.63	3.0536	1414.364	2047.006	11.09485	2.540	3.560	4875
650	2.04808	3932.23	2.8087	1541.566	2224.213	11.37881	2.519	3.532	5054
700	2.19770	4202.75	2.6011	1667.850	2400.370	11.64016	2.507	3.515	5225
800	2.49611	4741.48	2.2675	1918.709	2750.693	12.10828	2.496	3.497	5547
1000	3.09089	5813.50	1.8069	2418.522	3448.750	12.88664	2.494	3.487	6137
2000	6.05293	11144.52	0.9000	4968.955	6986.464	15.33147	2.645	3.632	8419
3000	9.01117	16467.82	0.5998	7755.291	10758.817	16.84758	2.923	3.909	10101
4000	11.97222	21790.49	0.4499	10833.099	14823.573	18.21058	3.228	4.221	11489
5000	14.97759	27113.16	0.3599	14383.715	19375.915	20.05822	3.938	4.993	12618

* TWO-PHASE BOUNDRY

1800 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 31.418	5.17125	425.32	13.148	22500.51	0.0037284	0.06503	2.228	0.00793	1.27216	1.9559
32	5.15997	426.88	13.041	22243.88	0.0037705	0.06603	2.149	0.00795	1.27151	1.8856
34	5.12046	431.50	12.699	21366.16	0.0039177	0.06881	1.914	0.00795	1.26926	1.6933
36	5.07973	434.88	12.397	20495.39	0.0040684	0.07130	1.727	0.00793	1.26695	1.5427
38	5.03779	437.19	12.126	19633.49	0.0042228	0.07402	1.574	0.00796	1.26457	1.4129
40	4.99524	437.34	11.903	18729.40	0.0044058	0.07620	1.447	0.00792	1.26216	1.3176
42	4.95054	437.50	11.681	17869.77	0.0045769	0.07788	1.340	0.00786	1.25963	1.2403
44	4.90458	436.84	11.461	17004.63	0.0047552	0.07916	1.248	0.00777	1.25703	1.1793
46	4.85758	437.38	11.251	16257.59	0.0049079	0.08009	1.170	0.00768	1.25437	1.1286
48	4.80921	437.10	11.046	15504.11	0.0050693	0.08071	1.101	0.00757	1.25165	1.0882
50	4.75986	436.78	10.847	14783.28	0.0052316	0.08110	1.041	0.00746	1.24887	1.0559
52	4.70947	435.35	10.659	14049.69	0.0054116	0.08128	0.988	0.00733	1.24603	1.0307
54	4.65795	433.61	10.477	13343.61	0.0055918	0.08128	0.940	0.00720	1.24314	1.0097
56	4.60522	431.55	10.291	12650.47	0.0057788	0.08080	0.897	0.00704	1.24018	0.9972
58	4.55145	429.36	10.107	11987.04	0.0059671	0.08021	0.859	0.00688	1.23717	0.9874
60	4.49660	426.94	9.929	11351.61	0.0061568	0.07954	0.823	0.00673	1.23411	0.9795
62	4.44071	424.29	9.750	10736.73	0.0063521	0.07883	0.791	0.00659	1.23099	0.9736
64	4.38379	421.68	9.575	10158.22	0.0065427	0.07805	0.761	0.00645	1.22782	0.9686
66	4.32598	418.82	9.398	9597.77	0.0067397	0.07723	0.734	0.00632	1.22461	0.9652
68	4.26726	415.87	9.226	9067.46	0.0069351	0.07638	0.708	0.00621	1.22135	0.9624
70	4.20770	412.68	9.062	8562.65	0.0071320	0.07549	0.684	0.00610	1.21805	0.9601
75	4.05547	405.07	8.663	7427.76	0.0076130	0.07319	0.631	0.00585	1.20964	0.9568
80	3.89904	397.31	8.261	6418.32	0.0081214	0.07084	0.585	0.00563	1.20104	0.9592
85	3.74031	394.00	7.814	5626.43	0.0085098	0.06855	0.545	0.00547	1.19235	0.9605
90	3.58108	390.45	7.412	4945.54	0.0088692	0.06639	0.511	0.00535	1.18368	0.9604
95	3.42338	388.77	7.039	4397.21	0.0091302	0.06441	0.482	0.00530	1.17514	0.9571
100	3.26900	388.27	6.694	3940.58	0.0093270	0.06272	0.458	0.00530	1.16682	0.9516
105	3.11942	389.78	6.389	3582.66	0.0094046	0.06130	0.437	0.00536	1.15879	0.9412
110	2.97618	393.41	6.100	3296.66	0.0093883	0.06026	0.420	0.00548	1.15114	0.9268
115	2.84031	399.17	5.827	3069.11	0.0092883	0.05947	0.406	0.00565	1.14391	0.9112
120	2.71245	407.00	5.567	2887.77	0.0091210	0.05885	0.395	0.00584	1.13714	0.8964
125	2.59287	416.85	5.320	2743.28	0.0089014	0.05840	0.386	0.00607	1.13083	0.8826
130	2.48153	428.80	5.085	2629.95	0.0086376	0.05809	0.379	0.00632	1.12498	0.8697
140	2.28278	458.58	4.646	2470.43	0.0080427	0.05745	0.370	0.00682	1.11458	0.8546
150	2.11252	494.78	4.253	2363.70	0.0074553	0.05845	0.365	0.00750	1.10574	0.8301
160	1.96618	536.37	3.905	2287.69	0.0069169	0.06014	0.364	0.00825	1.09817	0.8089
170	1.83923	582.28	3.603	2229.91	0.0064398	0.06205	0.365	0.00900	1.09163	0.7949
180	1.72838	632.09	3.343	2187.06	0.0060118	0.06316	0.367	0.00962	1.08594	0.7954
190	1.63077	688.32	3.095	2153.63	0.0056305	0.06670	0.379	0.01055	1.08096	0.7935
200	1.54425	743.84	2.910	2129.30	0.0052862	0.07004	0.390	0.01154	1.07655	0.7880
220	1.39770	857.48	2.625	2092.85	0.0047059	0.07606	0.407	0.01349	1.06911	0.7782
240	1.27825	969.94	2.431	2067.43	0.0042382	0.08117	0.422	0.01545	1.06307	0.7691
260	1.17902	1076.87	2.303	2047.99	0.0038564	0.08535	0.434	0.01743	1.05808	0.7605
280	1.09507	1175.96	2.223	2033.18	0.0035380	0.08866	0.445	0.01946	1.05387	0.7522
300	1.02306	1266.54	2.176	2020.57	0.0032700	0.09125	0.456	0.02154	1.05026	0.7444
320	0.96053	1348.73	2.153	2009.49	0.0030417	0.09324	0.465	0.02366	1.04714	0.7371
340	0.90823	1418.82	2.143	1993.27	0.0028577	0.09480	0.475	0.02574	1.04453	0.7312
360	0.85937	1489.74	2.146	1985.42	0.0026816	0.09606	0.484	0.02798	1.04210	0.7249
380	0.81574	1555.20	2.159	1978.25	0.0025317	0.09711	0.493	0.03024	1.03993	0.7200
400	0.77652	1618.25	2.175	1971.64	0.0023987	0.09808	0.502	0.03254	1.03799	0.7157
420	0.74104	1679.62	2.193	1965.53	0.0022797	0.09901	0.511	0.03489	1.03623	0.7120
440	0.70878	1740.25	2.211	1959.85	0.0021726	0.09994	0.520	0.03729	1.03463	0.7087
460	0.67931	1800.98	2.227	1954.55	0.0020757	0.10092	0.529	0.03974	1.03317	0.7058
480	0.65227	1861.90	2.241	1949.58	0.0019874	0.10196	0.538	0.04224	1.03184	0.7033
500	0.62737	1923.55	2.253	1944.93	0.0019067	0.10306	0.547	0.04479	1.03061	0.7011
520	0.60435	1985.97	2.262	1940.54	0.0018326	0.10423	0.556	0.04739	1.02948	0.6993
540	0.58230	2054.48	2.270	1940.68	0.0017585	0.10545	0.565	0.05012	1.02839	0.6972
560	0.56253	2118.49	2.275	1936.43	0.0016957	0.10675	0.574	0.05283	1.02742	0.6957
580	0.54410	2183.04	2.279	1932.42	0.0016375	0.10810	0.583	0.05558	1.02651	0.6943
600	0.52686	2248.42	2.282	1928.62	0.0015833	0.10951	0.592	0.05839	1.02566	0.6932
650	0.48626	2414.56	2.283	1919.96	0.0014629	0.11318	0.615	0.06562	1.02377	0.6909
700	0.45502	2583.89	2.281	1912.33	0.0013602	0.11704	0.638	0.07319	1.02213	0.6892
800	0.40062	2929.59	2.267	1899.54	0.0011937	0.12512	0.683	0.08930	1.01947	0.6870
1000	0.32353	3629.87	2.240	1880.85	0.0009607	0.14160	0.772	0.12551	1.01570	0.6847
2000	0.16521	7429.30	2.059	1841.18	0.0004888	0.27727	1.190	0.46211	1.00800	0.5611
3000	0.11097	11907.92	1.849	1827.49	0.0003282	0.39286	1.562	0.90571	1.00537	0.5593
4000	0.08353	17077.19	1.668	1820.09	0.0002472	0.52273	1.901	1.48265	1.00404	0.5527
5000	0.06677	25113.08	1.369	1810.25	0.0001988	0.78002	2.221	2.33988	1.00323	0.5118

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

2200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 32.702	0.19099	4666.46	85.4522	-127.640	-49.834	1.26196	1.255	1.600	5251
34	0.19187	4580.94	85.4328	-125.887	-47.723	1.32525	1.281	1.650	5229
36	0.19327	4449.16	85.2746	-123.082	-44.347	1.42172	1.318	1.725	5194
38	0.19473	4317.55	84.9648	-120.154	-40.824	1.51696	1.352	1.798	5158
40	0.19526	4186.40	84.5107	-117.108	-37.156	1.61101	1.383	1.869	5121
42	0.19785	4056.08	83.9206	-113.946	-33.348	1.70390	1.410	1.938	5083
44	0.19949	3914.87	83.5199	-110.675	-29.409	1.79551	1.435	2.013	5044
46	0.20122	3785.04	82.6478	-107.288	-25.316	1.88649	1.458	2.080	5002
48	0.20302	3661.98	81.6228	-103.799	-21.094	1.97633	1.478	2.145	4961
50	0.20489	3534.64	80.4883	-100.207	-16.739	2.06522	1.498	2.210	4916
52	0.20684	3416.78	79.2591	-96.516	-12.251	2.15321	1.516	2.273	4872
54	0.20886	3306.40	77.9728	-92.735	-7.649	2.24005	1.531	2.333	4831
56	0.21095	3191.11	76.6722	-88.859	-2.918	2.32609	1.546	2.396	4787
58	0.21314	3081.38	75.2984	-84.892	1.938	2.41130	1.559	2.457	4743
60	0.21541	2971.35	73.8569	-80.840	6.913	2.49561	1.571	2.517	4697
62	0.21776	2864.62	72.3550	-76.704	12.005	2.57910	1.582	2.577	4650
64	0.22019	2767.74	70.8067	-72.490	17.213	2.66177	1.591	2.632	4605
66	0.22272	2669.92	69.2241	-68.198	22.534	2.74364	1.600	2.688	4559
68	0.22534	2575.27	67.6111	-63.834	27.965	2.82471	1.607	2.742	4512
70	0.22805	2486.41	65.9746	-59.405	33.500	2.90493	1.612	2.792	4467
75	0.23526	2278.51	61.8356	-48.076	47.763	3.10170	1.622	2.912	4353
80	0.24309	2091.81	57.7247	-36.416	62.613	3.29335	1.632	3.027	4239
85	0.25157	1924.36	53.7253	-24.660	77.826	3.47763	1.654	3.148	4119
90	0.26076	1784.06	49.8806	-12.389	93.839	3.66067	1.670	3.250	4011
95	0.27058	1666.60	46.2588	0.072	110.299	3.83865	1.684	3.337	3912
100	0.28103	1574.92	42.8748	12.783	127.270	4.01277	1.698	3.405	3825
105	0.29208	1497.14	39.7595	25.451	144.438	4.18028	1.709	3.460	3748
110	0.30368	1435.07	36.9079	38.145	161.857	4.34234	1.723	3.506	3678
115	0.31578	1386.94	34.3113	50.839	179.482	4.49903	1.740	3.543	3617
120	0.32833	1351.79	31.9556	63.519	197.273	4.65046	1.762	3.572	3563
125	0.34125	1327.12	29.8263	76.175	215.193	4.79677	1.788	3.595	3516
130	0.35448	1311.22	27.9029	88.811	233.220	4.93818	1.819	3.615	3475
140	0.38164	1301.74	24.6063	114.055	269.529	5.20724	1.892	3.648	3410
150	0.40940	1316.17	21.9157	139.375	306.155	5.45993	1.979	3.678	3366
160	0.43740	1344.99	19.7167	164.927	343.113	5.69844	2.077	3.715	3339
170	0.46548	1382.69	17.9024	190.880	380.507	5.92512	2.181	3.762	3324
180	0.49351	1426.01	16.3940	217.362	418.408	6.14173	2.289	3.819	3320
190	0.52144	1472.63	15.1221	245.069	457.492	6.35294	2.415	3.900	3319
200	0.54929	1522.28	14.0311	272.986	496.757	6.55420	2.517	3.962	3332
220	0.60460	1629.76	12.2652	330.727	577.031	6.93669	2.695	4.070	3376
240	0.65932	1742.52	10.8949	390.610	659.204	7.29396	2.831	4.147	3439
260	0.71338	1857.46	9.8049	451.924	742.541	7.62764	2.920	4.188	3513
280	0.76679	1973.69	8.9164	514.001	826.375	7.93819	2.966	4.194	3596
300	0.81965	2089.73	8.1781	576.119	910.029	8.22689	2.979	4.174	3683
320	0.87203	2205.66	7.5545	637.827	993.073	8.49498	2.967	4.133	3773
340	0.92383	2320.93	7.0222	698.763	1075.115	8.74331	2.937	4.079	3864
360	0.97528	2435.09	6.5615	758.718	1156.028	8.97464	2.897	4.018	3956
380	1.02634	2548.21	6.1589	817.586	1235.697	9.19004	2.852	3.955	4046
400	1.07422	2643.72	5.8215	875.277	1312.892	9.38818	2.807	3.902	4127
420	1.12491	2757.26	5.5106	932.021	1390.289	9.57704	2.763	3.847	4217
440	1.17540	2870.21	5.2342	987.851	1466.687	9.75479	2.723	3.798	4306
460	1.22570	2982.62	4.9845	1042.823	1542.150	9.92253	2.688	3.754	4393
480	1.27584	3094.55	4.7583	1097.038	1616.790	10.08114	2.656	3.715	4478
500	1.32583	3206.04	4.5523	1150.589	1690.706	10.23217	2.629	3.681	4560
520	1.37568	3317.13	4.3638	1203.568	1763.995	10.37602	2.606	3.652	4641
540	1.42783	3444.42	4.1856	1256.903	1838.574	10.51561	2.587	3.624	4728
560	1.47733	3553.97	4.0259	1308.918	1910.752	10.64637	2.570	3.603	4804
580	1.52673	3663.23	3.8784	1360.640	1982.599	10.77229	2.556	3.584	4878
600	1.57605	3772.23	3.7417	1412.095	2054.145	10.89363	2.544	3.569	4951
650	1.69902	4043.77	3.4398	1539.603	2231.750	11.17824	2.523	3.540	5127
700	1.82163	4314.21	3.1842	1666.143	2408.239	11.44088	2.510	3.521	5295
800	2.06606	4852.70	2.7741	1917.399	2759.073	11.90888	2.499	3.501	5613
1000	2.55303	5924.11	2.2092	2417.723	3457.779	12.68798	2.495	3.490	6195
2000	4.97690	11252.46	1.0998	4968.971	6996.461	15.13355	2.646	3.632	8459
3000	7.39729	16574.29	0.7330	7755.453	10768.962	16.64973	2.923	3.908	10133
4000	9.81968	21896.09	0.5498	10830.814	14831.158	18.01204	3.221	4.213	11519
5000	12.27499	27218.20	0.4398	14353.711	19354.304	19.85339	3.881	4.929	12653

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

2200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 32.702	5.23586	457.62	13.006	24432.93	0.0034974	0.06904	2.340	0.00824	1.27584	1.9531
34	5.21187	461.22	12.795	23875.23	0.0035783	0.07090	2.166	0.00824	1.27447	1.8154
36	5.17405	465.75	12.502	23020.20	0.0037043	0.07363	1.944	0.00825	1.27231	1.6397
38	5.13520	469.19	12.239	22171.51	0.0038322	0.07661	1.764	0.00830	1.27010	1.4902
40	5.09534	471.83	11.996	21331.14	0.0039618	0.07900	1.615	0.00829	1.26784	1.3759
42	5.05446	473.53	11.777	20501.31	0.0040934	0.08089	1.491	0.00826	1.26552	1.2862
44	5.01290	472.95	11.610	19624.87	0.0042558	0.08239	1.386	0.00817	1.26316	1.2193
46	4.96971	473.44	11.408	18810.58	0.0043937	0.08349	1.296	0.00808	1.26071	1.1622
48	4.92569	474.00	11.208	18037.78	0.0045251	0.08429	1.218	0.00798	1.25822	1.1156
50	4.88063	473.77	11.009	17251.28	0.0046656	0.08483	1.150	0.00786	1.25567	1.0784
52	4.83455	473.76	10.816	16518.60	0.0047982	0.08515	1.089	0.00775	1.25307	1.0470
54	4.78790	473.71	10.636	15830.70	0.0049254	0.08530	1.036	0.00764	1.25044	1.0204
56	4.74020	472.71	10.463	15126.50	0.0050687	0.08494	0.989	0.00748	1.24776	1.0039
58	4.69156	471.74	10.293	14456.76	0.0052085	0.08447	0.946	0.00733	1.24503	0.9904
60	4.64237	470.16	10.127	13794.08	0.0053542	0.08391	0.907	0.00718	1.24227	0.9795
62	4.59228	468.48	9.961	13155.13	0.0055001	0.08331	0.872	0.00704	1.23946	0.9705
64	4.54147	467.24	9.798	12569.62	0.0056332	0.08264	0.839	0.00691	1.23662	0.9623
66	4.48993	465.49	9.637	11987.74	0.0057746	0.08193	0.810	0.00679	1.23374	0.9561
68	4.43772	463.48	9.480	11428.34	0.0059161	0.08117	0.782	0.00667	1.23082	0.9510
70	4.38492	461.45	9.333	10902.69	0.0060512	0.08038	0.756	0.00657	1.22788	0.9460
75	4.25066	456.08	8.969	9685.18	0.0063846	0.07831	0.700	0.00633	1.22043	0.9370
80	4.11374	451.23	8.596	8605.17	0.0067081	0.07619	0.652	0.00612	1.21285	0.9325
85	3.97499	448.26	8.170	7649.33	0.0070235	0.07409	0.611	0.00592	1.20521	0.9341
90	3.83499	445.79	7.790	6841.85	0.0072905	0.07207	0.575	0.00578	1.19753	0.9329
95	3.69583	444.38	7.434	6159.46	0.0075102	0.07018	0.543	0.00569	1.18993	0.9304
100	3.55832	445.00	7.098	5604.09	0.0076506	0.06844	0.516	0.00565	1.18245	0.9248
105	3.42375	446.07	6.797	5125.84	0.0077567	0.06689	0.493	0.00565	1.17516	0.9186
110	3.29297	448.87	6.506	4725.65	0.0078101	0.06576	0.473	0.00570	1.16811	0.9085
115	3.16676	453.51	6.225	4392.10	0.0078120	0.06494	0.457	0.00579	1.16133	0.8967
120	3.04575	460.19	5.954	4117.23	0.0077614	0.06424	0.442	0.00591	1.15485	0.8854
125	2.93042	468.77	5.691	3889.00	0.0076694	0.06368	0.431	0.00604	1.14870	0.8751
130	2.82100	479.20	5.439	3698.96	0.0075435	0.06325	0.421	0.00620	1.14289	0.8658
140	2.62025	505.66	4.964	3410.88	0.0072141	0.06243	0.407	0.00653	1.13227	0.8551
150	2.44262	539.48	4.534	3214.91	0.0068169	0.06314	0.398	0.00703	1.12294	0.8339
160	2.28626	579.38	4.153	3074.99	0.0064120	0.06458	0.393	0.00760	1.11477	0.8136
170	2.14832	624.29	3.820	2970.46	0.0060268	0.06624	0.391	0.00819	1.10759	0.7996
180	2.02631	673.11	3.535	2889.55	0.0056735	0.06690	0.390	0.00865	1.10127	0.8015
190	1.91778	728.44	3.265	2824.17	0.0053545	0.07029	0.401	0.00940	1.09567	0.8015
200	1.82052	782.56	3.062	2771.35	0.0050629	0.07344	0.411	0.01018	1.09067	0.7976
220	1.65397	894.50	2.751	2695.58	0.0045501	0.07905	0.426	0.01174	1.08214	0.7893
240	1.51671	1005.88	2.538	2642.91	0.0041223	0.08376	0.438	0.01332	1.07515	0.7804
260	1.40178	1112.17	2.395	2603.74	0.0037657	0.08760	0.448	0.01492	1.06932	0.7715
280	1.30414	1210.84	2.305	2573.98	0.0034640	0.09063	0.458	0.01657	1.06438	0.7625
300	1.22003	1301.19	2.250	2549.53	0.0032077	0.09299	0.467	0.01826	1.06014	0.7539
320	1.14676	1383.62	2.221	2529.35	0.0029867	0.09480	0.475	0.02000	1.05646	0.7457
340	1.08245	1459.20	2.209	2512.28	0.0027952	0.09622	0.484	0.02179	1.05323	0.7381
360	1.02535	1529.09	2.209	2496.81	0.0026280	0.09736	0.492	0.02363	1.05037	0.7312
380	0.97434	1594.56	2.216	2482.81	0.0024806	0.09833	0.501	0.02551	1.04783	0.7250
400	0.93091	1649.76	2.228	2461.07	0.0023654	0.09924	0.509	0.02732	1.04566	0.7208
420	0.88896	1711.11	2.243	2451.08	0.0022482	0.10011	0.518	0.02927	1.04357	0.7162
440	0.85077	1771.69	2.259	2441.89	0.0021435	0.10101	0.526	0.03126	1.04167	0.7125
460	0.81586	1832.50	2.273	2433.39	0.0020484	0.10196	0.535	0.03329	1.03994	0.7092
480	0.78380	1893.52	2.286	2425.50	0.0019618	0.10296	0.544	0.03536	1.03835	0.7063
500	0.75425	1955.27	2.296	2418.14	0.0018825	0.10405	0.553	0.03748	1.03688	0.7038
520	0.72691	2017.81	2.304	2411.26	0.0018098	0.10520	0.561	0.03963	1.03553	0.7017
540	0.70036	2088.69	2.310	2412.34	0.0017351	0.10641	0.570	0.04192	1.03422	0.6993
560	0.67690	2152.75	2.314	2405.67	0.0016735	0.10771	0.579	0.04417	1.03306	0.6975
580	0.65500	2217.35	2.316	2399.40	0.0016164	0.10906	0.588	0.04646	1.03197	0.6960
600	0.63450	2282.78	2.318	2393.48	0.0015633	0.11047	0.597	0.04879	1.03096	0.6947
650	0.58857	2449.07	2.317	2380.06	0.0014453	0.11415	0.620	0.05479	1.02870	0.6920
700	0.54896	2618.55	2.311	2368.32	0.0013445	0.11804	0.643	0.06108	1.02675	0.6900
800	0.48401	2964.55	2.294	2348.76	0.0011811	0.12619	0.688	0.07446	1.02356	0.6875
1000	0.39169	3665.25	2.260	2320.42	0.0009521	0.14290	0.779	0.10454	1.01903	0.6849
2000	0.20093	7466.57	2.069	2260.94	0.0004864	0.27727	1.204	0.37992	1.00973	0.5677
3000	0.13518	11947.17	1.855	2240.59	0.0003271	0.39282	1.582	0.74346	1.00654	0.5667
4000	0.10184	17087.24	1.676	2229.82	0.0002465	0.52106	1.928	1.21455	1.00492	0.5611
5000	0.08147	24851.44	1.391	2217.37	0.0001984	0.76439	2.253	1.90347	1.00394	0.5231

* TWO-PHASE BOUNDRY

2400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 33.327	0.18987	4819.51	86.2226	-126.963	-42.581	1.26802	1.265	1.608	5328
34	0.19031	4776.11	86.2278	-126.066	-41.490	1.30044	1.278	1.633	5317
36	0.19164	4647.12	86.1388	-123.320	-38.150	1.39587	1.315	1.706	5285
38	0.19303	4518.15	85.8983	-120.453	-34.667	1.49004	1.349	1.777	5251
40	0.19448	4389.48	85.5147	-117.471	-31.042	1.58298	1.380	1.847	5216
42	0.19598	4261.43	84.9970	-114.377	-27.281	1.67474	1.408	1.914	5181
44	0.19754	4134.39	84.3545	-111.177	-23.386	1.76532	1.433	1.980	5145
46	0.19916	3997.01	83.9248	-107.873	-19.364	1.85471	1.456	2.052	5108
48	0.20085	3875.71	83.0009	-104.461	-15.200	1.94331	1.478	2.115	5070
50	0.20261	3753.52	81.9440	-100.951	-10.906	2.03095	1.498	2.178	5028
52	0.20444	3627.40	80.7892	-97.344	-6.487	2.11762	1.516	2.240	4983
54	0.20633	3518.14	79.5556	-93.650	-1.954	2.20315	1.532	2.298	4944
56	0.20829	3405.92	78.2658	-89.866	2.704	2.28765	1.547	2.356	4902
58	0.21033	3290.93	76.9549	-85.996	7.476	2.37158	1.561	2.416	4858
60	0.21243	3185.84	75.6007	-82.042	12.367	2.45448	1.573	2.473	4817
62	0.21461	3084.04	74.1895	-78.012	17.364	2.53642	1.584	2.528	4775
64	0.21687	2982.50	72.7187	-73.902	22.478	2.61759	1.594	2.583	4731
66	0.21920	2884.09	71.2094	-69.720	27.697	2.69790	1.604	2.636	4687
68	0.22162	2789.16	69.6699	-65.468	33.021	2.77737	1.611	2.687	4643
70	0.22411	2696.66	68.1092	-61.154	38.444	2.85597	1.617	2.737	4599
75	0.23070	2489.67	64.1431	-50.122	52.406	3.04859	1.627	2.849	4493
80	0.23782	2301.60	60.1719	-38.773	66.918	3.23588	1.639	2.957	4386
85	0.24549	2134.88	56.2855	-27.338	81.761	3.41567	1.661	3.069	4275
90	0.25372	1984.11	52.5298	-15.397	97.360	3.59398	1.677	3.169	4168
95	0.26252	1861.74	48.9501	-3.243	113.426	3.76769	1.692	3.252	4072
100	0.27185	1756.43	45.5915	9.172	129.984	3.93757	1.706	3.325	3983
105	0.28168	1673.19	42.4638	21.569	146.753	4.10120	1.717	3.380	3906
110	0.29199	1602.84	39.5866	34.016	163.779	4.25960	1.731	3.429	3835
115	0.30273	1546.45	36.9467	46.497	181.033	4.41299	1.749	3.472	3771
120	0.31386	1502.25	34.5327	58.997	198.484	4.56153	1.771	3.508	3713
125	0.32535	1469.72	32.3301	71.513	216.104	4.70538	1.797	3.539	3662
130	0.33713	1447.13	30.3290	84.041	233.864	4.84469	1.827	3.566	3617
140	0.36139	1422.43	26.8577	109.174	269.781	5.11085	1.900	3.617	3542
150	0.38629	1425.44	23.9955	134.489	306.160	5.36182	1.987	3.661	3488
160	0.41155	1444.72	21.6245	160.114	343.014	5.59966	2.085	3.709	3451
170	0.43697	1475.09	19.6522	186.178	380.375	5.82615	2.189	3.763	3427
180	0.46241	1513.00	18.0017	212.789	418.293	6.04286	2.296	3.822	3416
190	0.48782	1555.73	16.6063	240.632	457.427	6.25434	2.421	3.905	3410
200	0.51318	1601.12	15.4102	268.687	496.752	6.45591	2.523	3.969	3416
220	0.56367	1702.47	13.4721	326.711	577.213	6.83929	2.701	4.081	3452
240	0.61374	1809.60	11.9651	386.877	659.632	7.19762	2.836	4.160	3507
260	0.66327	1921.53	10.7629	448.464	743.231	7.53235	2.925	4.202	3576
280	0.71229	2036.01	9.7834	510.803	827.357	7.84398	2.972	4.208	3655
300	0.76079	2150.71	8.9685	573.164	911.272	8.13359	2.985	4.187	3739
320	0.80886	2265.01	8.2816	635.101	994.572	8.40251	2.972	4.146	3826
340	0.85647	2379.49	7.6942	696.256	1076.885	8.65167	2.942	4.092	3915
360	0.90372	2493.39	7.1858	756.416	1158.044	8.88370	2.903	4.030	4005
380	0.95061	2606.20	6.7416	815.477	1237.945	9.09972	2.858	3.967	4094
400	0.99720	2717.49	6.3497	873.416	1316.586	9.30150	2.812	3.905	4181
420	1.04355	2830.46	6.0022	930.270	1394.041	9.49045	2.768	3.846	4269
440	1.08718	2923.78	5.7135	986.080	1469.238	9.66544	2.727	3.802	4346
460	1.13338	3036.24	5.5583	1041.116	1544.806	9.83343	2.690	3.804	4460
480	1.17942	3148.22	5.2019	1095.426	1619.578	9.99234	2.659	3.721	4518
500	1.22532	3259.78	4.9758	1149.065	1693.617	10.14362	2.631	3.687	4600
520	1.27110	3370.94	4.7691	1202.126	1767.022	10.28770	2.608	3.658	4680
540	1.31934	3501.31	4.5731	1255.603	1841.938	10.42775	2.590	3.629	4768
560	1.36476	3610.78	4.3980	1307.697	1914.218	10.55869	2.573	3.608	4843
580	1.41009	3719.96	4.2363	1359.492	1986.158	10.68477	2.558	3.589	4917
600	1.45534	3828.90	4.0865	1411.015	2057.789	10.80626	2.546	3.573	4989
650	1.56816	4100.27	3.7558	1538.671	2235.583	11.09116	2.525	3.543	5163
700	1.68062	4370.55	3.4760	1665.334	2412.227	11.35323	2.511	3.523	5330
800	1.90480	4908.75	3.0275	1916.783	2763.303	11.82236	2.500	3.503	5645
1000	2.35131	5979.60	2.4104	2417.358	3462.316	12.60180	2.496	3.491	6224
2000	4.57331	11306.08	1.1997	4969.008	7001.455	15.04773	2.646	3.632	8479
3000	6.79198	16626.97	0.7995	7755.567	10774.026	16.56394	2.923	3.908	10149
4000	9.01239	21948.23	0.5997	10829.948	14835.191	17.92598	3.218	4.210	11533
5000	11.26175	27269.99	0.4798	14341.667	19346.560	19.76478	3.858	4.904	12670

* TWO-PHASE BOUNDRY

2400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^3	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 33.327	5.26672	473.33	12.945	25383.02	0.0033969	0.07094	2.396	0.00838	1.27760	1.9554
34	5.25452	475.27	12.841	25096.63	0.0034358	0.07189	2.302	0.00838	1.27691	1.8821
36	5.21803	480.33	12.550	24248.80	0.0035523	0.07474	2.060	0.00839	1.27482	1.6928
38	5.18048	484.30	12.290	23406.18	0.0036699	0.07783	1.864	0.00845	1.27268	1.5326
40	5.14198	487.47	12.050	22570.62	0.0037888	0.08033	1.704	0.00846	1.27049	1.4103
42	5.10256	489.67	11.833	21744.18	0.0039090	0.08232	1.570	0.00843	1.26825	1.3143
44	5.06221	491.37	11.626	20929.13	0.0040305	0.08389	1.457	0.00837	1.26596	1.2384
46	5.02113	490.64	11.477	20069.53	0.0041817	0.08510	1.361	0.00826	1.26362	1.1813
48	4.97880	491.68	11.283	19296.39	0.0043014	0.08596	1.278	0.00816	1.26123	1.1316
50	4.93552	492.30	11.086	18525.56	0.0044233	0.08657	1.205	0.00806	1.25878	1.0911
52	4.89135	491.95	10.896	17742.89	0.0045533	0.08697	1.141	0.00794	1.25628	1.0581
54	4.84661	492.43	10.717	17051.07	0.0046657	0.08718	1.085	0.00783	1.25375	1.0291
56	4.80089	492.23	10.539	16351.41	0.0047865	0.08687	1.034	0.00768	1.25118	1.0100
58	4.75450	491.19	10.370	15646.71	0.0049183	0.08644	0.989	0.00753	1.24856	0.9952
60	4.70732	490.47	10.210	14996.80	0.0050411	0.08593	0.948	0.00738	1.24591	0.9824
62	4.65961	489.69	10.049	14370.41	0.0051627	0.08538	0.911	0.00725	1.24323	0.9716
64	4.61110	488.41	9.892	13752.60	0.0052876	0.08475	0.878	0.00712	1.24051	0.9627
66	4.56200	487.04	9.734	13157.21	0.0054122	0.08408	0.847	0.00699	1.23776	0.9555
68	4.51231	485.46	9.583	12585.55	0.0055357	0.08336	0.818	0.00687	1.23499	0.9493
70	4.46210	483.47	9.441	12032.74	0.0056603	0.08261	0.791	0.00677	1.23218	0.9439
75	4.33458	479.32	9.093	10791.68	0.0059438	0.08063	0.733	0.00653	1.22508	0.9325
80	4.20483	475.54	8.733	9677.83	0.0062175	0.07858	0.684	0.00632	1.21789	0.9260
85	4.07352	474.12	8.319	8696.46	0.0064722	0.07655	0.641	0.00612	1.21063	0.9253
90	3.94134	471.81	7.946	7820.03	0.0067173	0.07459	0.604	0.00597	1.20336	0.9243
95	3.80921	471.17	7.595	7091.77	0.0069024	0.07274	0.572	0.00587	1.19612	0.9209
100	3.67857	471.27	7.265	6461.15	0.0070563	0.07102	0.544	0.00581	1.18899	0.9172
105	3.55010	472.77	6.966	5939.98	0.0071488	0.06947	0.520	0.00579	1.18200	0.9105
110	3.42482	475.51	6.677	5489.44	0.0072114	0.06830	0.499	0.00582	1.17522	0.9017
115	3.30330	480.00	6.395	5108.40	0.0072325	0.06740	0.481	0.00588	1.16866	0.8917
120	3.18609	486.28	6.121	4786.29	0.0072149	0.06668	0.466	0.00597	1.16236	0.8818
125	3.07360	494.54	5.854	4517.35	0.0071569	0.06609	0.452	0.00608	1.15634	0.8724
130	2.96626	504.74	5.596	4292.56	0.0070655	0.06561	0.442	0.00620	1.15061	0.8640
140	2.76710	530.07	5.108	3935.99	0.0068236	0.06476	0.425	0.00647	1.14003	0.8546
150	2.58875	563.02	4.665	3690.11	0.0065027	0.06536	0.414	0.00690	1.13061	0.8351
160	2.42983	602.08	4.269	3510.43	0.0061601	0.06669	0.408	0.00740	1.12227	0.8158
170	2.28847	646.32	3.923	3375.70	0.0058217	0.06825	0.404	0.00793	1.11488	0.8021
180	2.16256	694.74	3.626	3271.96	0.0055018	0.06877	0.402	0.00832	1.10833	0.8036
190	2.04993	750.02	3.346	3189.13	0.0052872	0.07210	0.412	0.00901	1.10249	0.8042
200	1.94863	803.68	3.135	3119.99	0.0049392	0.07518	0.421	0.00972	1.09726	0.8010
220	1.77409	914.90	2.811	3020.34	0.0044604	0.08062	0.436	0.01114	1.08829	0.7937
240	1.62936	1025.19	2.589	2948.49	0.0040581	0.08514	0.447	0.01256	1.08088	0.7855
260	1.50758	1131.08	2.440	2897.06	0.0037151	0.08881	0.456	0.01402	1.07469	0.7764
280	1.40391	1229.56	2.345	2858.38	0.0034227	0.09170	0.464	0.01552	1.06942	0.7672
300	1.31442	1319.83	2.286	2826.92	0.0031725	0.09393	0.472	0.01707	1.06490	0.7582
320	1.23630	1401.85	2.254	2800.24	0.0029575	0.09564	0.480	0.01866	1.06096	0.7498
340	1.16758	1477.37	2.240	2778.24	0.0027695	0.09699	0.488	0.02030	1.05750	0.7418
360	1.10653	1547.45	2.237	2759.02	0.0026045	0.09807	0.497	0.02199	1.05444	0.7345
380	1.05195	1613.08	2.243	2741.60	0.0024590	0.09899	0.505	0.02372	1.05171	0.7279
400	1.00281	1675.88	2.252	2725.12	0.0023301	0.09986	0.513	0.02550	1.04925	0.7220
420	0.95826	1737.81	2.263	2712.33	0.0022129	0.10070	0.521	0.02733	1.04702	0.7166
440	0.91981	1789.45	2.278	2689.33	0.0021245	0.10157	0.530	0.02905	1.04511	0.7137
460	0.88232	1833.26	2.342	2678.93	0.0020748	0.10250	0.538	0.03054	1.04324	0.7189
480	0.84787	1909.56	2.308	2669.30	0.0019488	0.10349	0.547	0.03280	1.04153	0.7078
500	0.81611	1971.34	2.317	2660.34	0.0018704	0.10456	0.555	0.03475	1.03995	0.7051
520	0.78672	2033.92	2.324	2651.99	0.0017983	0.10571	0.564	0.03673	1.03849	0.7029
540	0.75795	2106.11	2.330	2653.83	0.0017232	0.10691	0.573	0.03886	1.03707	0.7003
560	0.73273	2170.17	2.333	2645.72	0.0016623	0.10821	0.582	0.04094	1.03582	0.6985
580	0.70917	2234.77	2.335	2638.10	0.0016058	0.10955	0.591	0.04305	1.03465	0.6968
600	0.68713	2300.21	2.336	2630.93	0.0015532	0.11096	0.600	0.04520	1.03356	0.6954
650	0.63769	2466.53	2.333	2614.71	0.0014364	0.11464	0.622	0.05074	1.03112	0.6925
700	0.59502	2636.06	2.326	2600.55	0.0013366	0.11854	0.645	0.05654	1.02902	0.6904
800	0.52499	2982.16	2.307	2577.04	0.0011748	0.12673	0.691	0.06890	1.02557	0.6877
1000	0.42529	3583.02	2.271	2543.09	0.0009478	0.14354	0.782	0.09669	1.02068	0.6849
2000	0.21856	7485.15	2.073	2472.19	0.0004853	0.27727	1.211	0.34910	1.01059	0.5710
3000	0.14723	11966.75	1.858	2448.03	0.0003266	0.39280	1.593	0.68260	1.00712	0.5705
4000	0.11096	17095.25	1.679	2435.34	0.0002462	0.52039	1.941	1.11413	1.00537	0.5654
5000	0.08880	24750.10	1.400	2421.47	0.0001981	0.75809	2.269	1.74099	1.00429	0.5285

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

2600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 33.941	0.18880	4969.83	86.9857	-126.265	-35.369	1.27398	1.274	1.615	5403
34	0.18883	4966.12	86.9873	-126.188	-35.274	1.27678	1.275	1.617	5402
36	0.19011	4839.75	86.9610	-123.495	-31.968	1.37125	1.312	1.689	5371
38	0.19143	4713.28	86.7829	-120.685	-28.520	1.46444	1.346	1.758	5340
40	0.19281	4586.94	86.4621	-117.762	-24.935	1.55638	1.378	1.826	5308
42	0.19423	4461.05	86.0086	-114.730	-21.216	1.64710	1.406	1.892	5275
44	0.19572	4335.95	85.4321	-111.595	-17.367	1.73662	1.431	1.957	5240
46	0.19725	4212.02	84.7418	-108.358	-13.390	1.82499	1.455	2.020	5205
48	0.19885	4078.61	84.2756	-105.023	-9.288	1.91228	1.477	2.089	5170
50	0.20050	3962.18	83.3084	-101.588	-5.055	1.99869	1.497	2.149	5133
52	0.20223	3843.77	82.2269	-98.056	-0.692	2.08424	1.516	2.208	5094
54	0.20401	3719.95	81.0641	-94.439	3.781	2.16866	1.532	2.267	5050
56	0.20585	3614.44	79.8250	-90.739	8.367	2.25204	1.548	2.322	5013
58	0.20776	3505.21	78.5361	-86.953	13.071	2.33457	1.562	2.378	4972
60	0.20972	3389.14	77.2197	-83.090	17.881	2.41611	1.575	2.434	4927
62	0.21175	3290.90	75.8862	-79.151	22.797	2.49672	1.587	2.487	4889
64	0.21386	3191.49	74.4920	-75.133	27.830	2.57660	1.597	2.539	4849
66	0.21603	3093.27	73.0554	-71.047	32.961	2.65556	1.607	2.591	4807
68	0.21827	2997.49	71.5819	-66.894	38.193	2.73364	1.615	2.640	4765
70	0.22058	2909.52	70.0828	-62.681	43.517	2.81081	1.621	2.685	4726
75	0.22667	2698.26	66.2687	-51.908	57.222	2.99989	1.632	2.794	4625
80	0.23321	2509.51	62.4309	-40.826	71.453	3.18355	1.644	2.896	4525
85	0.24021	2338.54	58.6500	-29.668	85.983	3.35956	1.667	3.003	4418
90	0.24769	2185.70	54.9867	-18.010	101.238	3.53393	1.684	3.098	4316
95	0.25565	2051.72	51.4590	-6.133	116.948	3.70379	1.699	3.183	4220
100	0.26407	1942.41	48.1195	6.027	133.165	3.87018	1.714	3.253	4133
105	0.27293	1848.02	44.9969	18.181	149.586	4.03041	1.725	3.312	4054
110	0.28221	1772.06	42.0969	30.409	166.277	4.18570	1.739	3.362	3983
115	0.29186	1708.11	39.4263	42.690	183.204	4.33618	1.757	3.408	3918
120	0.30186	1656.55	36.9687	55.018	200.348	4.48210	1.779	3.449	3858
125	0.31217	1515.64	34.7117	67.390	217.687	4.62366	1.805	3.487	3803
130	0.32276	1587.01	32.6477	79.805	235.200	4.76104	1.835	3.520	3755
140	0.34462	1551.44	29.0329	104.792	270.711	5.02418	1.908	3.581	3673
150	0.36714	1540.88	26.0188	130.058	306.818	5.27327	1.995	3.640	3609
160	0.39008	1549.24	23.4966	155.708	343.513	5.51007	2.092	3.699	3562
170	0.41325	1572.89	21.3797	181.844	380.803	5.73613	2.196	3.759	3531
180	0.43650	1604.46	19.5950	208.555	418.707	5.95276	2.303	3.822	3513
190	0.45976	1642.38	18.0806	236.506	457.855	6.16432	2.428	3.908	3500
200	0.48300	1684.33	16.7808	264.674	497.214	6.36607	2.529	3.973	3501
220	0.52935	1778.36	14.6737	322.930	577.785	6.74997	2.707	4.089	3528
240	0.57544	1880.57	13.0347	383.339	660.386	7.10909	2.841	4.171	3576
260	0.62113	1989.51	11.7235	445.169	744.212	7.44474	2.930	4.214	3640
280	0.66638	2100.58	10.6518	507.741	828.568	7.75722	2.977	4.221	3714
300	0.71121	2213.56	9.7617	570.329	912.740	8.04771	2.990	4.200	3795
320	0.75567	2327.32	9.0083	632.483	996.299	8.31746	2.977	4.157	3880
340	0.79962	2439.60	8.3670	693.838	1078.812	8.56723	2.948	4.103	3966
360	0.84330	2552.57	7.8113	754.191	1160.196	8.79991	2.908	4.041	4054
380	0.88665	2665.31	7.3256	813.438	1240.317	9.01652	2.863	3.977	4141
400	0.92974	2777.74	6.8977	871.554	1319.177	9.21886	2.818	3.914	4228
420	0.97255	2888.56	6.5187	928.576	1396.811	9.40824	2.773	3.855	4313
440	1.01511	2998.76	6.1795	984.581	1473.305	9.58620	2.732	3.801	4397
460	1.05747	3109.60	5.8730	1039.649	1548.765	9.75394	2.694	3.751	4478
480	1.09986	3202.40	5.6280	1093.900	1622.465	9.91058	2.662	3.721	4554
500	1.14030	3313.98	5.4002	1147.587	1696.585	10.06203	2.634	3.693	4640
520	1.18262	3425.17	5.1751	1200.727	1770.100	10.20633	2.610	3.663	4719
540	1.22758	3558.86	4.9612	1254.344	1845.361	10.34683	2.592	3.634	4808
560	1.26955	3668.20	4.7706	1306.515	1917.737	10.47795	2.575	3.612	4882
580	1.31143	3777.27	4.5946	1358.380	1989.766	10.60419	2.561	3.593	4955
600	1.35323	3886.09	4.4316	1409.969	2061.480	10.72581	2.549	3.577	5027
650	1.45744	4157.22	4.0720	1537.769	2239.454	11.01101	2.526	3.546	5199
700	1.56132	4427.27	3.7680	1664.553	2416.249	11.27330	2.513	3.526	5365
800	1.76834	4965.06	3.2810	1916.192	2767.559	11.74274	2.501	3.505	5678
1000	2.18061	6035.20	2.6114	2417.014	3466.869	12.52252	2.497	3.492	6253
2000	4.23177	11359.46	1.2994	4969.063	7006.445	14.96879	2.647	3.632	8499
3000	6.27974	16679.28	0.8661	7755.702	10779.082	16.48502	2.923	3.908	10165
4000	8.32325	21999.94	0.6496	10829.224	14839.339	17.84682	3.216	4.207	11547
5000	10.40449	27321.30	0.5197	14331.082	19340.317	19.68338	3.838	4.881	12686

* TWO-PHASE BOUNDRY

2600 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(DH/DV)_P$	$V(DP/DU)_V$	$-V(DP/DV)_T$	$(DV/DT)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 33.941	5.29671	488.65	12.894	26323.76	0.0033045	0.07277	2.453	0.00851	1.27931	1.9591
34	5.29568	488.83	12.885	26298.96	0.0033076	0.07286	2.444	0.00851	1.27925	1.9526
36	5.26019	494.41	12.597	25458.04	0.0034159	0.07582	2.181	0.00853	1.27723	1.7489
38	5.22381	498.90	12.338	24621.27	0.0035247	0.07902	1.969	0.00860	1.27515	1.5776
40	5.18655	502.57	12.100	23790.39	0.0036343	0.08162	1.796	0.00862	1.27303	1.4469
42	5.14842	505.25	11.886	22967.34	0.0037448	0.08370	1.652	0.00859	1.27086	1.3443
44	5.10943	507.42	11.681	22154.24	0.0038562	0.08536	1.531	0.00854	1.26864	1.2632
46	5.06961	508.98	11.490	21353.32	0.0039686	0.08663	1.427	0.00846	1.26638	1.1981
48	5.02898	508.31	11.350	20511.24	0.0041088	0.08758	1.339	0.00834	1.26407	1.1492
50	4.98743	509.77	11.157	19761.06	0.0042158	0.08826	1.261	0.00823	1.26171	1.1057
52	4.94485	510.48	10.971	19006.87	0.0043262	0.08871	1.193	0.00812	1.25930	1.0695
54	4.90172	509.97	10.795	18234.13	0.0044457	0.08898	1.134	0.00801	1.25687	1.0398
56	4.85794	510.82	10.617	17558.74	0.0045462	0.08872	1.080	0.00786	1.25439	1.0162
58	4.81334	510.80	10.446	16871.78	0.0046549	0.08834	1.033	0.00772	1.25188	1.0008
60	4.76819	509.46	10.285	16160.08	0.0047784	0.08787	0.990	0.00757	1.24934	0.9874
62	4.72249	509.40	10.128	15541.22	0.0048829	0.08736	0.951	0.00744	1.24676	0.9750
64	4.67594	508.71	9.976	14923.22	0.0049917	0.08677	0.916	0.00731	1.24415	0.9648
66	4.62894	507.77	9.823	14318.56	0.0051021	0.08613	0.883	0.00718	1.24151	0.9565
68	4.58143	506.51	9.676	13732.81	0.0052125	0.08545	0.853	0.00706	1.23885	0.9494
70	4.53350	505.41	9.538	13190.29	0.0053132	0.08473	0.826	0.00696	1.23617	0.9424
75	4.41171	501.85	9.202	11903.94	0.0055670	0.08282	0.765	0.00672	1.22937	0.9296
80	4.28736	499.10	8.854	10760.68	0.0058018	0.08084	0.714	0.00651	1.22250	0.9214
85	4.16297	498.50	8.450	9735.28	0.0060245	0.07886	0.671	0.00631	1.21557	0.9196
90	4.03736	497.25	8.067	8824.45	0.0062312	0.07695	0.633	0.00615	1.20864	0.9174
95	3.91167	496.46	7.741	8025.66	0.0064118	0.07513	0.600	0.00603	1.20173	0.9149
100	3.78680	497.28	7.414	7355.54	0.0065419	0.07344	0.571	0.00596	1.19489	0.9104
105	3.66388	498.41	7.118	6770.92	0.0066456	0.07189	0.546	0.00592	1.18819	0.9051
110	3.54349	501.45	6.830	6279.29	0.0067041	0.07072	0.524	0.00594	1.18164	0.8962
115	3.42634	505.88	6.549	5852.56	0.0067366	0.06978	0.505	0.00598	1.17530	0.8873
120	3.31282	512.05	6.273	5487.87	0.0067364	0.06898	0.488	0.00604	1.16917	0.8789
125	3.20333	519.94	6.003	5175.44	0.0067070	0.06836	0.474	0.00612	1.16329	0.8707
130	3.09823	530.07	5.742	4916.93	0.0066399	0.06786	0.462	0.00622	1.15765	0.8629
140	2.90172	555.25	5.244	4501.84	0.0064491	0.06697	0.443	0.00645	1.14717	0.8536
150	2.72374	587.12	4.788	4196.94	0.0061995	0.06749	0.431	0.00681	1.13774	0.8361
160	2.56356	625.21	4.381	3971.57	0.0059162	0.06874	0.422	0.00725	1.12929	0.8181
170	2.41985	669.12	4.023	3806.17	0.0056171	0.07021	0.417	0.00772	1.12175	0.8045
180	2.29096	717.05	3.714	3675.75	0.0053309	0.07062	0.413	0.00806	1.11501	0.8051
190	2.17507	772.14	3.424	3572.30	0.0050613	0.07391	0.424	0.00869	1.10898	0.8065
200	2.07039	825.72	3.205	3487.21	0.0048121	0.07692	0.432	0.00935	1.10355	0.8038
220	1.88911	936.10	2.870	3359.53	0.0043678	0.08221	0.445	0.01064	1.09419	0.7976
240	1.73779	1045.68	2.640	3268.03	0.0039885	0.08656	0.455	0.01194	1.08643	0.7899
260	1.60997	1151.23	2.485	3203.05	0.0036601	0.09007	0.464	0.01328	1.07989	0.7810
280	1.50065	1249.00	2.384	3152.24	0.0033791	0.09281	0.471	0.01465	1.07433	0.7717
300	1.40606	1338.97	2.322	3112.39	0.0031364	0.09492	0.479	0.01608	1.06953	0.7625
320	1.32333	1421.26	2.286	3079.81	0.0029249	0.09653	0.486	0.01755	1.06535	0.7535
340	1.25060	1496.12	2.270	3050.96	0.0027424	0.09779	0.493	0.01906	1.06168	0.7454
360	1.18582	1566.06	2.265	3026.90	0.0025806	0.09881	0.501	0.02062	1.05842	0.7378
380	1.12784	1631.93	2.269	3006.04	0.0024370	0.09968	0.509	0.02222	1.05551	0.7308
400	1.07557	1695.43	2.276	2987.65	0.0023087	0.10050	0.517	0.02387	1.05289	0.7245
420	1.02822	1756.60	2.286	2970.07	0.0021948	0.10131	0.525	0.02556	1.05052	0.7190
440	0.98512	1817.02	2.296	2954.12	0.0020918	0.10215	0.533	0.02728	1.04836	0.7140
460	0.94566	1878.13	2.305	2940.62	0.0019972	0.10306	0.541	0.02905	1.04640	0.7093
480	0.91086	1928.63	2.322	2916.95	0.0019294	0.10403	0.550	0.03069	1.04466	0.7060
500	0.87696	1987.53	2.338	2906.23	0.0018581	0.10509	0.558	0.03245	1.04297	0.7065
520	0.84558	2050.13	2.345	2896.26	0.0017868	0.10622	0.567	0.03429	1.04141	0.7040
540	0.81461	2123.72	2.350	2899.09	0.0017113	0.10742	0.576	0.03628	1.03988	0.7013
560	0.78768	2187.75	2.352	2889.38	0.0016511	0.10871	0.585	0.03821	1.03854	0.6994
580	0.76253	2252.34	2.353	2880.28	0.0015952	0.11005	0.594	0.04017	1.03729	0.6976
600	0.73897	2317.78	2.353	2871.72	0.0015432	0.11145	0.603	0.04217	1.03613	0.6961
650	0.68613	2484.11	2.349	2852.41	0.0014276	0.11514	0.625	0.04732	1.03351	0.6931
700	0.64048	2653.67	2.341	2835.60	0.0013288	0.11905	0.648	0.05271	1.03126	0.6909
800	0.56550	2999.84	2.320	2807.75	0.0011685	0.12727	0.694	0.06420	1.02756	0.6880
1000	0.45859	3700.82	2.281	2767.67	0.0009435	0.14418	0.786	0.09004	1.02231	0.6850
2000	0.23631	7503.69	2.078	2684.33	0.0004841	0.27727	1.218	0.32302	1.01145	0.5744
3000	0.15924	11986.30	1.861	2656.04	0.0003261	0.39279	1.603	0.63111	1.00771	0.5742
4000	0.12006	17104.69	1.683	2641.29	0.0002459	0.51979	1.955	1.02922	1.00581	0.5696
5000	0.09611	24663.21	1.409	2625.92	0.0001979	0.75252	2.286	1.60405	1.00465	0.5338

* TWO-PHASE BOUNDRY

2800 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 34.546	0.18776	5117.66	87.7415	-125.548	-28.197	1.27982	1.282	1.622	5476
36	0.18865	5027.57	87.7482	-123.615	-25.801	1.34773	1.309	1.673	5455
38	0.18992	4903.46	87.6264	-120.857	-22.387	1.44002	1.344	1.741	5425
40	0.19123	4779.35	87.3621	-117.989	-18.838	1.53103	1.375	1.808	5395
42	0.19259	4655.52	86.9658	-115.014	-15.158	1.62081	1.403	1.872	5364
44	0.19400	4532.28	86.4480	-111.938	-11.350	1.70936	1.430	1.935	5331
46	0.19546	4410.00	85.8181	-108.764	-7.418	1.79675	1.453	1.997	5298
48	0.19698	4289.04	85.0849	-105.494	-3.364	1.88301	1.475	2.057	5264
50	0.19854	4169.83	84.2561	-102.131	0.811	1.96823	1.496	2.118	5229
52	0.20018	4047.33	83.5746	-98.669	5.119	2.05271	1.515	2.181	5195
54	0.20186	3933.55	82.4805	-95.123	9.538	2.13610	1.532	2.237	5158
56	0.20359	3821.45	81.3126	-91.495	14.065	2.21841	1.548	2.292	5119
58	0.20539	3709.89	80.0706	-87.786	18.705	2.29982	1.563	2.346	5079
60	0.20724	3604.28	78.7857	-84.001	23.450	2.38025	1.576	2.398	5040
62	0.20915	3486.08	77.4682	-80.142	28.297	2.45972	1.588	2.453	4994
64	0.21111	3392.47	76.1470	-76.213	33.246	2.53828	1.599	2.502	4959
66	0.21315	3296.83	74.7753	-72.211	38.303	2.61609	1.609	2.551	4920
68	0.21524	3201.66	73.3688	-68.145	43.454	2.69297	1.618	2.599	4881
70	0.21739	3113.48	71.9297	-64.022	48.693	2.76891	1.624	2.642	4844
75	0.22305	2899.56	68.2497	-53.478	62.171	2.95486	1.637	2.747	4748
80	0.22911	2708.80	64.5306	-42.633	76.157	3.13535	1.650	2.845	4652
85	0.23557	2536.87	60.8507	-31.715	90.422	3.30816	1.673	2.948	4551
90	0.24243	2381.23	57.2668	-20.302	105.393	3.47927	1.690	3.039	4454
95	0.24970	2240.68	53.8112	-8.667	120.797	3.64583	1.706	3.124	4359
100	0.25738	2120.14	50.4970	3.261	136.708	3.80908	1.721	3.197	4271
105	0.26545	2024.00	47.3781	15.200	152.830	3.96639	1.733	3.252	4195
110	0.27387	1940.96	44.4650	27.226	169.223	4.11890	1.747	3.304	4123
115	0.28263	1871.39	41.7674	39.326	185.865	4.26685	1.765	3.351	4057
120	0.29170	1812.97	39.2772	51.492	202.733	4.41042	1.787	3.396	3995
125	0.30105	1765.53	36.9782	63.724	219.815	4.54988	1.813	3.438	3938
130	0.31066	1730.04	34.8625	76.022	237.094	4.68542	1.843	3.475	3887
140	0.33052	1682.23	31.1270	100.846	272.214	4.94566	1.916	3.547	3798
150	0.35103	1660.84	27.9820	126.032	308.033	5.19277	2.003	3.616	3727
160	0.37198	1659.91	25.3273	151.670	344.536	5.42833	2.100	3.684	3673
170	0.39321	1674.67	23.0810	177.845	381.717	5.65372	2.203	3.752	3635
180	0.41458	1700.67	21.1719	204.626	419.579	5.87012	2.310	3.820	3610
190	0.43599	1733.11	19.5435	232.665	458.721	6.08164	2.434	3.908	3590
200	0.45742	1770.89	18.1434	260.925	498.089	6.28343	2.535	3.975	3587
220	0.50023	1857.60	15.8685	319.378	578.737	6.66770	2.712	4.094	3604
240	0.54284	1955.04	14.0996	379.989	661.445	7.02729	2.846	4.178	3646
260	0.58519	2059.37	12.6814	442.030	745.441	7.36361	2.936	4.223	3705
280	0.62720	2168.20	11.5213	504.815	830.010	7.67688	2.982	4.231	3775
300	0.66883	2278.51	10.5554	567.608	914.387	7.96809	2.995	4.210	3852
320	0.71012	2390.13	9.7397	629.959	998.147	8.23849	2.982	4.168	3934
340	0.75103	2502.80	9.0418	691.508	1080.905	8.48900	2.953	4.113	4019
360	0.79164	2614.81	8.4379	752.045	1162.500	8.72228	2.913	4.051	4104
380	0.83194	2726.18	7.9112	811.467	1242.816	8.93942	2.868	3.987	4190
400	0.87197	2837.47	7.4477	869.751	1321.855	9.14222	2.823	3.924	4275
420	0.91178	2948.31	7.0358	926.935	1399.678	9.33206	2.779	3.864	4358
440	0.95133	3057.60	6.6677	983.095	1476.343	9.51042	2.737	3.809	4440
460	0.99069	3167.69	6.3362	1038.314	1551.972	9.67853	2.700	3.760	4520
480	1.02984	3276.87	6.0378	1092.695	1626.652	9.83724	2.667	3.715	4599
500	1.06744	3368.60	5.7791	1146.311	1699.762	9.98665	2.637	3.683	4668
520	1.10579	3479.80	5.5597	1199.401	1773.256	10.13093	2.613	3.660	4752
540	1.14895	3617.05	5.3498	1253.124	1848.838	10.27184	2.595	3.639	4848
560	1.18796	3726.22	5.1435	1305.369	1921.307	10.40313	2.578	3.617	4922
580	1.22588	3835.13	4.9532	1357.304	1993.421	10.52951	2.563	3.597	4994
600	1.26572	3943.80	4.7770	1408.957	2065.215	10.65127	2.551	3.581	5064
650	1.36256	4214.60	4.3884	1536.898	2243.363	10.93675	2.528	3.549	5236
700	1.45906	4484.36	4.0600	1663.801	2420.303	11.19926	2.515	3.529	5400
800	1.65138	5021.64	3.5344	1915.626	2771.838	11.66900	2.502	3.507	5710
1000	2.03428	6090.92	2.8124	2416.692	3471.435	12.44910	2.498	3.493	6282
2000	3.93897	11412.62	1.3992	4969.137	7011.432	14.89569	2.647	3.633	8518
3000	5.84063	16731.24	0.9325	7755.858	10784.132	16.41196	2.923	3.908	10180
4000	7.74365	22051.21	0.6995	10828.618	14843.580	17.77353	3.213	4.204	11561
5000	9.66374	27372.13	0.5596	14321.693	19335.300	19.60811	3.820	4.861	12701

* TWO-PHASE BOUNDRY

2800 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 34.546	5.32589	503.73	12.847	27256.06	0.0032192	0.07456	2.509	0.00863	1.28098	1.9646
36	5.30073	508.04	12.642	26649.80	0.0032926	0.07686	2.308	0.00867	1.27954	1.8082
38	5.26541	513.02	12.385	25818.72	0.0033939	0.08018	2.079	0.00875	1.27752	1.6251
40	5.22926	517.18	12.148	24992.45	0.0034955	0.08287	1.892	0.00877	1.27546	1.4856
42	5.19230	520.34	11.935	24172.84	0.0035977	0.08504	1.737	0.00875	1.27335	1.3761
44	5.15454	522.96	11.732	23361.85	0.0037004	0.08678	1.606	0.00870	1.27120	1.2896
46	5.11601	524.95	11.542	22561.58	0.0038037	0.08813	1.496	0.00863	1.26901	1.2202
48	5.07671	526.51	11.361	21774.22	0.0039076	0.08914	1.401	0.00853	1.26678	1.1641
50	5.03666	527.67	11.180	21002.04	0.0040118	0.08988	1.319	0.00843	1.26451	1.1186
52	4.99558	527.71	11.040	20218.77	0.0041335	0.09039	1.247	0.00830	1.26218	1.0830
54	4.95394	528.46	10.867	19486.54	0.0042327	0.09071	1.183	0.00819	1.25982	1.0503
56	4.91173	529.03	10.693	18769.94	0.0043321	0.09050	1.127	0.00804	1.25743	1.0275
58	4.86881	529.19	10.523	18062.72	0.0044329	0.09016	1.077	0.00789	1.25501	1.0086
60	4.82534	529.29	10.361	17391.85	0.0045300	0.08973	1.032	0.00776	1.25255	0.9924
62	4.78133	527.75	10.201	16668.10	0.0046477	0.08925	0.991	0.00761	1.25007	0.9803
64	4.73680	527.98	10.053	16069.47	0.0047386	0.08870	0.954	0.00748	1.24757	0.9685
66	4.69157	527.66	9.904	15467.32	0.0048344	0.08809	0.920	0.00736	1.24503	0.9590
68	4.64595	526.84	9.762	14874.75	0.0049324	0.08744	0.889	0.00724	1.24247	0.9509
70	4.59996	526.09	9.627	14321.90	0.0050224	0.08675	0.860	0.00714	1.23989	0.9431
75	4.48324	523.20	9.300	12999.41	0.0052502	0.08491	0.797	0.00689	1.23336	0.9287
80	4.36471	521.26	8.962	11823.12	0.0054580	0.08297	0.745	0.00668	1.22676	0.9191
85	4.24508	521.73	8.567	10769.24	0.0056504	0.08105	0.700	0.00648	1.22012	0.9160
90	4.12497	521.31	8.213	9822.51	0.0058302	0.07917	0.661	0.00632	1.21347	0.9130
95	4.00486	520.90	7.875	8973.58	0.0059966	0.07738	0.627	0.00619	1.20685	0.9106
100	3.88531	521.44	7.551	8237.41	0.0061302	0.07571	0.597	0.00610	1.20029	0.9072
105	3.76723	523.42	7.257	7624.87	0.0062136	0.07416	0.571	0.00605	1.19382	0.9010
110	3.65138	526.54	6.969	7087.18	0.0062740	0.07299	0.548	0.00605	1.18751	0.8925
115	3.53821	531.19	6.688	6621.36	0.0063080	0.07205	0.528	0.00608	1.18136	0.8838
120	3.42820	537.33	6.412	6215.21	0.0063195	0.07122	0.510	0.00612	1.17540	0.8762
125	3.32168	545.19	6.141	5864.52	0.0063054	0.07052	0.495	0.00618	1.16965	0.8694
130	3.21896	555.13	5.876	5568.94	0.0062602	0.06998	0.482	0.00626	1.16413	0.8624
140	3.02557	579.97	5.370	5089.69	0.0061157	0.06909	0.462	0.00644	1.15377	0.8535
150	2.84879	611.43	4.905	4731.37	0.0059141	0.06953	0.447	0.00675	1.14436	0.8372
160	2.68830	649.08	4.487	4462.35	0.0056758	0.07072	0.437	0.00714	1.13586	0.8200
170	2.54318	692.28	4.119	4258.99	0.0054194	0.07211	0.431	0.00756	1.12822	0.8071
180	2.41208	740.05	3.800	4102.16	0.0051612	0.07244	0.425	0.00786	1.12134	0.8060
190	2.29361	794.91	3.500	3975.07	0.0049165	0.07569	0.435	0.00844	1.11515	0.8084
200	2.18618	848.29	3.274	3871.48	0.0046864	0.07866	0.443	0.00905	1.10956	0.8063
220	1.99909	958.04	2.927	3713.52	0.0042732	0.08381	0.455	0.01024	1.09986	0.8010
240	1.84215	1067.21	2.689	3601.48	0.0039149	0.08801	0.464	0.01143	1.09178	0.7938
260	1.70885	1171.92	2.528	3519.16	0.0036035	0.09136	0.472	0.01266	1.08495	0.7852
280	1.59438	1269.42	2.423	3456.94	0.0033328	0.09395	0.479	0.01393	1.07910	0.7758
300	1.49514	1358.81	2.357	3406.70	0.0030984	0.09595	0.485	0.01524	1.07405	0.7664
320	1.40821	1440.49	2.319	3365.80	0.0028937	0.09746	0.492	0.01660	1.06964	0.7573
340	1.33151	1515.92	2.300	3332.49	0.0027132	0.09863	0.499	0.01801	1.06576	0.7487
360	1.26319	1585.78	2.293	3303.02	0.0025546	0.09958	0.506	0.01946	1.06231	0.7408
380	1.20201	1651.27	2.294	3276.88	0.0024143	0.10039	0.513	0.02095	1.05923	0.7336
400	1.14682	1714.47	2.300	3254.07	0.0022887	0.10117	0.521	0.02248	1.05646	0.7271
420	1.09676	1775.97	2.309	3233.58	0.0021759	0.10194	0.529	0.02405	1.05395	0.7213
440	1.05116	1836.27	2.317	3214.03	0.0020746	0.10275	0.537	0.02566	1.05167	0.7161
460	1.00940	1897.22	2.325	3197.45	0.0019816	0.10363	0.545	0.02731	1.04958	0.7113
480	0.97102	1957.95	2.332	3181.92	0.0018975	0.10459	0.553	0.02899	1.04766	0.7072
500	0.93582	2011.39	2.339	3155.78	0.0018313	0.10563	0.561	0.03061	1.04596	0.7048
520	0.90351	2070.03	2.355	3144.03	0.0017683	0.10675	0.570	0.03228	1.04430	0.7036
540	0.87036	2141.49	2.369	3148.12	0.0016993	0.10793	0.579	0.03408	1.04265	0.7024
560	0.84178	2205.49	2.371	3136.66	0.0016398	0.10922	0.587	0.03588	1.04123	0.7003
580	0.81508	2270.06	2.371	3125.92	0.0015846	0.11056	0.596	0.03771	1.03990	0.6984
600	0.79006	2335.48	2.371	3115.85	0.0015331	0.11195	0.605	0.03957	1.03866	0.6968
650	0.73391	2501.80	2.365	3093.16	0.0014188	0.11564	0.628	0.04439	1.03588	0.6936
700	0.68537	2671.37	2.356	3073.45	0.0013210	0.11956	0.651	0.04943	1.03347	0.6913
800	0.60556	3017.60	2.332	3040.88	0.0011623	0.12781	0.697	0.06018	1.02954	0.6882
1000	0.49157	3718.66	2.290	2994.14	0.0009393	0.14482	0.789	0.08434	1.02393	0.6851
2000	0.25387	7522.20	2.082	2897.36	0.0004829	0.27727	1.225	0.30065	1.01231	0.5777
3000	0.17121	12005.80	1.863	2864.63	0.0003255	0.39278	1.614	0.58697	1.00829	0.5780
4000	0.12914	17115.29	1.686	2847.65	0.0002456	0.51926	1.969	0.95648	1.00625	0.5738
5000	0.10342	24588.12	1.416	2830.70	0.0001977	0.74757	2.303	1.48709	1.00500	0.5390

* TWO-PHASE BOUNDRY

3000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 35.142	0.18677	5263.18	88.4898	-124.813	-21.062	1.28556	1.291	1.628	5546
36	0.18727	5211.00	88.5061	-123.685	-19.651	1.32521	1.306	1.658	5535
38	0.18849	5089.15	88.4355	-120.975	-16.268	1.41666	1.341	1.725	5507
40	0.18974	4967.18	88.2221	-118.158	-12.752	1.50682	1.373	1.791	5479
42	0.19104	4845.32	87.8773	-115.236	-9.107	1.59573	1.401	1.854	5449
44	0.19239	4723.89	87.4118	-112.215	-5.338	1.68340	1.428	1.915	5419
46	0.19378	4603.21	86.8358	-109.097	-1.447	1.76987	1.452	1.976	5387
48	0.19522	4483.62	86.1581	-105.887	2.564	1.85521	1.474	2.035	5355
50	0.19671	4365.51	85.3869	-102.586	6.692	1.93948	1.495	2.094	5321
52	0.19825	4249.27	84.5293	-99.195	10.938	2.02272	1.515	2.151	5287
54	0.19986	4132.22	83.8101	-95.712	15.313	2.10528	1.532	2.211	5256
56	0.20150	4022.26	82.7041	-92.150	19.789	2.18667	1.548	2.264	5220
58	0.20320	3914.01	81.5297	-88.510	24.372	2.26708	1.564	2.317	5183
60	0.20495	3804.84	80.2959	-84.796	29.056	2.34647	1.577	2.368	5145
62	0.20674	3702.88	79.0151	-81.010	33.840	2.42492	1.590	2.417	5107
64	0.20860	3599.46	77.7101	-77.155	38.725	2.50245	1.601	2.466	5068
66	0.21050	3492.76	76.3936	-73.235	43.703	2.57905	1.611	2.516	5027
68	0.21247	3400.22	75.0402	-69.247	48.785	2.65490	1.620	2.562	4990
70	0.21449	3312.28	73.6631	-65.203	53.949	2.72975	1.627	2.604	4955
75	0.21978	3098.08	70.1059	-54.865	67.228	2.91295	1.641	2.705	4864
80	0.22543	2902.80	66.4951	-44.231	80.997	3.09066	1.654	2.801	4772
85	0.23142	2729.33	62.9064	-33.526	95.034	3.26069	1.679	2.901	4674
90	0.23777	2571.79	59.3978	-22.328	109.758	3.42899	1.696	2.989	4582
95	0.24448	2433.41	56.0026	-10.907	124.904	3.59275	1.713	3.068	4494
100	0.25153	2307.34	52.7418	0.810	140.539	3.75317	1.728	3.140	4408
105	0.25893	2199.21	49.6323	12.554	156.394	3.90788	1.740	3.200	4329
110	0.26665	2110.19	46.7173	24.400	172.530	4.05800	1.755	3.253	4257
115	0.27467	2033.40	43.9914	36.333	188.918	4.20369	1.773	3.302	4189
120	0.28296	1971.02	41.4696	48.347	205.539	4.34516	1.794	3.347	4127
125	0.29152	1917.41	39.1383	60.444	222.386	4.48270	1.820	3.392	4068
130	0.30030	1873.49	36.9783	72.629	239.452	4.61657	1.851	3.435	4014
140	0.31847	1813.91	33.1456	97.281	274.199	4.87404	1.923	3.516	3919
150	0.33727	1784.37	29.8848	122.365	309.722	5.11910	2.010	3.591	3843
160	0.35652	1774.40	27.1138	147.964	346.019	5.35333	2.107	3.667	3783
170	0.37607	1781.10	24.7509	174.149	383.063	5.57789	2.210	3.742	3737
180	0.39581	1800.03	22.7280	200.976	420.855	5.79388	2.316	3.815	3706
190	0.41563	1828.02	20.9931	229.083	459.971	6.00527	2.441	3.906	3681
200	0.43548	1861.04	19.4963	257.419	499.334	6.20703	2.541	3.976	3673
220	0.47518	1941.04	17.0568	316.035	580.008	6.59143	2.718	4.096	3682
240	0.51481	2031.04	15.1571	376.823	662.810	6.95142	2.852	4.184	3716
260	0.55424	2132.10	13.6364	439.048	746.938	7.28826	2.941	4.230	3770
280	0.59340	2236.69	12.3888	502.020	831.665	7.60212	2.987	4.240	3835
300	0.63225	2345.76	11.3487	565.000	916.225	7.89396	3.000	4.219	3909
320	0.67078	2455.38	10.4702	627.534	1000.165	8.16494	2.988	4.178	3988
340	0.70899	2565.83	9.7183	689.262	1083.119	8.41605	2.958	4.123	4070
360	0.74693	2677.32	9.0670	749.972	1164.907	8.64988	2.919	4.061	4154
380	0.78459	2788.32	8.4985	809.561	1245.414	8.86754	2.874	3.996	4238
400	0.82198	2898.35	7.9981	868.005	1324.630	9.07079	2.828	3.933	4321
420	0.85916	3008.26	7.5538	925.345	1402.626	9.26105	2.784	3.873	4403
440	0.89612	3118.24	7.1566	981.656	1479.465	9.43982	2.743	3.817	4484
460	0.93288	3227.40	6.7989	1037.021	1555.256	9.60829	2.706	3.767	4563
480	0.96943	3335.32	6.4779	1091.542	1630.079	9.76730	2.672	3.723	4640
500	1.00586	3443.55	6.1847	1145.316	1704.088	9.91852	2.643	3.683	4715
520	1.04205	3551.99	5.9177	1198.431	1777.308	10.06224	2.618	3.648	4789
540	1.08084	3675.84	5.7386	1251.941	1852.368	10.20196	2.597	3.644	4888
560	1.11727	3784.79	5.5167	1304.260	1924.926	10.33341	2.580	3.621	4961
580	1.15362	3893.50	5.3120	1356.262	1997.122	10.45995	2.565	3.601	5032
600	1.18990	4002.00	5.1225	1407.977	2068.992	10.58183	2.553	3.584	5102
650	1.28033	4272.39	4.7049	1536.057	2247.307	10.86758	2.530	3.552	5272
700	1.37045	4541.80	4.3521	1663.076	2424.387	11.13029	2.516	3.531	5434
800	1.55000	5078.46	3.7878	1915.084	2776.140	11.60033	2.504	3.509	5743
1000	1.90745	6146.74	3.0133	2416.390	3476.014	12.38074	2.499	3.494	6310
2000	3.68518	11465.56	1.4988	4969.230	7016.416	14.82765	2.647	3.633	8538
3000	5.46002	16782.84	0.9990	7756.033	10789.175	16.34394	2.923	3.908	10195
4000	7.23608	22102.05	0.7493	10828.115	14847.895	17.70532	3.211	4.202	11575
5000	9.03299	27422.49	0.5995	14313.302	19331.299	19.53810	3.804	4.843	12716

* TWO-PHASE BOUNDRY

3000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 35.142	5.35430	518.60	12.804	28180.69	0.0031401	0.07628	2.565	0.00875	1.28261	1.9716
36	5.33980	521.23	12.687	27825.69	0.0031807	0.07788	2.441	0.00880	1.28178	1.8707
38	5.30544	526.71	12.430	27000.19	0.0032754	0.08130	2.193	0.00888	1.27981	1.6752
40	5.27030	531.35	12.194	26178.50	0.0033700	0.08409	1.991	0.00891	1.27780	1.5264
42	5.23440	534.96	11.982	25362.36	0.0034649	0.08634	1.824	0.00890	1.27575	1.4098
44	5.19776	538.04	11.780	24553.64	0.0035600	0.08816	1.685	0.00885	1.27367	1.3177
46	5.16039	540.45	11.592	23754.33	0.0036556	0.08958	1.566	0.00879	1.27154	1.2437
48	5.12231	542.41	11.411	22966.47	0.0037515	0.09065	1.465	0.00870	1.26937	1.1839
50	5.08353	544.17	11.232	22192.18	0.0038476	0.09146	1.378	0.00859	1.26717	1.1353
52	5.04408	545.50	11.062	21433.63	0.0039438	0.09203	1.301	0.00848	1.26493	1.0950
54	5.00355	545.45	10.933	20675.76	0.0040535	0.09240	1.234	0.00835	1.26263	1.0628
56	4.96268	546.54	10.763	19961.16	0.0041433	0.09221	1.174	0.00821	1.26031	1.0380
58	4.92125	547.32	10.596	19261.80	0.0042327	0.09191	1.121	0.00806	1.25797	1.0173
60	4.87933	547.44	10.435	18565.04	0.0043251	0.09152	1.074	0.00792	1.25560	0.9999
62	4.83688	547.88	10.276	17910.39	0.0044117	0.09107	1.031	0.00779	1.25321	0.9848
64	4.79392	547.58	10.126	17255.53	0.0045035	0.09055	0.992	0.00766	1.25078	0.9724
66	4.75056	546.55	9.979	16592.54	0.0046041	0.08998	0.956	0.00753	1.24834	0.9629
68	4.70653	546.34	9.839	16003.24	0.0046891	0.08935	0.924	0.00741	1.24587	0.9536
70	4.66227	545.95	9.709	15442.75	0.0047701	0.08869	0.894	0.00730	1.24338	0.9451
75	4.54997	543.93	9.390	14096.18	0.0049734	0.08690	0.829	0.00706	1.23709	0.9288
80	4.43606	542.45	9.060	12876.98	0.0051639	0.08501	0.774	0.00684	1.23073	0.9183
85	4.32109	543.84	8.673	11793.66	0.0053339	0.08312	0.728	0.00663	1.22433	0.9143
90	4.20574	544.27	8.326	10816.28	0.0054915	0.08128	0.688	0.00647	1.21794	0.9103
95	4.09039	545.22	7.995	9953.61	0.0056264	0.07952	0.653	0.00634	1.21156	0.9065
100	3.97568	546.19	7.677	9173.25	0.0057495	0.07786	0.622	0.00624	1.20525	0.9033
105	3.86205	547.66	7.385	8493.45	0.0058436	0.07632	0.595	0.00617	1.19901	0.8984
110	3.75020	550.98	7.099	7913.63	0.0059034	0.07515	0.571	0.00616	1.19289	0.8903
115	3.64071	555.60	6.817	7403.01	0.0059424	0.07420	0.551	0.00617	1.18693	0.8819
120	3.53401	562.15	6.539	6965.63	0.0059535	0.07336	0.532	0.00620	1.18113	0.8742
125	3.43035	570.02	6.268	6577.40	0.0059504	0.07263	0.516	0.00624	1.17552	0.8680
130	3.32998	579.54	6.000	6238.70	0.0059272	0.07202	0.502	0.00630	1.17010	0.8627
140	3.13998	604.14	5.489	5695.64	0.0058195	0.07112	0.480	0.00644	1.15989	0.8544
150	2.96502	635.77	5.015	5290.70	0.0056486	0.07150	0.464	0.00672	1.15054	0.8386
160	2.80487	673.14	4.588	4976.97	0.0054479	0.07263	0.452	0.00706	1.14203	0.8221
170	2.65907	715.97	4.211	4736.08	0.0052260	0.07396	0.445	0.00743	1.13432	0.8097
180	2.52648	763.31	3.884	4547.75	0.0049976	0.07422	0.436	0.00770	1.12734	0.8066
190	2.40600	818.31	3.575	4398.21	0.0047731	0.07746	0.446	0.00824	1.12102	0.8097
200	2.29634	871.44	3.341	4273.58	0.0045620	0.08038	0.454	0.00881	1.11529	0.8084
220	2.10445	980.99	2.983	4084.82	0.0041757	0.08541	0.466	0.00991	1.10532	0.8039
240	1.94246	1089.00	2.736	3945.20	0.0038419	0.08946	0.474	0.01101	1.09694	0.7974
260	1.80428	1193.42	2.570	3846.90	0.0035448	0.09267	0.480	0.01214	1.08983	0.7891
280	1.68520	1289.96	2.461	3769.28	0.0032868	0.09513	0.486	0.01331	1.08374	0.7798
300	1.58166	1379.39	2.392	3710.20	0.0030588	0.09700	0.492	0.01454	1.07845	0.7702
320	1.49080	1460.62	2.351	3660.49	0.0028603	0.09841	0.498	0.01580	1.07363	0.7609
340	1.41046	1535.39	2.329	3618.99	0.0026854	0.09950	0.504	0.01711	1.06976	0.7521
360	1.33881	1605.30	2.320	3584.42	0.0025296	0.10038	0.511	0.01846	1.06613	0.7438
380	1.27456	1670.92	2.320	3553.87	0.0023913	0.10113	0.518	0.01986	1.06289	0.7363
400	1.21658	1733.87	2.324	3526.07	0.0022683	0.10186	0.525	0.02129	1.05997	0.7296
420	1.16392	1795.23	2.331	3501.38	0.0021574	0.10259	0.532	0.02276	1.05732	0.7236
440	1.11593	1856.10	2.338	3479.73	0.0020567	0.10337	0.540	0.02427	1.05491	0.7181
460	1.07194	1916.96	2.344	3459.59	0.0019652	0.10422	0.548	0.02581	1.05271	0.7132
480	1.03153	1977.37	2.350	3440.49	0.0018828	0.10515	0.556	0.02738	1.05068	0.7090
500	0.99418	2038.95	2.354	3423.50	0.0018065	0.10618	0.565	0.02899	1.04882	0.7050
520	0.95965	2101.52	2.356	3408.67	0.0017361	0.10729	0.573	0.03064	1.04709	0.7015
540	0.92521	2159.41	2.388	3400.91	0.0016874	0.10846	0.582	0.03217	1.04538	0.7034
560	0.89504	2223.37	2.389	3387.53	0.0016285	0.10974	0.590	0.03386	1.04387	0.7011
580	0.86683	2287.90	2.389	3375.02	0.0015739	0.11107	0.599	0.03558	1.04247	0.6992
600	0.84040	2353.30	2.388	3363.29	0.0015231	0.11246	0.608	0.03733	1.04116	0.6975
650	0.78105	2519.58	2.381	3336.94	0.0014099	0.11614	0.630	0.04186	1.03821	0.6942
700	0.72969	2689.15	2.370	3314.09	0.0013132	0.12006	0.653	0.04659	1.03567	0.6917
800	0.64516	3035.41	2.345	3276.42	0.0011561	0.12834	0.699	0.05669	1.03149	0.6885
1000	0.52426	3736.53	2.300	3222.49	0.0009351	0.14545	0.792	0.07941	1.02553	0.6852
2000	0.27136	7540.68	2.087	3111.26	0.0004817	0.27727	1.232	0.28127	1.01316	0.5810
3000	0.18315	12025.26	1.866	3073.77	0.0003250	0.39277	1.624	0.54870	1.00887	0.5818
4000	0.13820	17126.84	1.688	3054.42	0.0002453	0.51879	1.983	0.89346	1.00669	0.5781
5000	0.11071	24522.82	1.424	3035.81	0.0001975	0.74311	2.319	1.38605	1.00535	0.5442

* TWO-PHASE BOUNDRY

3500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 36.594	0.18442	5618.07	90.3291	-122.907	-3.382	1.29943	1.310	1.644	5717
38	0.18520	5536.11	90.3409	-121.068	-1.039	1.36227	1.334	1.690	5700
40	0.18634	5419.14	90.2357	-118.362	2.404	1.45057	1.367	1.753	5675
42	0.18751	5301.96	89.9988	-115.556	5.971	1.53758	1.396	1.813	5649
44	0.18873	5184.83	89.6425	-112.656	9.658	1.62331	1.423	1.873	5623
46	0.18998	5068.02	89.1777	-109.664	13.460	1.70782	1.448	1.930	5595
48	0.19127	4951.81	88.6143	-106.584	17.376	1.79115	1.471	1.986	5566
50	0.19259	4836.54	87.9609	-103.417	21.405	1.87337	1.493	2.042	5537
52	0.19396	4722.51	87.2252	-100.165	25.544	1.95454	1.513	2.097	5506
54	0.19537	4610.08	86.4140	-96.833	29.790	2.03466	1.531	2.149	5476
56	0.19683	4499.60	85.5331	-93.423	34.141	2.11377	1.548	2.202	5444
58	0.19832	4391.44	84.5879	-89.936	38.596	2.19193	1.565	2.253	5412
60	0.19989	4291.60	83.7151	-86.367	43.180	2.26964	1.579	2.304	5386
62	0.20146	4190.31	82.5689	-82.736	47.834	2.34593	1.592	2.350	5353
64	0.20309	4091.58	81.3780	-79.039	52.583	2.42132	1.604	2.395	5320
66	0.20475	3992.88	80.1462	-75.281	57.417	2.49569	1.616	2.440	5285
68	0.20645	3899.07	78.8779	-71.464	62.337	2.56913	1.626	2.482	5252
70	0.20820	3802.06	77.5953	-67.590	67.346	2.64174	1.633	2.523	5216
75	0.21277	3573.78	74.3144	-57.687	80.208	2.81917	1.649	2.621	5129
80	0.21760	3380.05	70.9474	-47.496	93.532	2.99113	1.665	2.709	5048
85	0.22271	3197.43	67.5520	-37.239	107.099	3.15548	1.691	2.805	4957
90	0.22808	3033.67	64.1983	-26.486	121.335	3.31821	1.710	2.887	4872
95	0.23372	2887.17	60.9397	-15.510	135.963	3.47637	1.727	2.963	4791
100	0.23961	2757.74	57.7971	-4.230	151.061	3.63127	1.743	3.031	4713
105	0.24575	2639.17	54.7786	7.096	166.368	3.78063	1.756	3.091	4639
110	0.25214	2536.61	51.8776	18.552	181.964	3.92573	1.771	3.145	4568
115	0.25875	2444.51	49.1292	30.121	197.820	4.06669	1.790	3.198	4498
120	0.26559	2365.50	46.5508	41.804	213.931	4.20382	1.812	3.248	4432
125	0.27262	2302.18	44.1417	53.599	230.286	4.33734	1.838	3.294	4372
130	0.27984	2244.23	41.8975	65.511	246.875	4.46746	1.868	3.343	4313
140	0.29478	2157.83	37.8739	89.727	280.775	4.71865	1.941	3.438	4208
150	0.31027	2104.62	34.3939	114.517	315.607	4.95894	2.027	3.530	4121
160	0.32621	2073.60	31.3784	139.951	351.370	5.18972	2.124	3.621	4047
170	0.34245	2060.76	28.7718	166.074	388.018	5.41187	2.227	3.710	3988
180	0.35892	2063.04	26.5104	192.927	425.547	5.62636	2.332	3.795	3944
190	0.37555	2076.47	24.5433	221.122	464.515	5.83695	2.456	3.896	3906
200	0.39226	2099.14	22.8254	249.588	503.812	6.03837	2.556	3.970	3887
220	0.42578	2161.08	19.9951	308.515	584.464	6.42266	2.731	4.097	3876
240	0.45932	2236.50	17.7807	369.637	667.326	6.78291	2.864	4.190	3893
260	0.49281	2323.22	16.0056	432.218	751.608	7.12037	2.953	4.242	3932
280	0.52621	2417.86	14.5481	495.571	836.607	7.43524	2.999	4.256	3987
300	0.55945	2519.86	13.3286	558.948	921.532	7.72834	3.012	4.238	4053
320	0.59248	2623.78	12.2939	621.881	1005.870	8.00061	3.000	4.198	4124
340	0.62525	2731.20	11.4079	684.004	1089.231	8.25295	2.971	4.143	4201
360	0.65780	2839.23	10.6390	745.102	1171.425	8.48795	2.931	4.081	4279
380	0.69013	2947.38	9.9665	805.072	1252.347	8.70673	2.886	4.016	4359
400	0.72223	3055.62	9.3746	863.887	1331.969	8.91102	2.841	3.952	4438
420	0.75417	3164.29	8.8492	921.588	1410.367	9.10226	2.797	3.892	4516
440	0.78589	3272.32	8.3806	978.251	1487.588	9.28192	2.756	3.836	4594
460	0.81741	3379.48	7.9595	1033.957	1563.726	9.45116	2.719	3.786	4669
480	0.84879	3486.07	7.5783	1088.813	1638.920	9.61096	2.686	3.741	4743
500	0.87999	3594.04	7.2322	1142.911	1713.238	9.76261	2.657	3.700	4816
520	0.91109	3700.67	6.9174	1196.347	1786.832	9.90726	2.631	3.665	4887
540	0.94469	3825.27	6.7115	1249.147	1861.406	10.04565	2.604	3.654	4987
560	0.97597	3933.51	6.4504	1301.639	1934.168	10.17747	2.586	3.631	5058
580	1.00717	4041.57	6.2096	1353.802	2006.556	10.30434	2.571	3.610	5128
600	1.03831	4149.47	5.9868	1405.667	2078.603	10.42653	2.558	3.593	5196
650	1.11592	4418.54	5.4962	1534.079	2257.310	10.71290	2.535	3.560	5361
700	1.19323	4686.81	5.0822	1661.378	2434.719	10.97611	2.520	3.537	5520
800	1.34724	5221.53	4.4210	1913.830	2786.986	11.44683	2.507	3.514	5823
1000	1.65373	6286.73	3.5151	2415.723	3487.516	12.22798	2.501	3.496	6381
2000	3.17745	11596.96	1.7477	4969.540	7028.862	14.67562	2.648	3.633	8585
3000	4.69861	16910.31	1.1650	7756.558	10801.750	16.19197	2.924	3.908	10233
4000	6.22076	22227.31	0.8739	10827.220	14858.928	17.55294	3.207	4.197	11608
5000	7.75955	27546.33	0.6992	14295.744	19324.750	19.38193	3.770	4.805	12751

* TWO-PHASE BOUNDRY

3500 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 36.594	5.42234	554.58	12.719	30463.14	0.0029652	0.08149	2.707	0.00914	1.28651	1.9667
38	5.39957	559.17	12.541	29892.64	0.0030222	0.08399	2.502	0.00920	1.28520	1.8125
40	5.36660	564.98	12.304	29082.36	0.0031028	0.08701	2.259	0.00925	1.28331	1.6383
42	5.33298	569.72	12.092	28275.23	0.0031830	0.08947	2.059	0.00925	1.28139	1.5023
44	5.29871	573.88	11.891	27472.91	0.0032629	0.09146	1.893	0.00922	1.27943	1.3949
46	5.26382	577.34	11.704	26677.14	0.0033429	0.09305	1.753	0.00916	1.27743	1.3087
48	5.22833	580.30	11.525	25889.73	0.0034228	0.09427	1.633	0.00908	1.27541	1.2390
50	5.19225	583.02	11.349	25112.50	0.0035027	0.09521	1.531	0.00898	1.27335	1.1822
52	5.15559	585.25	11.182	24347.33	0.0035825	0.09591	1.442	0.00887	1.27126	1.1350
54	5.11837	586.90	11.027	23596.10	0.0036622	0.09640	1.364	0.00876	1.26915	1.0952
56	5.08062	588.44	10.872	22860.73	0.0037415	0.09631	1.296	0.00861	1.26700	1.0665
58	5.04234	589.74	10.722	22143.13	0.0038201	0.09609	1.235	0.00846	1.26483	1.0425
60	5.00286	590.84	10.599	21470.27	0.0038991	0.09575	1.180	0.00831	1.26259	1.0223
62	4.96365	592.08	10.447	20799.26	0.0039698	0.09537	1.132	0.00817	1.26037	1.0040
64	4.92397	593.04	10.302	20146.84	0.0040392	0.09492	1.088	0.00805	1.25812	0.9882
66	4.88405	593.68	10.157	19501.43	0.0041098	0.09441	1.048	0.00792	1.25587	0.9751
68	4.84380	594.26	10.018	18866.32	0.0041765	0.09384	1.012	0.00781	1.25360	0.9633
70	4.80305	593.79	9.891	18261.52	0.0042491	0.09323	0.979	0.00769	1.25130	0.9533
75	4.70001	592.35	9.587	16796.79	0.0044243	0.09156	0.906	0.00743	1.24550	0.9341
80	4.59558	593.18	9.273	15533.30	0.0045674	0.08977	0.847	0.00721	1.23964	0.9200
85	4.49019	596.10	8.899	14357.06	0.0047051	0.08794	0.796	0.00698	1.23375	0.9142
90	4.38438	598.22	8.565	13300.76	0.0048267	0.08615	0.753	0.00681	1.22785	0.9086
95	4.27866	600.58	8.248	12353.28	0.0049331	0.08443	0.715	0.00666	1.22198	0.9039
100	4.17350	603.54	7.945	11509.43	0.0050217	0.08279	0.683	0.00655	1.21615	0.8996
105	4.06918	606.01	7.666	10739.26	0.0051008	0.08126	0.654	0.00646	1.21039	0.8951
110	3.96608	609.94	7.384	10060.39	0.0051566	0.08010	0.628	0.00642	1.20472	0.8876
115	3.86470	614.87	7.103	9447.30	0.0052003	0.07915	0.605	0.00640	1.19916	0.8801
120	3.76525	621.39	6.823	8906.70	0.0052265	0.07829	0.585	0.00640	1.19372	0.8737
125	3.66810	630.16	6.547	8444.64	0.0052272	0.07752	0.567	0.00642	1.18842	0.8675
130	3.57351	639.83	6.276	8019.77	0.0052243	0.07686	0.551	0.00643	1.18327	0.8632
140	3.39237	664.50	5.753	7320.14	0.0051739	0.07584	0.525	0.00650	1.17346	0.8570
150	3.22296	696.17	5.265	6783.12	0.0050705	0.07611	0.505	0.00669	1.16434	0.8432
160	3.06551	733.49	4.820	6356.64	0.0049363	0.07713	0.490	0.00695	1.15590	0.8280
170	2.92013	775.91	4.425	6017.69	0.0047812	0.07834	0.479	0.00723	1.14815	0.8166
180	2.78611	822.82	4.080	5747.86	0.0046122	0.07855	0.464	0.00743	1.14104	0.8064
190	2.66279	877.60	3.753	5529.20	0.0044388	0.08174	0.473	0.00788	1.13452	0.8122
200	2.54935	930.83	3.503	5351.45	0.0042653	0.08460	0.481	0.00836	1.12854	0.8124
220	2.34864	1040.09	3.117	5075.61	0.0039395	0.08939	0.491	0.00929	1.11802	0.8100
240	2.17712	1147.29	2.851	4869.14	0.0036517	0.09313	0.497	0.01021	1.10909	0.8048
260	2.02920	1249.43	2.671	4714.27	0.0033951	0.09600	0.501	0.01115	1.10142	0.7974
280	1.90040	1344.12	2.553	4594.90	0.0031661	0.09814	0.505	0.01214	1.09478	0.7886
300	1.78746	1432.11	2.476	4504.15	0.0029592	0.09973	0.509	0.01317	1.08897	0.7789
320	1.68783	1512.14	2.428	4428.49	0.0027761	0.10088	0.513	0.01424	1.08387	0.7692
340	1.59936	1586.50	2.401	4368.19	0.0026116	0.10176	0.518	0.01536	1.07935	0.7598
360	1.52022	1655.72	2.388	4316.26	0.0024649	0.10245	0.524	0.01651	1.07533	0.7510
380	1.44901	1720.87	2.383	4270.78	0.0023336	0.10305	0.530	0.01771	1.07171	0.7429
400	1.38460	1783.75	2.383	4230.80	0.0022158	0.10365	0.536	0.01894	1.06845	0.7356
420	1.32597	1845.25	2.386	4195.74	0.0021091	0.10428	0.543	0.02021	1.06548	0.7290
440	1.27245	1905.89	2.390	4163.86	0.0020127	0.10497	0.550	0.02151	1.06278	0.7231
460	1.22337	1966.45	2.393	4134.36	0.0019252	0.10575	0.557	0.02283	1.06031	0.7179
480	1.17814	2027.20	2.395	4107.09	0.0018452	0.10662	0.565	0.02419	1.05803	0.7132
500	1.13637	2089.46	2.396	4084.17	0.0017708	0.10760	0.573	0.02559	1.05594	0.7089
520	1.09758	2151.90	2.395	4061.78	0.0017030	0.10867	0.581	0.02702	1.05399	0.7052
540	1.05855	2204.79	2.435	4049.23	0.0016575	0.10981	0.589	0.02839	1.05204	0.7058
560	1.02452	2268.59	2.434	4030.36	0.0016004	0.11106	0.598	0.02985	1.05034	0.7033
580	0.99288	2332.99	2.433	4012.79	0.0015474	0.11237	0.606	0.03135	1.04875	0.7012
600	0.96310	2398.29	2.430	3996.36	0.0014981	0.11375	0.615	0.03287	1.04727	0.6993
650	0.89612	2564.43	2.420	3959.57	0.0013881	0.11742	0.637	0.03681	1.04393	0.6955
700	0.83806	2733.93	2.406	3927.82	0.0012939	0.12134	0.660	0.04093	1.04104	0.6927
800	0.74226	3080.19	2.376	3875.71	0.0011407	0.12968	0.707	0.04973	1.03629	0.6891
1000	0.60469	3781.36	2.324	3801.54	0.0009246	0.14703	0.801	0.06954	1.02949	0.6854
2000	0.31472	7586.74	2.097	3649.77	0.0004789	0.27727	1.249	0.24250	1.01527	0.5893
3000	0.21283	12073.70	1.872	3599.01	0.0003237	0.39274	1.651	0.47217	1.01031	0.5914
4000	0.16075	17158.87	1.695	3573.09	0.0002446	0.51778	2.018	0.76751	1.00778	0.5888
5000	0.12887	24392.84	1.439	3549.99	0.0001970	0.73369	2.362	1.18491	1.00623	0.5569

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

4000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 38.000	0.18226	5961.98	92.1254	-120.917	14.084	1.31265	1.327	1.660	5877
38	0.18226	5961.95	92.1254	-120.916	14.085	1.31267	1.327	1.660	5877
40	0.18331	5849.64	92.1071	-118.306	17.467	1.39939	1.360	1.721	5856
42	0.18438	5736.84	91.9559	-115.600	20.968	1.48481	1.390	1.780	5833
44	0.18549	5623.79	91.6851	-112.802	24.585	1.56893	1.418	1.837	5810
46	0.18662	5510.70	91.3066	-109.916	28.314	1.65181	1.443	1.892	5785
48	0.18779	5397.85	90.8310	-106.945	32.153	1.73348	1.467	1.946	5760
50	0.18900	5285.49	90.2676	-103.890	36.099	1.81402	1.490	2.000	5733
52	0.19023	5173.91	89.6245	-100.754	40.151	1.89347	1.511	2.052	5705
54	0.19151	5063.39	88.9088	-97.542	44.305	1.97185	1.530	2.102	5678
56	0.19281	4954.24	88.1266	-94.254	48.559	2.04920	1.548	2.152	5649
58	0.19415	4846.75	87.2834	-90.894	52.912	2.12558	1.564	2.201	5620
60	0.19553	4741.25	86.3842	-87.463	57.361	2.20099	1.580	2.248	5591
62	0.19694	4638.06	85.4332	-83.966	61.904	2.27547	1.594	2.295	5562
64	0.19838	4537.51	84.4346	-80.403	66.538	2.34904	1.607	2.340	5532
66	0.19990	4455.41	83.4600	-76.766	71.299	2.42230	1.619	2.382	5511
68	0.20141	4360.73	82.3056	-73.083	76.103	2.49399	1.629	2.423	5481
70	0.20297	4271.16	81.1206	-69.345	80.992	2.56486	1.638	2.460	5452
75	0.20698	4051.51	78.0470	-59.796	93.514	2.73760	1.655	2.550	5377
80	0.21122	3833.47	74.8829	-49.964	106.484	2.90499	1.673	2.640	5294
85	0.21569	3649.95	71.6644	-40.062	119.695	3.06503	1.700	2.731	5211
90	0.22035	3482.73	68.4497	-29.669	133.544	3.22333	1.721	2.809	5132
95	0.22523	3327.32	65.2884	-19.046	147.782	3.37727	1.739	2.882	5054
100	0.23031	3189.81	62.2248	-8.115	162.471	3.52800	1.756	2.948	4981
105	0.23558	3065.24	59.2790	2.874	177.369	3.67336	1.770	3.007	4912
110	0.24105	2951.37	56.4499	14.006	192.546	3.81456	1.786	3.064	4843
115	0.24669	2854.17	53.7476	25.276	207.996	3.95191	1.805	3.116	4778
120	0.25250	2766.52	51.1510	36.679	223.702	4.08559	1.827	3.167	4713
125	0.25847	2589.97	48.6932	48.216	239.663	4.21590	1.854	3.217	4650
130	0.26459	2621.48	46.3857	59.891	255.870	4.34302	1.884	3.267	4589
140	0.27724	2513.73	42.2073	83.696	289.046	4.58884	1.957	3.369	4478
150	0.29038	2433.33	38.5591	108.174	323.258	4.82484	2.043	3.474	4378
160	0.30391	2384.15	35.3684	133.388	358.493	5.05222	2.139	3.575	4296
170	0.31774	2355.17	32.5685	159.381	394.731	5.27189	2.242	3.674	4228
180	0.33183	2339.35	30.1096	186.182	431.967	5.48470	2.347	3.770	4172
190	0.34607	2339.20	27.9518	214.379	470.713	5.69408	2.471	3.878	4124
200	0.36042	2350.77	26.0523	242.892	509.850	5.89469	2.570	3.959	4096
220	0.38934	2394.10	22.8791	302.012	590.392	6.27844	2.744	4.094	4068
240	0.41834	2456.20	20.3645	363.377	673.239	6.63862	2.876	4.190	4071
260	0.44735	2530.80	18.3434	426.218	757.566	6.97626	2.964	4.245	4098
280	0.47633	2613.06	16.6825	489.846	842.662	7.29148	3.010	4.263	4141
300	0.50526	2703.56	15.2924	553.520	927.765	7.58520	3.023	4.250	4196
320	0.53410	2800.16	14.1095	616.772	1012.374	7.85834	3.011	4.213	4260
340	0.56274	2903.57	13.0929	679.222	1096.041	8.11161	2.982	4.159	4331
360	0.59124	3006.69	12.2089	740.653	1178.577	8.34758	2.943	4.098	4404
380	0.61953	3112.57	11.4363	800.953	1259.835	8.56727	2.898	4.033	4479
400	0.64765	3218.39	10.7544	860.097	1339.803	8.77245	2.853	3.970	4555
420	0.67560	3325.29	10.1483	918.122	1418.533	8.96451	2.810	3.909	4630
440	0.70337	3430.37	9.6066	975.105	1496.088	9.14494	2.769	3.853	4703
460	0.73100	3536.62	9.1195	1031.126	1572.568	9.31495	2.732	3.802	4775
480	0.75847	3642.50	8.6789	1086.291	1648.085	9.47543	2.699	3.756	4846
500	0.78579	3748.62	8.2807	1140.692	1722.721	9.62793	2.670	3.715	4916
520	0.81301	3853.17	7.9170	1194.426	1796.613	9.77297	2.645	3.680	4984
540	0.84265	3977.88	7.6843	1246.571	1870.719	9.91006	2.610	3.664	5086
560	0.87005	4085.18	7.3839	1299.224	1943.666	10.04221	2.592	3.640	5155
580	0.89739	4192.40	7.1069	1351.538	2016.225	10.16938	2.576	3.619	5223
600	0.92466	4299.51	6.8508	1403.544	2088.433	10.29185	2.564	3.601	5289
650	0.99262	4566.88	6.2871	1532.269	2267.498	10.57879	2.540	3.566	5451
700	1.06033	4833.67	5.8118	1659.834	2445.209	10.84244	2.525	3.543	5606
800	1.19515	5365.93	5.0534	1912.712	2797.950	11.31380	2.511	3.518	5902
1000	1.46338	6427.29	4.0160	2415.174	3499.087	12.09564	2.504	3.499	6451
2000	2.79548	11727.09	1.9962	4969.960	7041.291	14.54395	2.649	3.633	8632
3000	4.12733	17035.65	1.3307	7757.201	10814.280	16.06034	2.924	3.908	10270
4000	5.45904	22349.97	0.9983	10826.741	14870.205	17.42097	3.204	4.193	11641
5000	6.80446	27667.28	0.7989	14281.842	19321.846	19.24691	3.743	4.774	12785

* TWO-PHASE BOUNDRY

4000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 38.000	5.48657	589.43	12.651	32710.80	0.0028164	0.08655	2.850	0.00950	1.29019	1.9680
38	5.48656	589.43	12.651	32710.62	0.0028164	0.08655	2.850	0.00950	1.29019	1.9680
40	5.45536	596.38	12.411	31911.90	0.0028863	0.08977	2.557	0.00956	1.28840	1.7649
42	5.42359	602.20	12.197	31114.27	0.0029554	0.09242	2.318	0.00957	1.28658	1.6069
44	5.39125	607.43	11.994	30319.25	0.0030240	0.09459	2.120	0.00955	1.28472	1.4824
46	5.35838	611.91	11.806	29528.43	0.0030922	0.09632	1.955	0.00950	1.28284	1.3826
48	5.32498	615.85	11.627	28743.45	0.0031601	0.09768	1.815	0.00943	1.28093	1.3019
50	5.29107	619.52	11.451	27965.94	0.0032278	0.09874	1.696	0.00933	1.27899	1.2361
52	5.25667	622.65	11.285	27197.56	0.0032953	0.09955	1.592	0.00923	1.27703	1.1814
54	5.22179	625.13	11.131	26439.98	0.0033627	0.10015	1.502	0.00912	1.27504	1.1352
56	5.18644	627.45	10.979	25694.87	0.0034297	0.10014	1.423	0.00897	1.27302	1.1013
58	5.15064	629.46	10.832	24963.90	0.0034964	0.09999	1.354	0.00882	1.27098	1.0728
60	5.11441	631.06	10.693	24248.73	0.0035624	0.09974	1.292	0.00867	1.26892	1.0484
62	5.07777	632.56	10.555	23551.02	0.0036276	0.09942	1.237	0.00853	1.26684	1.0276
64	5.04074	633.78	10.425	22872.40	0.0036915	0.09901	1.187	0.00840	1.26474	1.0096
66	5.00245	636.21	10.306	22287.95	0.0037446	0.09851	1.141	0.00827	1.26257	0.9935
68	4.96489	637.33	10.175	21650.55	0.0038015	0.09799	1.100	0.00815	1.26044	0.9795
70	4.92688	638.26	10.054	21043.49	0.0038549	0.09742	1.063	0.00804	1.25829	0.9668
75	4.83135	639.52	9.759	19574.27	0.0039872	0.09585	0.984	0.00778	1.25289	0.9421
80	4.73444	639.75	9.455	18149.33	0.0041259	0.09412	0.918	0.00753	1.24744	0.9269
85	4.63636	644.80	9.091	16922.46	0.0042349	0.09235	0.863	0.00729	1.24193	0.9186
90	4.53819	648.70	8.765	15805.27	0.0043308	0.09059	0.816	0.00711	1.23643	0.9112
95	4.43986	652.19	8.456	14772.81	0.0044195	0.08888	0.776	0.00695	1.23094	0.9056
100	4.34204	656.29	8.160	13850.30	0.0044927	0.08726	0.740	0.00682	1.22550	0.9007
105	4.24478	660.02	7.890	13011.24	0.0045560	0.08572	0.709	0.00672	1.22010	0.8958
110	4.14859	664.52	7.619	12244.01	0.0046104	0.08457	0.682	0.00665	1.21478	0.8892
115	4.05369	670.86	7.346	11569.94	0.0046455	0.08361	0.657	0.00662	1.20954	0.8820
120	3.96042	678.42	7.068	10956.56	0.0046685	0.08273	0.635	0.00660	1.20441	0.8757
125	3.86891	687.53	6.789	10407.26	0.0046788	0.08194	0.616	0.00658	1.19939	0.8704
130	3.77945	697.89	6.514	9907.73	0.0046818	0.08125	0.598	0.00658	1.19449	0.8664
140	3.60698	723.67	5.981	9066.95	0.0046551	0.08013	0.569	0.00659	1.18509	0.8612
150	3.44374	754.95	5.481	8379.78	0.0046014	0.08034	0.546	0.00672	1.17624	0.8496
160	3.29043	792.97	5.024	7844.89	0.0045085	0.08129	0.528	0.00691	1.16797	0.8354
170	3.14719	836.05	4.615	7412.18	0.0043939	0.08240	0.514	0.00713	1.16028	0.8244
180	3.01357	882.60	4.257	7049.81	0.0042710	0.08266	0.490	0.00728	1.15313	0.8049
190	2.88956	937.79	3.915	6759.25	0.0041353	0.08584	0.500	0.00766	1.14653	0.8130
200	2.77456	991.18	3.653	6522.34	0.0039943	0.08865	0.507	0.00807	1.14043	0.8151
220	2.56846	1100.46	3.246	6149.16	0.0037207	0.09327	0.516	0.00887	1.12955	0.8150
240	2.39039	1207.92	2.962	5871.28	0.0034685	0.09676	0.520	0.00966	1.12020	0.8108
260	2.23539	1309.30	2.768	5657.31	0.0032424	0.09936	0.523	0.01047	1.11212	0.8040
280	2.09937	1401.90	2.640	5485.79	0.0030410	0.10122	0.525	0.01131	1.10505	0.7957
300	1.97916	1487.09	2.556	5350.78	0.0028580	0.10253	0.527	0.01219	1.09884	0.7864
320	1.87231	1565.38	2.503	5242.77	0.0026912	0.10345	0.530	0.01311	1.09333	0.7766
340	1.77701	1639.06	2.471	5159.67	0.0025375	0.10411	0.533	0.01409	1.08844	0.7668
360	1.69137	1707.06	2.453	5085.43	0.0024008	0.10462	0.537	0.01509	1.08405	0.7576
380	1.61412	1771.87	2.444	5024.07	0.0022763	0.10507	0.542	0.01614	1.08011	0.7491
400	1.54405	1834.41	2.441	4969.36	0.0021641	0.10554	0.547	0.01722	1.07654	0.7413
420	1.48017	1895.88	2.440	4921.99	0.0020618	0.10606	0.553	0.01833	1.07329	0.7342
440	1.42172	1956.06	2.441	4877.02	0.0019698	0.10665	0.560	0.01947	1.07033	0.7280
460	1.36800	2017.06	2.440	4838.09	0.0018849	0.10735	0.567	0.02064	1.06761	0.7223
480	1.31844	2078.33	2.439	4802.41	0.0018072	0.10816	0.574	0.02184	1.06510	0.7172
500	1.27260	2140.45	2.437	4770.50	0.0017358	0.10908	0.581	0.02307	1.06279	0.7128
520	1.23000	2202.91	2.434	4739.40	0.0016705	0.11010	0.589	0.02432	1.06064	0.7088
540	1.18673	2250.83	2.481	4720.65	0.0016278	0.11120	0.597	0.02557	1.05847	0.7082
560	1.14935	2314.42	2.479	4695.32	0.0015726	0.11242	0.605	0.02687	1.05659	0.7055
580	1.11435	2378.65	2.475	4671.78	0.0015212	0.11371	0.614	0.02820	1.05483	0.7031
600	1.08148	2443.81	2.471	4649.82	0.0014733	0.11506	0.622	0.02955	1.05318	0.7010
650	1.00743	2609.71	2.457	4600.81	0.0013665	0.11871	0.644	0.03304	1.04948	0.6969
700	0.94311	2779.08	2.441	4558.67	0.0012749	0.12263	0.667	0.03670	1.04627	0.6938
800	0.83671	3125.25	2.406	4489.75	0.0011255	0.13102	0.714	0.04452	1.04097	0.6898
1000	0.68335	3826.35	2.347	4392.08	0.0009144	0.14858	0.809	0.06215	1.03337	0.6857
2000	0.35759	7632.64	2.107	4193.50	0.0004760	0.27727	1.267	0.21341	1.01737	0.5976
3000	0.24229	12121.83	1.878	4127.52	0.0003224	0.39272	1.678	0.41475	1.01174	0.6011
4000	0.18318	17194.13	1.701	4094.12	0.0002438	0.51697	2.054	0.67312	1.00887	0.5996
5000	0.14696	24297.99	1.452	4066.05	0.0001965	0.72610	2.406	1.03495	1.00711	0.5695

* TWO-PHASE BOUNDRY

4500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 39.363	0.18026	6296.66	93.8822	-118.855	31.353	1.32527	1.344	1.675	6031
40	0.18057	6262.18	93.8837	-118.040	32.427	1.35233	1.354	1.694	6024
42	0.18156	6153.56	93.8015	-115.420	35.873	1.43638	1.384	1.751	6005
44	0.18258	6044.40	93.5988	-112.711	39.431	1.51913	1.413	1.807	5984
46	0.18363	5934.94	93.2885	-109.916	43.098	1.60063	1.439	1.860	5962
48	0.18470	5825.40	92.8817	-107.038	46.870	1.68090	1.463	1.912	5939
50	0.18580	5716.01	92.3884	-104.080	50.747	1.76002	1.487	1.964	5915
52	0.18693	5607.02	91.8170	-101.043	54.726	1.83804	1.508	2.014	5890
54	0.18809	5498.67	91.1750	-97.931	58.803	1.91498	1.528	2.063	5864
56	0.18928	5391.24	90.4688	-94.748	62.976	1.99086	1.547	2.111	5838
58	0.19050	5284.97	89.7040	-91.494	67.244	2.06574	1.564	2.157	5812
60	0.19175	5180.14	88.8856	-88.173	71.605	2.13965	1.580	2.203	5785
62	0.19302	5077.03	88.0180	-84.786	76.055	2.21261	1.595	2.247	5757
64	0.19433	4975.92	87.1050	-81.337	80.593	2.28465	1.608	2.291	5730
66	0.19567	4877.07	86.1504	-77.827	85.217	2.35579	1.621	2.333	5703
68	0.19703	4780.79	85.1575	-74.260	89.925	2.42605	1.632	2.374	5675
70	0.19843	4687.34	84.1294	-70.639	94.711	2.49542	1.641	2.412	5649
75	0.20209	4492.47	81.3778	-61.367	107.027	2.66536	1.660	2.496	5594
80	0.20587	4293.51	78.4063	-51.831	119.719	2.82916	1.679	2.578	5526
85	0.20983	4084.97	75.3713	-42.234	132.612	2.98533	1.708	2.672	5441
90	0.21397	3913.50	72.2831	-32.136	146.161	3.14020	1.730	2.749	5367
95	0.21829	3756.32	69.2199	-21.803	160.090	3.29080	1.750	2.819	5295
100	0.22275	3610.85	66.2236	-11.158	174.456	3.43821	1.768	2.884	5224
105	0.22739	3474.52	63.3123	-0.451	189.024	3.58036	1.782	2.942	5155
110	0.23217	3359.15	60.5292	10.408	203.867	3.71845	1.799	2.996	5091
115	0.23709	3253.64	57.8588	21.418	218.983	3.85283	1.818	3.050	5028
120	0.24217	3156.99	55.3030	32.581	234.374	3.98383	1.841	3.104	4965
125	0.24737	3074.38	52.8629	43.898	250.026	4.11161	1.868	3.156	4905
130	0.25268	3000.60	50.5225	55.369	265.924	4.23632	1.899	3.206	4845
140	0.26365	2872.05	46.2250	78.809	298.502	4.47770	1.971	3.312	4728
150	0.27503	2774.82	42.4306	102.984	332.158	4.70987	2.057	3.421	4623
160	0.28675	2703.67	39.0953	127.963	366.908	4.93410	2.154	3.531	4532
170	0.29877	2657.23	36.1469	153.792	402.750	5.15137	2.257	3.638	4455
180	0.31102	2629.36	33.5340	180.486	439.651	5.36227	2.361	3.740	4393
190	0.32344	2616.29	31.2152	208.037	478.157	5.57035	2.485	3.855	4337
200	0.33599	2613.35	29.1576	237.148	517.121	5.77007	2.584	3.944	4299
220	0.36134	2635.58	25.6878	296.354	597.448	6.15279	2.757	4.089	4255
240	0.38684	2585.48	22.9070	357.886	680.228	6.51268	2.888	4.188	4247
260	0.41238	2747.99	20.6497	420.926	764.552	6.85030	2.976	4.246	4262
280	0.43792	2820.79	18.7898	484.766	849.675	7.16562	3.021	4.266	4295
300	0.46344	2901.22	17.2338	548.665	934.842	7.45955	3.034	4.255	4342
320	0.48893	2988.07	15.9102	612.160	1019.578	7.73311	3.022	4.222	4398
340	0.51436	3080.79	14.7672	674.880	1103.488	7.98712	2.993	4.172	4460
360	0.53964	3181.54	13.7747	736.587	1186.259	8.22376	2.954	4.112	4529
380	0.56479	3283.74	12.9014	797.175	1267.803	8.44422	2.910	4.047	4600
400	0.58979	3385.76	12.1296	856.609	1348.071	8.65018	2.865	3.985	4671
420	0.61464	3490.23	11.4444	914.925	1427.091	8.84294	2.821	3.924	4742
440	0.63934	3593.30	10.8310	972.198	1504.946	9.02407	2.781	3.868	4812
460	0.66391	3599.35	10.2794	1028.508	1581.726	9.19474	2.744	3.816	4882
480	0.68834	3803.66	9.7807	1083.959	1657.534	9.35585	2.711	3.770	4950
500	0.71263	3906.97	9.3287	1138.644	1732.459	9.50893	2.682	3.730	5017
520	0.73682	4010.55	8.9159	1192.656	1806.632	9.65452	2.657	3.694	5082
540	0.76334	4133.32	8.6557	1244.201	1880.275	9.79034	2.616	3.672	5184
560	0.78771	4239.50	8.3161	1297.004	1953.387	9.92280	2.598	3.648	5251
580	0.81203	4345.69	8.0031	1349.459	2026.103	10.05024	2.582	3.626	5317
600	0.83629	4451.86	7.7136	1401.596	2098.456	10.17295	2.569	3.608	5382
650	0.89574	4717.16	7.0768	1530.617	2277.847	10.46042	2.545	3.572	5539
700	0.95694	4982.20	6.5402	1658.436	2455.837	10.72448	2.529	3.548	5691
800	1.07683	5511.52	5.6846	1911.722	2809.017	11.19643	2.514	3.521	5980
1000	1.31527	6568.36	4.5157	2414.737	3510.720	11.97891	2.506	3.501	6520
2000	2.50003	11855.88	2.2441	4970.485	7053.703	14.42782	2.650	3.633	8678
3000	3.68281	17158.92	1.4962	7757.959	10826.767	15.94425	2.925	3.908	10306
4000	4.86538	22470.10	1.1226	10826.591	14881.639	17.30460	3.201	4.189	11672
5000	6.06153	27785.39	0.8984	14270.583	19321.522	19.12800	3.721	4.748	12816

* TWO-PHASE BOUNDRY

4500 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 39.363	5.54747	623.28	12.595	34930.49	0.0026877	0.09139	2.994	0.00983	1.29370	1.9759
40	5.53794	625.80	12.519	34679.58	0.0027072	0.09241	2.890	0.00985	1.29315	1.9075
42	5.50770	632.69	12.301	33891.95	0.0027677	0.09524	2.605	0.00988	1.29141	1.7245
44	5.47697	638.98	12.095	33105.03	0.0028273	0.09757	2.371	0.00986	1.28964	1.5808
46	5.44577	644.46	11.904	32320.32	0.0028864	0.09944	2.177	0.00982	1.28785	1.4658
48	5.41410	649.38	11.724	31539.32	0.0029449	0.10093	2.013	0.00975	1.28603	1.3729
50	5.38199	654.00	11.546	30763.54	0.0030032	0.10210	1.873	0.00966	1.28419	1.2971
52	5.34945	658.04	11.379	29994.48	0.0030611	0.10302	1.753	0.00956	1.28233	1.2341
54	5.31650	661.34	11.225	29233.68	0.0031188	0.10370	1.649	0.00946	1.28044	1.1810
56	5.28313	664.46	11.073	28482.62	0.0031763	0.10376	1.559	0.00931	1.27854	1.1413
58	5.24938	667.22	10.926	27742.81	0.0032334	0.10367	1.479	0.00915	1.27661	1.1079
60	5.21524	669.50	10.789	27015.72	0.0032901	0.10348	1.408	0.00901	1.27466	1.0792
62	5.18075	671.61	10.653	26302.83	0.0033463	0.10321	1.345	0.00886	1.27270	1.0547
64	5.14590	673.37	10.525	25605.59	0.0034018	0.10285	1.289	0.00873	1.27071	1.0336
66	5.11073	675.03	10.398	24925.42	0.0034563	0.10242	1.238	0.00859	1.26871	1.0155
68	5.07525	676.36	10.279	24263.70	0.0035097	0.10193	1.193	0.00846	1.26670	0.9997
70	5.03949	677.26	10.171	23621.79	0.0035615	0.10139	1.151	0.00834	1.26467	0.9856
75	4.94837	681.97	9.905	22230.36	0.0036607	0.09984	1.061	0.00808	1.25950	0.9552
80	4.85734	685.77	9.613	20855.05	0.0037596	0.09816	0.989	0.00784	1.25436	0.9350
85	4.76577	690.17	9.258	19468.03	0.0038715	0.09643	0.929	0.00757	1.24920	0.9265
90	4.67355	695.54	8.939	18289.95	0.0039521	0.09470	0.878	0.00737	1.24402	0.9175
95	4.58115	700.78	8.636	17208.28	0.0040225	0.09300	0.834	0.00720	1.23884	0.9104
100	4.48929	705.89	8.344	16210.13	0.0040853	0.09137	0.796	0.00706	1.23370	0.9049
105	4.39782	710.88	8.077	15280.29	0.0041434	0.08983	0.763	0.00694	1.22860	0.8998
110	4.30726	716.25	7.812	14468.74	0.0041834	0.08867	0.734	0.00687	1.22357	0.8926
115	4.21774	723.41	7.544	13723.02	0.0042162	0.08770	0.707	0.00682	1.21860	0.8857
120	4.12938	731.65	7.273	13036.40	0.0042422	0.08681	0.684	0.00677	1.21372	0.8804
125	4.04253	741.88	7.000	12428.28	0.0042534	0.08599	0.663	0.00674	1.20893	0.8757
130	3.95752	753.59	6.724	11874.94	0.0042545	0.08527	0.644	0.00672	1.20425	0.8718
140	3.79292	780.52	6.182	10893.45	0.0042434	0.08408	0.612	0.00669	1.19523	0.8676
150	3.63601	813.37	5.672	10089.27	0.0042055	0.08424	0.586	0.00677	1.18667	0.8563
160	3.48732	851.59	5.205	9428.56	0.0041465	0.08515	0.565	0.00691	1.17860	0.8434
170	3.34707	895.18	4.786	8893.93	0.0040642	0.08620	0.548	0.00708	1.17102	0.8333
180	3.21525	942.94	4.417	8454.06	0.0039666	0.08658	0.516	0.00720	1.16393	0.8024
190	3.09172	999.03	4.064	8088.83	0.0038590	0.08976	0.525	0.00753	1.15731	0.8125
200	2.97628	1052.02	3.792	7778.07	0.0037487	0.09254	0.532	0.00788	1.15114	0.8166
220	2.76750	1161.01	3.367	7293.96	0.0035218	0.09702	0.540	0.00857	1.14005	0.8193
240	2.58508	1269.19	3.068	6942.17	0.0032997	0.10032	0.543	0.00927	1.13042	0.8162
260	2.42495	1370.22	2.862	6663.75	0.0030988	0.10267	0.544	0.00997	1.12201	0.8100
280	2.28352	1462.29	2.724	6441.33	0.0029171	0.10429	0.544	0.01071	1.11462	0.8017
300	2.15776	1545.75	2.633	6260.14	0.0027529	0.10537	0.545	0.01148	1.10808	0.7926
320	2.04527	1621.62	2.574	6111.39	0.0026034	0.10606	0.546	0.01228	1.10225	0.7830
340	1.94415	1692.11	2.538	5989.51	0.0024655	0.10652	0.548	0.01313	1.09703	0.7733
360	1.85308	1759.86	2.516	5895.65	0.0023364	0.10686	0.551	0.01402	1.09234	0.7638
380	1.77056	1824.02	2.504	5814.08	0.0022190	0.10715	0.555	0.01495	1.08811	0.7548
400	1.69551	1885.81	2.497	5740.59	0.0021130	0.10749	0.559	0.01591	1.08426	0.7467
420	1.62697	1946.96	2.493	5678.49	0.0020154	0.10789	0.565	0.01690	1.08076	0.7392
440	1.56411	2007.06	2.490	5620.32	0.0019271	0.10839	0.570	0.01792	1.07756	0.7326
460	1.50624	2068.69	2.487	5572.09	0.0018448	0.10901	0.576	0.01896	1.07461	0.7266
480	1.45278	2130.05	2.483	5525.88	0.0017700	0.10974	0.583	0.02004	1.07190	0.7212
500	1.40326	2191.89	2.478	5482.50	0.0017015	0.11060	0.590	0.02113	1.06939	0.7165
520	1.35718	2254.85	2.472	5443.06	0.0016380	0.11157	0.598	0.02226	1.06706	0.7122
540	1.31003	2297.39	2.525	5414.79	0.0015985	0.11263	0.605	0.02341	1.06468	0.7105
560	1.26950	2360.72	2.521	5382.04	0.0015452	0.11381	0.613	0.02458	1.06263	0.7076
580	1.23149	2424.74	2.517	5351.66	0.0014954	0.11507	0.621	0.02577	1.06072	0.7050
600	1.19576	2489.73	2.511	5323.36	0.0014490	0.11640	0.630	0.02698	1.05892	0.7027
650	1.11515	2655.33	2.494	5260.36	0.0013453	0.12001	0.652	0.03013	1.05487	0.6982
700	1.04499	2824.52	2.475	5206.36	0.0012562	0.12393	0.674	0.03342	1.05136	0.6948
800	0.92866	3170.53	2.435	5118.30	0.0011106	0.13235	0.721	0.04047	1.04555	0.6904
1000	0.76030	3871.48	2.370	4993.93	0.0009042	0.15012	0.817	0.05640	1.03718	0.6859
2000	0.40000	7678.40	2.117	4742.30	0.0004732	0.27727	1.284	0.19077	1.01944	0.6059
3000	0.27153	12169.67	1.884	4659.19	0.0003211	0.39271	1.705	0.37007	1.01317	0.6109
4000	0.20549	17231.56	1.706	4617.42	0.0002431	0.51630	2.090	0.59974	1.00995	0.6106
5000	0.16497	24228.03	1.464	4583.89	0.0001960	0.71981	2.451	0.91888	1.00798	0.5822

* TWO-PHASE BOUNDRY

5000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 40.688	0.17840	6523.48	95.6033	-116.734	48.439	1.33733	1.359	1.690	6177
42	0.17901	6554.76	95.5716	-115.056	50.680	1.39154	1.379	1.726	6166
44	0.17995	6449.39	95.4238	-112.425	54.187	1.47311	1.408	1.781	6147
46	0.18092	6343.46	95.1678	-109.710	57.800	1.55341	1.435	1.833	6127
48	0.18192	6237.19	94.8155	-106.914	61.517	1.63249	1.460	1.884	6106
50	0.18294	6130.79	94.3773	-104.039	65.334	1.71041	1.484	1.934	6084
52	0.18398	6024.47	93.8621	-101.088	69.251	1.78721	1.506	1.982	6062
54	0.18504	5918.47	93.2778	-98.064	73.262	1.86291	1.526	2.029	6039
56	0.18614	5813.01	92.6308	-94.970	77.367	1.93754	1.545	2.075	6014
58	0.18725	5708.32	91.9271	-91.808	81.563	2.01116	1.563	2.121	5990
60	0.18839	5604.64	91.1718	-88.580	85.849	2.08380	1.579	2.164	5965
62	0.18956	5502.22	90.3691	-85.289	90.220	2.15547	1.595	2.207	5939
64	0.19076	5401.29	89.5231	-81.937	94.677	2.22622	1.609	2.249	5914
66	0.19198	5302.10	88.6373	-78.526	99.216	2.29606	1.623	2.290	5888
68	0.19322	5204.89	87.7149	-75.060	103.836	2.36501	1.634	2.329	5862
70	0.19449	5109.90	86.7588	-71.541	108.532	2.43307	1.644	2.366	5837
75	0.19778	4883.76	84.2392	-62.536	120.585	2.59936	1.665	2.454	5775
80	0.20127	4706.37	81.5553	-53.243	133.102	2.76091	1.685	2.533	5725
85	0.20485	4529.95	78.6913	-43.898	145.761	2.91424	1.715	2.618	5660
90	0.20856	4341.97	75.7757	-34.055	159.046	3.06609	1.738	2.697	5587
95	0.21243	4166.24	72.8062	-23.972	172.710	3.21384	1.759	2.769	5512
100	0.21643	4024.57	69.8865	-13.567	186.821	3.35862	1.778	2.831	5448
105	0.22056	3887.63	67.0276	-3.099	201.114	3.49808	1.793	2.887	5384
110	0.22483	3759.99	64.2594	7.531	215.690	3.63369	1.811	2.941	5319
115	0.22920	3643.48	61.6030	18.317	230.528	3.76560	1.831	2.996	5256
120	0.23371	3537.70	59.0572	29.268	245.651	3.89432	1.854	3.051	5193
125	0.23832	3448.07	56.6307	40.384	261.034	4.01991	1.881	3.104	5134
130	0.24303	3367.17	54.3086	51.673	276.687	4.14269	1.912	3.158	5075
140	0.25273	3234.59	49.9682	74.795	308.792	4.38057	1.985	3.263	4963
150	0.26276	3119.38	46.0626	98.693	341.971	4.60944	2.071	3.376	4853
160	0.27310	3037.41	42.5920	123.446	376.297	4.83094	2.168	3.487	4758
170	0.28368	2967.77	39.5185	149.091	411.736	5.04576	2.270	3.603	4671
180	0.29451	2921.73	36.7743	175.663	448.343	5.25497	2.375	3.713	4600
190	0.30549	2896.85	34.3284	203.729	486.574	5.46156	2.498	3.833	4538
200	0.31662	2884.33	32.1373	232.201	525.349	5.66031	2.597	3.926	4495
220	0.33913	2885.09	28.4093	291.418	605.404	6.04173	2.770	4.080	4437
240	0.36184	2919.82	25.3901	353.050	688.067	6.40110	2.900	4.185	4418
260	0.38464	2972.70	22.9171	416.240	772.369	6.73863	2.987	4.245	4424
280	0.40745	3036.78	20.8657	480.249	857.496	7.05397	3.032	4.266	4449
300	0.43026	3106.49	19.1481	544.326	942.690	7.34799	3.044	4.258	4487
320	0.45303	3187.52	17.6883	608.010	1027.456	7.62163	3.032	4.225	4537
340	0.47581	3271.97	16.4286	670.938	1111.473	7.87597	3.003	4.179	4593
360	0.49852	3362.29	15.3284	732.876	1194.438	8.11316	2.964	4.122	4654
380	0.52112	3458.87	14.3623	793.707	1276.193	8.33420	2.920	4.060	4720
400	0.54361	3559.72	13.5040	853.396	1356.708	8.54078	2.876	3.997	4788
420	0.56598	3660.76	12.7394	911.972	1435.993	8.73419	2.832	3.937	4855
440	0.58822	3762.59	12.0540	969.509	1514.119	8.91595	2.792	3.881	4922
460	0.61032	3865.16	11.4383	1026.083	1591.161	9.08721	2.756	3.830	4989
480	0.63231	3967.44	10.8816	1081.798	1667.231	9.24887	2.723	3.783	5054
500	0.65417	4069.21	10.3766	1136.746	1742.422	9.40250	2.694	3.743	5117
520	0.67595	4172.73	9.9151	1191.023	1816.858	9.54860	2.670	3.706	5180
540	0.69991	4291.29	9.6247	1242.024	1890.047	9.68318	2.623	3.680	5282
560	0.72186	4396.17	9.2461	1294.966	1963.308	9.81591	2.604	3.655	5346
580	0.74375	4501.18	8.8972	1347.552	2036.164	9.94360	2.588	3.633	5410
600	0.76559	4606.27	8.5745	1399.813	2108.650	10.06653	2.575	3.614	5473
650	0.82002	4869.19	7.8648	1529.113	2288.340	10.35448	2.550	3.578	5626
700	0.87422	5132.21	7.2670	1657.173	2466.586	10.61893	2.533	3.553	5774
800	0.98214	5658.18	6.3144	1910.852	2820.176	11.09142	2.518	3.525	6058
1000	1.19572	6709.89	5.0143	2414.405	3522.407	11.87450	2.509	3.503	6588
2000	2.26273	11983.51	2.4914	4971.112	7066.098	14.32397	2.651	3.634	8723
3000	3.32703	17280.18	1.6614	7758.828	10839.210	15.84042	2.926	3.908	10341
4000	4.39207	22587.74	1.2467	10826.712	14893.175	17.20052	3.199	4.187	11702
5000	5.46708	27900.71	0.9977	14261.317	19323.097	19.02177	3.702	4.727	12846

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

5000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 40.688	5.60543	656.40	12.547	37127.51	0.0025750	0.09604	3.140	0.01014	1.29703	1.9892
42	5.58640	661.40	12.406	36617.53	0.0026100	0.09795	2.926	0.01016	1.29594	1.8562
44	5.55702	668.73	12.196	35839.41	0.0026625	0.10043	2.649	0.01015	1.29425	1.6907
46	5.52722	675.22	12.001	35061.75	0.0027143	0.10244	2.420	0.01011	1.29253	1.5586
48	5.49702	681.11	11.817	34285.97	0.0027654	0.10404	2.228	0.01005	1.29079	1.4521
50	5.46642	686.68	11.637	33513.48	0.0028161	0.10532	2.066	0.00996	1.28904	1.3653
52	5.43545	691.62	11.468	32745.70	0.0028664	0.10633	1.927	0.00987	1.28726	1.2932
54	5.40411	695.77	11.312	31984.02	0.0029164	0.10710	1.807	0.00977	1.28546	1.2324
56	5.37241	699.71	11.159	31229.84	0.0029661	0.10722	1.703	0.00962	1.28364	1.1865
58	5.34037	703.24	11.012	30484.52	0.0030155	0.10719	1.611	0.00946	1.28181	1.1477
60	5.30800	706.23	10.875	29749.43	0.0030647	0.10704	1.531	0.00932	1.27996	1.1144
62	5.27530	709.00	10.740	29025.88	0.0031134	0.10681	1.460	0.00917	1.27809	1.0859
64	5.24230	711.35	10.612	28315.21	0.0031617	0.10650	1.396	0.00903	1.27621	1.0612
66	5.20901	713.56	10.487	27618.69	0.0032093	0.10611	1.339	0.00889	1.27431	1.0401
68	5.17544	715.36	10.369	26937.58	0.0032562	0.10565	1.287	0.00876	1.27239	1.0217
70	5.14161	716.62	10.263	26273.11	0.0033022	0.10514	1.240	0.00864	1.27047	1.0051
75	5.05601	719.36	10.008	24692.33	0.0034116	0.10366	1.141	0.00835	1.26560	0.9725
80	4.96856	726.21	9.743	23383.89	0.0034877	0.10197	1.060	0.00810	1.26065	0.9480
85	4.88173	735.65	9.400	22113.97	0.0035584	0.10026	0.994	0.00785	1.25574	0.9346
90	4.79473	740.90	9.093	20818.57	0.0036398	0.09854	0.939	0.00762	1.25083	0.9253
95	4.70741	745.85	8.794	19612.21	0.0037123	0.09684	0.892	0.00743	1.24592	0.9180
100	4.62034	753.17	8.507	18594.90	0.0037584	0.09521	0.851	0.00728	1.24103	0.9110
105	4.53382	759.05	8.243	17625.81	0.0038028	0.09366	0.816	0.00716	1.23619	0.9048
110	4.44788	765.51	7.979	16723.97	0.0038424	0.09249	0.784	0.00707	1.23139	0.8976
115	4.36294	773.09	7.713	15896.31	0.0038753	0.09151	0.756	0.00700	1.22666	0.8911
120	4.27883	781.95	7.444	15137.21	0.0039015	0.09060	0.731	0.00694	1.22199	0.8861
125	4.19607	793.05	7.174	14468.32	0.0039141	0.08976	0.708	0.00689	1.21740	0.8820
130	4.11469	805.57	6.902	13854.88	0.0039198	0.08900	0.688	0.00685	1.21291	0.8789
140	3.95674	835.86	6.361	12798.42	0.0039042	0.08774	0.653	0.00679	1.20421	0.8747
150	3.80579	870.03	5.843	11871.70	0.0038800	0.08787	0.625	0.00684	1.19593	0.8643
160	3.66170	910.64	5.366	11122.09	0.0038295	0.08875	0.602	0.00695	1.18807	0.8511
170	3.52515	953.87	4.938	10461.83	0.0037774	0.08976	0.583	0.00707	1.18065	0.8424
180	3.39543	1001.62	4.561	9920.51	0.0037069	0.09032	0.541	0.00716	1.17363	0.8002
190	3.27339	1058.91	4.199	9482.52	0.0036202	0.09351	0.550	0.00745	1.16705	0.8119
200	3.15835	1112.88	3.919	9109.71	0.0035278	0.09627	0.557	0.00776	1.16087	0.8174
220	2.94874	1221.85	3.479	8507.38	0.0033394	0.10064	0.564	0.00837	1.14968	0.8227
240	2.76363	1330.05	3.168	8069.30	0.0031465	0.10378	0.566	0.00897	1.13985	0.8212
260	2.59981	1431.64	2.951	7728.46	0.0029653	0.10593	0.565	0.00960	1.13120	0.8154
280	2.45426	1523.69	2.804	7453.07	0.0027996	0.10733	0.564	0.01025	1.12355	0.8072
300	2.32417	1605.48	2.706	7220.00	0.0026521	0.10819	0.563	0.01093	1.11674	0.7981
320	2.20735	1680.74	2.643	7035.96	0.0025140	0.10868	0.563	0.01165	1.11066	0.7883
340	2.10168	1749.08	2.603	6876.64	0.0023890	0.10896	0.564	0.01241	1.10517	0.7787
360	2.00594	1813.67	2.578	6744.54	0.0022727	0.10913	0.566	0.01320	1.10022	0.7693
380	1.91895	1876.20	2.563	6637.38	0.0021638	0.10927	0.568	0.01403	1.09573	0.7602
400	1.83954	1938.24	2.553	6548.27	0.0020622	0.10948	0.572	0.01489	1.09165	0.7517
420	1.76665	1998.81	2.546	6468.00	0.0019696	0.10977	0.576	0.01578	1.08791	0.7440
440	1.70005	2059.25	2.540	6396.60	0.0018844	0.11016	0.581	0.01670	1.08450	0.7369
460	1.63847	2120.26	2.534	6332.95	0.0018062	0.11070	0.587	0.01764	1.08135	0.7307
480	1.58150	2181.59	2.527	6274.52	0.0017342	0.11136	0.593	0.01861	1.07844	0.7251
500	1.52865	2243.64	2.519	6220.39	0.0016682	0.11215	0.599	0.01960	1.07575	0.7201
520	1.47941	2307.43	2.511	6173.16	0.0016062	0.11307	0.606	0.02062	1.07325	0.7156
540	1.42875	2344.32	2.569	6131.19	0.0015698	0.11408	0.614	0.02170	1.07068	0.7127
560	1.38532	2407.37	2.563	6090.08	0.0015182	0.11523	0.621	0.02276	1.06848	0.7096
580	1.34454	2471.14	2.557	6052.00	0.0014701	0.11645	0.629	0.02384	1.06642	0.7068
600	1.30617	2535.94	2.550	6016.59	0.0014251	0.11776	0.638	0.02495	1.06448	0.7044
650	1.21948	2701.19	2.530	5937.89	0.0013245	0.12133	0.659	0.02781	1.06011	0.6995
700	1.14387	2870.17	2.508	5870.59	0.0012379	0.12523	0.681	0.03081	1.05631	0.6959
800	1.01819	3215.97	2.463	5761.10	0.0010960	0.13368	0.728	0.03725	1.05002	0.6911
1000	0.83562	3916.71	2.392	5606.89	0.0008943	0.15164	0.825	0.05181	1.04092	0.6862
2000	0.44194	7724.02	2.126	5296.03	0.0004704	0.27727	1.302	0.17266	1.02149	0.6142
3000	0.30057	12217.23	1.889	5193.67	0.0003199	0.39270	1.733	0.33432	1.01458	0.6209
4000	0.22758	17270.50	1.711	5142.84	0.0002424	0.51573	2.128	0.54105	1.01103	0.6219
5000	0.18291	24176.42	1.474	5103.40	0.0001955	0.71448	2.498	0.82640	1.00886	0.5949

* TWO-PHASE BOUNDRY

5500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 41.979	0.17665	6943.56	97.2920	-114.562	65.351	1.34886	1.373	1.704	6318
42	0.17666	6942.51	97.2916	-114.536	65.386	1.34970	1.374	1.704	6318
44	0.17755	6840.82	97.1881	-111.975	68.849	1.43023	1.403	1.758	6301
46	0.17845	6738.36	96.9756	-109.331	72.415	1.50950	1.430	1.809	6283
48	0.17938	6635.32	96.6666	-106.608	76.083	1.58754	1.456	1.859	6265
50	0.18033	6531.91	96.2720	-103.807	79.849	1.66442	1.480	1.908	6244
52	0.18130	6428.32	95.8011	-100.931	83.712	1.74017	1.503	1.955	6224
54	0.18229	6324.76	95.2619	-97.984	87.668	1.81481	1.524	2.000	6202
56	0.18330	6221.45	94.6615	-94.969	91.714	1.88837	1.543	2.045	6180
58	0.18433	6118.58	94.0057	-91.886	95.849	1.96092	1.562	2.089	6157
60	0.18539	6016.38	93.2998	-88.740	100.069	2.03246	1.579	2.131	6134
62	0.18647	5915.06	92.5483	-85.532	104.374	2.10303	1.595	2.173	6110
64	0.18756	5814.84	91.7551	-82.265	108.761	2.17267	1.610	2.213	6086
66	0.18869	5715.92	90.9236	-78.940	113.227	2.24139	1.624	2.253	6062
68	0.18983	5618.53	90.0571	-75.561	117.772	2.30922	1.636	2.291	6037
70	0.19100	5522.88	89.1584	-72.131	122.390	2.37615	1.646	2.327	6014
75	0.19401	5292.79	86.7870	-63.352	134.240	2.53963	1.668	2.412	5954
80	0.19717	5078.19	84.2666	-54.296	146.510	2.69798	1.690	2.495	5894
85	0.20050	4928.17	81.6666	-45.163	159.032	2.84966	1.721	2.577	5847
90	0.20389	4760.25	78.9027	-35.538	172.114	2.99919	1.745	2.651	5788
95	0.20740	4583.57	76.0941	-25.675	185.548	3.14444	1.767	2.723	5720
100	0.21102	4426.96	73.2619	-15.482	199.435	3.28693	1.787	2.787	5655
105	0.21477	4281.36	70.4529	-5.215	213.517	3.42433	1.803	2.843	5592
110	0.21861	4154.96	67.7241	5.216	227.861	3.55778	1.821	2.896	5532
115	0.22256	4033.41	65.0810	15.810	242.472	3.68767	1.842	2.950	5470
120	0.22660	3923.41	62.5338	26.572	257.354	3.81434	1.866	3.003	5409
125	0.23075	3817.40	60.1001	37.511	272.514	3.93811	1.894	3.060	5346
130	0.23498	3729.44	57.7784	48.632	287.945	4.05914	1.925	3.115	5287
140	0.24369	3580.37	53.4342	71.460	319.643	4.29401	1.998	3.226	5175
150	0.25268	3467.41	49.4701	95.116	352.458	4.52037	2.085	3.336	5070
160	0.26191	3363.35	45.8979	119.651	386.389	4.73932	2.181	3.454	4968
170	0.27138	3292.96	42.7081	145.127	421.509	4.95220	2.283	3.567	4882
180	0.28103	3224.87	39.8569	171.548	457.763	5.15939	2.388	3.684	4801
190	0.29087	3181.87	37.2962	199.518	495.756	5.36469	2.510	3.812	4731
200	0.30085	3156.60	34.9912	227.927	534.324	5.56238	2.609	3.909	4681
220	0.32107	3144.95	31.0396	287.105	614.097	5.94244	2.782	4.068	4616
240	0.34151	3160.00	27.8071	348.782	696.592	6.30108	2.912	4.180	4584
260	0.36207	3201.31	25.1371	412.074	780.823	6.63833	2.998	4.244	4582
280	0.38267	3256.25	22.9123	476.218	865.951	6.95366	3.042	4.266	4599
300	0.40327	3321.51	21.0380	540.442	951.150	7.24770	3.054	4.258	4632
320	0.42386	3393.69	19.4430	604.282	1035.958	7.52148	3.041	4.227	4675
340	0.44444	3469.80	18.0668	667.375	1120.015	7.77593	3.012	4.182	4724
360	0.46498	3553.80	16.8680	729.494	1203.052	8.01333	2.974	4.128	4780
380	0.48548	3641.68	15.8112	790.527	1284.968	8.23480	2.930	4.068	4840
400	0.50590	3736.82	14.8725	850.434	1365.670	8.44186	2.886	4.008	4903
420	0.52622	3834.57	14.0325	909.240	1445.174	8.63581	2.843	3.949	4967
440	0.54644	3934.93	13.2772	967.015	1523.542	8.81813	2.802	3.892	5032
460	0.56654	4034.85	12.5979	1023.831	1600.828	8.98993	2.766	3.842	5095
480	0.58653	4135.59	11.9819	1079.792	1677.148	9.15212	2.734	3.795	5157
500	0.60641	4236.07	11.4232	1134.987	1752.584	9.30625	2.706	3.755	5218
520	0.62619	4336.85	10.9131	1189.509	1827.253	9.45281	2.681	3.718	5278
540	0.64803	4451.50	10.5903	1240.027	1900.008	9.58621	2.629	3.687	5378
560	0.66798	4554.94	10.1731	1293.098	1973.404	9.71918	2.610	3.661	5441
580	0.68789	4658.64	9.7885	1345.806	2046.387	9.84710	2.594	3.639	5503
600	0.70775	4762.52	9.4329	1398.184	2118.995	9.97024	2.580	3.620	5564
650	0.75724	5022.80	8.6506	1527.747	2298.959	10.25862	2.555	3.583	5713
700	0.80552	5283.57	7.9918	1656.037	2477.443	10.52342	2.538	3.557	5857
800	0.90463	5805.82	6.9425	1910.094	2831.414	10.99643	2.522	3.528	6134
1000	1.09968	6851.84	5.5113	2414.172	3534.141	11.78006	2.512	3.505	6655
2000	2.06847	12109.99	2.7382	4971.839	7078.478	14.23005	2.653	3.634	8766
3000	3.03579	17399.48	1.8262	7759.806	10851.612	15.74651	2.926	3.908	10375
4000	4.00384	22702.95	1.3706	10827.067	14904.777	17.10639	3.198	4.184	11731
5000	4.98061	28013.29	1.0970	14253.606	19326.115	18.92579	3.686	4.708	12875

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

5500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 41.979	5.66079	688.39	12.516	39306.02	0.0024752	0.10053	3.287	0.01042	1.30023	2.0057
42	5.66050	688.48	12.513	39298.09	0.0024757	0.10056	3.283	0.01042	1.30021	2.0035
44	5.63228	696.85	12.298	38529.38	0.0025224	0.10318	2.957	0.01042	1.29858	1.8133
46	5.60368	704.34	12.099	37759.57	0.0025682	0.10532	2.688	0.01039	1.29693	1.6619
48	5.57472	711.20	11.911	36990.02	0.0026133	0.10703	2.464	0.01033	1.29526	1.5402
50	5.54541	717.73	11.727	36222.08	0.0026578	0.10841	2.275	0.01025	1.29358	1.4411
52	5.51576	723.58	11.555	35457.10	0.0027019	0.10951	2.114	0.01016	1.29187	1.3589
54	5.48580	728.59	11.397	34696.38	0.0027456	0.11036	1.976	0.01006	1.29015	1.2897
56	5.45552	733.35	11.242	33941.24	0.0027890	0.11054	1.857	0.00991	1.28841	1.2369
58	5.42494	737.67	11.093	33192.96	0.0028321	0.11055	1.753	0.00975	1.28665	1.1923
60	5.39407	741.39	10.954	32452.79	0.0028749	0.11045	1.661	0.00961	1.28488	1.1539
62	5.36291	744.87	10.819	31721.97	0.0029175	0.11027	1.580	0.00946	1.28310	1.1210
64	5.33149	747.85	10.691	31001.73	0.0029597	0.10999	1.508	0.00932	1.28130	1.0925
66	5.29980	750.66	10.566	30293.23	0.0030015	0.10963	1.444	0.00918	1.27949	1.0681
68	5.26786	752.98	10.449	29597.65	0.0030427	0.10920	1.386	0.00905	1.27766	1.0467
70	5.23569	754.69	10.343	28916.11	0.0030833	0.10871	1.333	0.00892	1.27583	1.0275
75	5.15432	758.28	10.092	27280.73	0.0031813	0.10727	1.223	0.00863	1.27119	0.9898
80	5.07181	762.58	9.833	25755.62	0.0032718	0.10564	1.134	0.00835	1.26650	0.9640
85	4.98765	775.66	9.515	24579.98	0.0033225	0.10389	1.060	0.00808	1.26173	0.9469
90	4.90460	784.45	9.219	23347.14	0.0033795	0.10216	1.000	0.00786	1.25703	0.9342
95	4.82169	790.76	8.932	22100.53	0.0034431	0.10047	0.949	0.00765	1.25235	0.9258
100	4.73882	797.98	8.651	20978.56	0.0034922	0.09882	0.905	0.00748	1.24768	0.9188
105	4.65617	804.43	8.391	19934.74	0.0035342	0.09725	0.867	0.00735	1.24304	0.9122
110	4.57432	812.68	8.129	19006.10	0.0035633	0.09607	0.833	0.00725	1.23845	0.9041
115	4.49325	821.36	7.864	18123.12	0.0035910	0.09508	0.803	0.00717	1.23392	0.8971
120	4.41305	831.52	7.594	17314.21	0.0036117	0.09415	0.777	0.00710	1.22945	0.8919
125	4.33378	842.24	7.324	16543.76	0.0036328	0.09329	0.753	0.00704	1.22504	0.8887
130	4.25574	855.58	7.053	15871.53	0.0036404	0.09251	0.731	0.00698	1.22071	0.8862
140	4.10352	887.04	6.516	14692.48	0.0036368	0.09118	0.694	0.00689	1.21229	0.8837
150	3.95758	925.44	5.996	13722.56	0.0036050	0.09127	0.663	0.00691	1.20425	0.8726
160	3.81818	966.30	5.512	12841.87	0.0035741	0.09213	0.638	0.00699	1.19661	0.8607
170	3.68494	1013.50	5.077	12134.34	0.0035196	0.09310	0.617	0.00708	1.18933	0.8509
180	3.55835	1060.74	4.691	11475.20	0.0034733	0.09391	0.565	0.00716	1.18245	0.7974
190	3.43795	1117.98	4.321	10939.13	0.0034094	0.09711	0.574	0.00741	1.17593	0.8111
200	3.32396	1172.21	4.035	10492.39	0.0033349	0.09985	0.580	0.00768	1.16977	0.8181
220	3.11461	1283.79	3.583	9795.30	0.0031688	0.10414	0.587	0.00822	1.15853	0.8251
240	2.92819	1390.99	3.261	9253.08	0.0030052	0.10713	0.588	0.00875	1.14858	0.8255
260	2.76191	1492.65	3.036	8841.74	0.0028430	0.10911	0.586	0.00931	1.13976	0.8205
280	2.61320	1584.42	2.882	8509.25	0.0026926	0.11032	0.584	0.00990	1.13190	0.8125
300	2.47974	1667.00	2.778	8236.49	0.0025542	0.11099	0.581	0.01051	1.12489	0.8031
320	2.35930	1740.75	2.710	8006.70	0.0024283	0.11130	0.580	0.01116	1.11858	0.7932
340	2.25002	1807.27	2.666	7807.13	0.0023141	0.11140	0.580	0.01184	1.11288	0.7835
360	2.15064	1870.27	2.637	7642.93	0.0022070	0.11141	0.580	0.01255	1.10771	0.7740
380	2.05980	1930.15	2.620	7501.14	0.0021078	0.11142	0.582	0.01330	1.10300	0.7650
400	1.97657	1990.51	2.607	7386.46	0.0020135	0.11149	0.585	0.01407	1.09871	0.7565
420	1.90033	2050.48	2.598	7286.95	0.0019257	0.11167	0.588	0.01488	1.09477	0.7485
440	1.83001	2111.08	2.589	7200.97	0.0018438	0.11197	0.592	0.01572	1.09116	0.7412
460	1.76509	2171.85	2.580	7121.88	0.0017689	0.11242	0.597	0.01658	1.08782	0.7347
480	1.70493	2233.50	2.571	7050.90	0.0016993	0.11300	0.603	0.01746	1.08474	0.7288
500	1.64905	2295.97	2.560	6985.50	0.0016353	0.11373	0.609	0.01837	1.08189	0.7236
520	1.59696	2359.61	2.549	6925.76	0.0015757	0.11459	0.615	0.01930	1.07923	0.7189
540	1.54315	2391.52	2.610	6869.33	0.0015417	0.11556	0.622	0.02031	1.07649	0.7149
560	1.49705	2454.25	2.603	6818.97	0.0014919	0.11666	0.630	0.02128	1.07415	0.7116
580	1.45372	2517.77	2.596	6772.37	0.0014454	0.11786	0.638	0.02228	1.07195	0.7087
600	1.41292	2582.35	2.588	6729.08	0.0014018	0.11914	0.646	0.02329	1.06988	0.7061
650	1.32058	2747.22	2.564	6633.03	0.0013042	0.12266	0.666	0.02592	1.06521	0.7009
700	1.23989	2915.97	2.540	6551.03	0.0012199	0.12653	0.689	0.02869	1.06114	0.6970
800	1.10543	3261.54	2.491	6417.90	0.0010817	0.13500	0.735	0.03461	1.05438	0.6918
1000	0.90936	3962.03	2.413	6230.76	0.0008845	0.15315	0.833	0.04806	1.04459	0.6865
2000	0.48345	7769.53	2.135	5854.55	0.0004677	0.27727	1.320	0.15783	1.02353	0.6226
3000	0.32940	12264.51	1.894	5731.45	0.0003186	0.39269	1.762	0.30505	1.01599	0.6311
4000	0.24976	17310.50	1.716	5670.30	0.0002417	0.51524	2.166	0.49305	1.01211	0.6333
5000	0.20078	24138.76	1.482	5624.47	0.0001950	0.70998	2.546	0.75100	1.00972	0.6078

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

6000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 43.240	0.17501	7257.76	98.9516	-112.348	82.101	1.35991	1.387	1.718	6453
44	0.17533	7220.33	98.9121	-111.388	83.415	1.39004	1.398	1.738	6447
46	0.17619	7121.27	98.7342	-108.808	86.940	1.46840	1.426	1.788	6432
48	0.17706	7021.43	98.4595	-106.150	90.565	1.54553	1.452	1.837	6415
50	0.17794	6921.00	98.0991	-103.415	94.287	1.62149	1.477	1.885	6396
52	0.17885	6820.17	97.6630	-100.606	98.103	1.69632	1.500	1.931	6377
54	0.17978	6719.14	97.1593	-97.728	102.010	1.77004	1.521	1.975	6357
56	0.18072	6618.09	96.5953	-94.782	106.005	1.84268	1.542	2.019	6337
58	0.18168	6517.22	95.9771	-91.770	110.086	1.91429	1.561	2.062	6315
60	0.18266	6416.72	95.3101	-88.695	114.252	1.98489	1.578	2.103	6294
62	0.18367	6316.79	94.5988	-85.561	118.498	2.05451	1.595	2.144	6271
64	0.18469	6217.63	93.8472	-82.368	122.825	2.12319	1.610	2.183	6249
66	0.18572	6119.43	93.0589	-79.119	127.228	2.19094	1.624	2.221	6226
68	0.18678	6022.39	92.2369	-75.816	131.708	2.25780	1.637	2.258	6203
70	0.18786	5926.70	91.3840	-72.463	136.259	2.32376	1.648	2.293	6180
75	0.19064	5694.65	89.1323	-63.883	147.931	2.48478	1.671	2.376	6123
80	0.19355	5475.20	86.7365	-55.029	160.013	2.64071	1.694	2.457	6065
85	0.19658	5271.11	84.2264	-46.109	172.296	2.78949	1.726	2.545	6000
90	0.19977	5139.38	81.7227	-36.670	185.278	2.93787	1.751	2.616	5963
95	0.20299	4970.54	79.0438	-27.000	198.529	3.08114	1.774	2.685	5904
100	0.20632	4822.43	76.3429	-16.994	212.230	3.22173	1.795	2.748	5848
105	0.20973	4676.18	73.6434	-6.909	226.114	3.35719	1.812	2.804	5790
110	0.21324	4533.72	70.9437	3.347	240.268	3.48888	1.831	2.859	5727
115	0.21684	4415.99	68.3238	13.775	254.696	3.61714	1.852	2.911	5670
120	0.22052	4301.57	65.7901	24.375	269.385	3.74216	1.877	2.964	5610
125	0.22428	4194.61	63.3515	35.155	284.342	3.86427	1.905	3.019	5550
130	0.22812	4091.54	61.0152	46.125	299.574	3.98375	1.937	3.076	5487
140	0.23602	3926.37	56.6471	68.679	330.902	4.21587	2.011	3.191	5373
150	0.24418	3795.15	52.6527	92.106	363.396	4.44002	2.097	3.307	5265
160	0.25254	3698.25	49.0149	116.453	397.040	4.65711	2.194	3.421	5169
170	0.26108	3603.85	45.7305	141.755	431.828	4.86798	2.296	3.541	5075
180	0.26982	3543.86	42.7800	168.043	467.821	5.07368	2.400	3.653	4999
190	0.27870	3479.17	40.1224	195.898	505.542	5.27751	2.523	3.787	4919
200	0.28772	3439.82	37.7245	224.225	543.889	5.47406	2.621	3.890	4863
220	0.30605	3403.82	33.5753	283.329	623.364	5.85270	2.793	4.057	4786
240	0.32462	3407.01	30.1508	345.014	705.679	6.21055	2.923	4.173	4747
260	0.34333	3433.50	27.3042	408.371	789.827	6.54746	3.009	4.241	4735
280	0.36209	3479.88	24.9163	472.613	874.907	6.86262	3.053	4.265	4746
300	0.38087	3536.20	22.8958	536.960	960.121	7.15670	3.064	4.259	4772
320	0.39964	3602.39	21.1703	600.930	1044.942	7.43052	3.051	4.228	4809
340	0.41840	3674.20	19.6811	664.160	1129.020	7.68504	3.022	4.184	4855
360	0.43715	3750.23	18.3857	726.427	1212.115	7.92260	2.983	4.131	4905
380	0.45587	3831.70	17.2431	787.621	1294.107	8.14427	2.939	4.074	4960
400	0.47454	3920.36	16.2283	847.708	1374.940	8.35167	2.895	4.016	5019
420	0.49314	4013.13	15.3183	906.710	1454.612	8.54603	2.852	3.958	5079
440	0.51167	4109.33	14.4979	964.696	1533.180	8.72882	2.812	3.903	5140
460	0.53009	4207.95	13.7562	1021.733	1610.687	8.90111	2.777	3.853	5201
480	0.54841	4305.15	13.0828	1077.920	1687.227	9.06377	2.744	3.807	5260
500	0.56665	4406.11	12.4709	1133.346	1762.920	9.21842	2.717	3.766	5320
520	0.58479	4505.75	11.9111	1188.102	1837.822	9.36544	2.692	3.729	5377
540	0.60479	4613.71	11.5519	1238.199	1910.139	9.49767	2.635	3.693	5473
560	0.62308	4715.59	11.0965	1291.390	1983.655	9.63087	2.616	3.667	5534
580	0.64133	4817.86	10.6766	1344.213	2056.754	9.75898	2.600	3.645	5594
600	0.65954	4920.43	10.2882	1396.700	2129.472	9.88231	2.586	3.625	5653
650	0.70491	5177.83	9.4339	1526.512	2309.690	10.17110	2.560	3.588	5798
700	0.75008	5436.15	8.7144	1655.022	2488.394	10.43623	2.543	3.561	5939
800	0.84001	5954.34	7.5686	1909.441	2842.723	10.90971	2.526	3.531	6210
1000	1.01876	6994.17	6.0069	2414.033	3545.918	11.69387	2.515	3.506	6721
2000	1.90549	12235.35	2.9842	4972.661	7090.844	14.14433	2.654	3.634	8810
3000	2.79296	17516.88	1.9907	7760.889	10863.973	15.66079	2.927	3.908	10408
4000	3.68016	22815.77	1.4942	10827.627	14916.421	17.02048	3.197	4.182	11760
5000	4.57510	28123.16	1.1961	14247.141	19330.254	18.83827	3.672	4.692	12902

* TWO-PHASE BOUNDRY

6000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 43.240	5.71380	720.01	12.484	41469.34	0.0023861	0.10486	3.436	0.01068	1.30329	2.0267
44	5.70340	723.47	12.403	41180.44	0.0024019	0.10585	3.299	0.01068	1.30269	1.9497
46	5.67584	731.96	12.198	40419.15	0.0024428	0.10811	2.984	0.01065	1.30110	1.7766
48	5.64795	739.79	12.006	39656.67	0.0024828	0.10993	2.723	0.01060	1.29949	1.6378
50	5.61975	747.28	11.817	38894.31	0.0025222	0.11140	2.504	0.01052	1.29786	1.5249
52	5.59126	754.05	11.641	38133.34	0.0025611	0.11258	2.318	0.01043	1.29622	1.4315
54	5.56248	759.92	11.481	37375.05	0.0025996	0.11351	2.160	0.01033	1.29456	1.3530
56	5.53342	765.52	11.323	36620.65	0.0026377	0.11374	2.023	0.01018	1.29289	1.2927
58	5.50410	770.64	11.172	35871.38	0.0026756	0.11380	1.904	0.01003	1.29120	1.2417
60	5.47452	775.12	11.031	35128.42	0.0027132	0.11374	1.799	0.00988	1.28950	1.1978
62	5.44469	779.31	10.894	34392.93	0.0027505	0.11359	1.708	0.00973	1.28779	1.1601
64	5.41462	782.96	10.765	33666.06	0.0027876	0.11334	1.626	0.00959	1.28606	1.1275
66	5.38431	786.40	10.639	32948.92	0.0028243	0.11301	1.554	0.00945	1.28433	1.0994
68	5.35379	789.29	10.522	32242.60	0.0028607	0.11260	1.489	0.00931	1.28258	1.0748
70	5.32305	791.50	10.416	31548.13	0.0028967	0.11214	1.430	0.00919	1.28082	1.0528
75	5.24536	796.13	10.167	29870.50	0.0029840	0.11074	1.307	0.00889	1.27638	1.0094
80	5.16661	801.19	9.910	28288.20	0.0030662	0.10913	1.209	0.00860	1.27189	0.9795
85	5.08703	810.24	9.590	26814.31	0.0031411	0.10741	1.129	0.00830	1.26736	0.9626
90	5.00585	823.40	9.322	25726.93	0.0031765	0.10563	1.061	0.00807	1.26276	0.9462
95	4.92637	831.82	9.045	24486.73	0.0032280	0.10392	1.006	0.00786	1.25826	0.9357
100	4.84694	841.26	8.774	23374.05	0.0032661	0.10225	0.958	0.00768	1.25377	0.9272
105	4.76792	848.95	8.523	22295.66	0.0033030	0.10066	0.917	0.00753	1.24932	0.9201
110	4.68948	856.84	8.263	21260.75	0.0033368	0.09946	0.881	0.00742	1.24491	0.9122
115	4.61162	867.57	7.999	20364.88	0.0033550	0.09846	0.850	0.00734	1.24054	0.9043
120	4.53466	878.83	7.730	19506.14	0.0033728	0.09751	0.821	0.00725	1.23624	0.8988
125	4.45866	891.23	7.459	18702.31	0.0033874	0.09663	0.796	0.00718	1.23199	0.8952
130	4.38368	904.34	7.187	17935.99	0.0034018	0.09583	0.773	0.00711	1.22781	0.8935
140	4.23699	937.12	6.649	16636.00	0.0034051	0.09444	0.733	0.00698	1.21967	0.8922
150	4.09538	976.25	6.130	15542.58	0.0033876	0.09449	0.701	0.00698	1.21184	0.8827
160	3.95969	1022.09	5.643	14643.93	0.0033471	0.09533	0.673	0.00704	1.20437	0.8698
170	3.83020	1068.77	5.201	13803.45	0.0033130	0.09628	0.651	0.00710	1.19727	0.8614
180	3.70620	1121.55	4.810	13134.26	0.0032571	0.09735	0.588	0.00719	1.19049	0.7938
190	3.58812	1178.28	4.433	12483.67	0.0032140	0.10057	0.597	0.00740	1.18407	0.8095
200	3.47565	1232.66	4.141	11955.61	0.0031554	0.10330	0.603	0.00764	1.17797	0.8180
220	3.26742	1343.91	3.679	11121.71	0.0030189	0.10752	0.609	0.00811	1.16673	0.8275
240	3.08052	1452.55	3.348	10495.39	0.0028728	0.11038	0.609	0.00859	1.15671	0.8290
260	2.91253	1553.33	3.116	10000.51	0.0027303	0.11221	0.606	0.00908	1.14775	0.8251
280	2.76176	1645.23	2.955	9610.58	0.0025926	0.11325	0.603	0.00961	1.13975	0.8174
300	2.62557	1726.97	2.846	9284.52	0.0024660	0.11375	0.599	0.01017	1.13255	0.8080
320	2.50227	1800.38	2.773	9014.15	0.0023486	0.11388	0.597	0.01076	1.12607	0.7978
340	2.39005	1866.69	2.725	8781.50	0.0022412	0.11383	0.595	0.01138	1.12019	0.7877
360	2.28755	1927.62	2.694	8578.85	0.0021431	0.11370	0.595	0.01203	1.11483	0.7782
380	2.19362	1985.80	2.674	8405.30	0.0020514	0.11357	0.596	0.01271	1.10994	0.7692
400	2.10730	2044.19	2.660	8261.39	0.0019644	0.11352	0.597	0.01342	1.10546	0.7607
420	2.02780	2102.75	2.648	8137.84	0.0018823	0.11359	0.600	0.01415	1.10135	0.7527
440	1.95439	2162.32	2.638	8031.22	0.0018052	0.11380	0.604	0.01492	1.09756	0.7454
460	1.88646	2223.38	2.626	7938.13	0.0017329	0.11416	0.608	0.01571	1.09406	0.7386
480	1.82344	2284.51	2.614	7850.19	0.0016666	0.11467	0.613	0.01652	1.09082	0.7326
500	1.76474	2348.05	2.601	7775.67	0.0016038	0.11533	0.619	0.01735	1.08781	0.7271
520	1.71002	2412.26	2.587	7704.93	0.0015459	0.11614	0.625	0.01821	1.08501	0.7222
540	1.65348	2438.87	2.651	7628.66	0.0015143	0.11706	0.631	0.01917	1.08211	0.7171
560	1.60493	2501.29	2.643	7568.21	0.0014662	0.11812	0.638	0.02007	1.07964	0.7136
580	1.55926	2564.54	2.634	7512.31	0.0014212	0.11927	0.646	0.02099	1.07731	0.7105
600	1.51621	2628.90	2.624	7460.42	0.0013790	0.12053	0.654	0.02193	1.07512	0.7077
650	1.41863	2793.37	2.598	7345.41	0.0012843	0.12399	0.674	0.02436	1.07017	0.7022
700	1.33318	2961.87	2.571	7247.37	0.0012024	0.12784	0.696	0.02693	1.06585	0.6981
800	1.19046	3307.18	2.517	7088.43	0.0010677	0.13632	0.743	0.03243	1.05865	0.6925
1000	0.98158	4007.41	2.433	6865.35	0.0008750	0.15464	0.841	0.04493	1.04819	0.6868
2000	0.52452	7814.95	2.144	6417.73	0.0004650	0.27727	1.337	0.14547	1.02555	0.6310
3000	0.35804	12311.53	1.899	6271.80	0.0003174	0.39268	1.790	0.28065	1.01739	0.6414
4000	0.27173	17351.27	1.720	6199.67	0.0002410	0.51482	2.206	0.45305	1.01318	0.6450
5000	0.21857	24111.96	1.490	6147.00	0.0001946	0.70590	2.595	0.68835	1.01059	0.6209

* TWO-PHASE BOUNDRY

6500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 44.471	0.17347	7566.79	100.5847	-110.095	98.697	1.37052	1.400	1.732	6584
46	0.17409	7493.53	100.4602	-108.161	101.374	1.42969	1.422	1.769	6573
48	0.17491	7396.85	100.2122	-105.562	104.961	1.50602	1.448	1.817	6558
50	0.17574	7299.40	99.8785	-102.887	108.644	1.58118	1.474	1.865	6541
52	0.17660	7201.35	99.4692	-100.138	112.419	1.65521	1.498	1.910	6523
54	0.17747	7102.88	98.9931	-97.321	116.283	1.72812	1.519	1.954	6505
56	0.17835	7004.17	98.4573	-94.438	120.233	1.79995	1.540	1.996	6486
58	0.17926	6905.41	97.8684	-91.489	124.268	1.87074	1.559	2.038	6466
60	0.18018	6806.77	97.2317	-88.479	128.385	1.94052	1.577	2.078	6446
62	0.18111	6708.45	96.5519	-85.409	132.581	2.00931	1.594	2.118	6425
64	0.18206	6610.61	95.8332	-82.282	136.854	2.07715	1.610	2.156	6404
66	0.18303	6513.44	95.0789	-79.100	141.203	2.14406	1.625	2.193	6382
68	0.18402	6417.13	94.2923	-75.865	145.626	2.21007	1.638	2.229	6360
70	0.18502	6321.84	93.4760	-72.581	150.118	2.27518	1.650	2.263	6339
75	0.18761	6089.29	91.3210	-64.176	161.635	2.43406	1.674	2.343	6284
80	0.19030	5866.95	89.0274	-55.501	173.551	2.58785	1.698	2.423	6228
85	0.19310	5657.39	86.6223	-46.762	185.662	2.73453	1.731	2.510	6164
90	0.19601	5462.93	84.1305	-37.516	198.407	2.88021	1.758	2.587	6104
95	0.19907	5347.15	81.7305	-28.007	211.603	3.02287	1.781	2.652	6074
100	0.20214	5181.05	79.1277	-18.174	225.133	3.16169	1.803	2.717	6015
105	0.20530	5053.00	76.5266	-8.253	238.857	3.29561	1.820	2.770	5969
110	0.20854	4911.61	73.9452	1.846	252.847	3.42576	1.840	2.826	5912
115	0.21185	4787.89	71.3504	12.125	267.115	3.55260	1.862	2.878	5856
120	0.21523	4667.53	68.8367	22.580	281.636	3.67620	1.887	2.932	5796
125	0.21868	4561.02	66.4072	33.222	296.430	3.79697	1.915	2.986	5739
130	0.22219	4457.81	64.0670	44.060	311.497	3.91515	1.948	3.042	5679
140	0.22941	4273.88	59.6654	66.361	342.483	4.14474	2.022	3.159	5561
150	0.23687	4126.81	55.6336	89.570	374.669	4.36676	2.110	3.279	5451
160	0.24453	3999.98	51.9446	113.740	408.067	4.58227	2.206	3.401	5345
170	0.25234	3926.46	48.5924	138.891	442.619	4.79170	2.308	3.514	5262
180	0.26031	3847.97	45.5528	165.046	478.363	4.99598	2.412	3.630	5180
190	0.26840	3778.97	42.8168	192.788	515.840	5.19847	2.534	3.764	5099
200	0.27661	3727.26	40.3372	221.022	553.955	5.39383	2.633	3.870	5038
220	0.29335	3668.70	36.0205	280.022	633.110	5.77094	2.805	4.045	4951
240	0.31036	3656.68	32.4241	341.688	715.248	6.12802	2.934	4.165	4904
260	0.32750	3671.58	29.4158	405.076	799.265	6.46440	3.020	4.237	4885
280	0.34472	3705.16	26.8760	469.394	884.311	6.77942	3.063	4.264	4888
300	0.36196	3755.36	24.7194	533.835	969.493	7.07339	3.074	4.258	4909
320	0.37920	3812.55	22.8696	597.917	1054.335	7.34728	3.061	4.229	4940
340	0.39646	3881.35	21.2701	661.267	1138.456	7.60192	3.031	4.184	4982
360	0.41367	3950.80	19.8797	723.655	1221.557	7.83950	2.992	4.133	5028
380	0.43087	4026.13	18.6540	784.982	1303.587	8.06128	2.948	4.077	5079
400	0.44806	4108.90	17.5657	845.214	1384.505	8.26889	2.904	4.021	5134
420	0.46519	4196.15	16.5900	904.379	1464.296	8.46353	2.861	3.965	5190
440	0.48227	4286.23	15.7095	962.544	1543.017	8.64668	2.822	3.913	5247
460	0.49928	4382.28	14.9113	1019.775	1620.718	8.81940	2.786	3.863	5306
480	0.51620	4478.88	14.1844	1076.168	1697.476	8.98252	2.754	3.818	5363
500	0.53302	4579.98	13.5200	1131.808	1773.369	9.13758	2.727	3.776	5421
520	0.54975	4674.12	12.9116	1186.780	1848.472	9.28500	2.703	3.741	5474
540	0.56619	4777.70	12.5088	1236.529	1920.417	9.41623	2.641	3.699	5567
560	0.58308	4877.92	12.0156	1289.833	1994.043	9.54962	2.622	3.673	5626
580	0.60192	4978.67	11.5608	1342.762	2067.248	9.67792	2.605	3.650	5684
600	0.61873	5079.84	11.1400	1395.351	2140.067	9.80142	2.591	3.630	5742
650	0.66060	5334.15	10.2142	1525.399	2320.518	10.09059	2.565	3.592	5883
700	0.70230	5589.83	9.4344	1654.118	2499.428	10.35602	2.547	3.565	6020
800	0.78530	6103.67	8.1925	1908.889	2854.093	10.82996	2.530	3.534	6285
1000	0.95025	7136.85	6.5007	2413.983	3557.730	11.61462	2.518	3.508	6787
2000	1.76934	12359.65	3.2295	4973.576	7103.196	14.06550	2.656	3.634	8852
3000	2.58737	17632.42	2.1548	7762.076	10876.296	15.58195	2.928	3.908	10441
4000	3.40614	22926.26	1.6177	10828.372	14928.087	16.94147	3.196	4.180	11787
5000	4.23187	28230.37	1.2950	14241.699	19335.282	18.75782	3.660	4.677	12929

* TWO-PHASE BOUNDRY

6500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 44.471	5.76468	750.97	12.460	43620.14	0.0023059	0.10904	3.587	0.01092	1.30624	2.0505
46	5.74427	758.19	12.300	43044.82	0.0023339	0.11081	3.312	0.01090	1.30505	1.9037
48	5.71731	766.99	12.102	42290.11	0.0023696	0.11274	3.008	0.01085	1.30350	1.7456
50	5.69008	775.44	11.909	41534.17	0.0024047	0.11430	2.754	0.01077	1.30192	1.6175
52	5.66258	783.12	11.729	40778.23	0.0024393	0.11556	2.540	0.01068	1.30033	1.5116
54	5.63483	789.86	11.565	40023.53	0.0024734	0.11656	2.358	0.01059	1.29873	1.4228
56	5.60684	796.32	11.403	39271.25	0.0025071	0.11683	2.201	0.01044	1.29712	1.3542
58	5.57861	802.25	11.250	38522.57	0.0025405	0.11694	2.066	0.01028	1.29549	1.2961
60	5.55015	807.49	11.107	37778.61	0.0025737	0.11692	1.947	0.01014	1.29385	1.2462
62	5.52147	812.42	10.968	37040.50	0.0026067	0.11680	1.843	0.00999	1.29220	1.2033
64	5.49258	816.77	10.837	36309.32	0.0026394	0.11658	1.752	0.00985	1.29054	1.1661
66	5.46349	820.87	10.710	35586.13	0.0026718	0.11627	1.670	0.00970	1.28887	1.1341
68	5.43420	824.37	10.591	34871.94	0.0027040	0.11589	1.597	0.00957	1.28719	1.1060
70	5.40472	827.12	10.485	34167.77	0.0027358	0.11544	1.532	0.00944	1.28550	1.0810
75	5.33024	832.90	10.235	32457.40	0.0028136	0.11408	1.395	0.00913	1.28123	1.0313
80	5.25480	838.93	9.979	30829.68	0.0028877	0.11248	1.286	0.00884	1.27692	0.9969
85	5.17857	848.89	9.661	29297.19	0.0029567	0.11078	1.198	0.00852	1.27257	0.9770
90	5.10177	857.04	9.383	27870.61	0.0030186	0.10902	1.125	0.00826	1.26820	0.9611
95	5.02326	871.41	9.137	26860.13	0.0030428	0.10722	1.063	0.00805	1.26375	0.9466
100	4.94694	880.05	8.874	25630.35	0.0030873	0.10553	1.012	0.00785	1.25942	0.9379
105	4.87080	890.94	8.631	24612.16	0.0031093	0.10391	0.968	0.00770	1.25512	0.9288
110	4.79531	900.11	8.381	23552.67	0.0031396	0.10270	0.929	0.00758	1.25086	0.9205
115	4.72028	911.60	8.119	22600.17	0.0031571	0.10167	0.895	0.00748	1.24664	0.9123
120	4.64619	923.65	7.852	21686.24	0.0031742	0.10071	0.865	0.00739	1.24248	0.9068
125	4.57291	937.72	7.582	20857.12	0.0031839	0.09981	0.838	0.00731	1.23837	0.9028
130	4.50059	952.56	7.309	20062.77	0.0031933	0.09897	0.814	0.00723	1.23433	0.9007
140	4.35903	986.34	6.768	18629.97	0.0032027	0.09753	0.772	0.00708	1.22644	0.9004
150	4.22177	1026.72	6.246	17422.45	0.0031932	0.09756	0.737	0.00705	1.21883	0.8920
160	4.08941	1071.05	5.758	16357.56	0.0031756	0.09837	0.708	0.00707	1.21151	0.8813
170	3.96284	1125.08	5.313	15559.92	0.0031229	0.09929	0.684	0.00713	1.20454	0.8709
180	3.84155	1177.97	4.916	14782.17	0.0030816	0.10067	0.610	0.00722	1.19789	0.7918
190	3.72579	1237.74	4.534	14079.65	0.0030410	0.10390	0.620	0.00741	1.19156	0.8080
200	3.61522	1292.73	4.238	13474.86	0.0029935	0.10663	0.626	0.00762	1.18554	0.8176
220	3.40885	1404.28	3.767	12506.06	0.0028802	0.11079	0.631	0.00804	1.17435	0.8293
240	3.22204	1513.50	3.429	11781.96	0.0027520	0.11354	0.630	0.00846	1.16429	0.8322
260	3.05342	1614.63	3.190	11210.91	0.0026239	0.11523	0.626	0.00891	1.15526	0.8291
280	2.90088	1705.35	3.025	10748.22	0.0025005	0.11611	0.622	0.00939	1.14713	0.8220
300	2.76277	1787.33	2.910	10375.21	0.0023825	0.11646	0.617	0.00990	1.13980	0.8126
320	2.63711	1859.38	2.834	10054.12	0.0022747	0.11644	0.614	0.01044	1.13316	0.8024
340	2.52232	1925.98	2.782	9790.02	0.0021726	0.11624	0.611	0.01101	1.12712	0.7918
360	2.41739	1985.58	2.749	9550.64	0.0020815	0.11597	0.610	0.01161	1.12162	0.7821
380	2.32088	2042.24	2.726	9344.18	0.0019963	0.11571	0.609	0.01223	1.11657	0.7729
400	2.23186	2098.98	2.710	9170.51	0.0019155	0.11555	0.610	0.01288	1.11193	0.7644
420	2.14965	2155.88	2.697	9020.24	0.0018392	0.11552	0.612	0.01355	1.10766	0.7565
440	2.07352	2213.54	2.685	8887.60	0.0017676	0.11563	0.615	0.01425	1.10371	0.7492
460	2.00289	2274.08	2.672	8777.24	0.0016989	0.11591	0.619	0.01498	1.10006	0.7425
480	1.93724	2335.58	2.658	8676.68	0.0016348	0.11635	0.623	0.01573	1.09667	0.7363
500	1.87609	2400.07	2.643	8592.44	0.0015735	0.11695	0.628	0.01651	1.09352	0.7305
520	1.81901	2463.19	2.626	8502.28	0.0015186	0.11769	0.634	0.01730	1.09059	0.7256
540	1.75997	2486.32	2.691	8408.61	0.0014876	0.11856	0.640	0.01821	1.08756	0.7192
560	1.70918	2548.41	2.681	8337.26	0.0014412	0.11958	0.647	0.01905	1.08496	0.7155
580	1.66135	2611.39	2.671	8271.32	0.0013977	0.12070	0.654	0.01991	1.08252	0.7122
600	1.61622	2675.52	2.660	8210.14	0.0013569	0.12192	0.662	0.02078	1.08021	0.7094
650	1.51377	2839.58	2.631	8074.65	0.0012650	0.12533	0.682	0.02305	1.07500	0.7035
700	1.42388	3007.82	2.601	7959.28	0.0011853	0.12915	0.704	0.02544	1.07044	0.6991
800	1.27340	3352.88	2.543	7772.42	0.0010541	0.13763	0.750	0.03058	1.06283	0.6932
1000	1.05235	4052.83	2.453	7510.47	0.0008656	0.15611	0.849	0.04229	1.05173	0.6871
2000	0.56518	7860.28	2.152	6985.46	0.0004623	0.27727	1.355	0.13500	1.02755	0.6394
3000	0.38649	12358.32	1.904	6814.81	0.0003162	0.39267	1.820	0.25999	1.01878	0.6519
4000	0.29359	17392.58	1.724	6730.86	0.0002403	0.51444	2.246	0.41920	1.01424	0.6570
5000	0.23630	24093.81	1.498	6670.89	0.0001941	0.70237	2.646	0.63547	1.01145	0.6342

* - TWO-PHASE BOUNDRY

7000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 45.676	0.17201	7871.27	102.1937	-107.811	115.150	1.38071	1.413	1.745	6711
46	0.17213	7856.23	102.1658	-107.406	115.716	1.39307	1.418	1.753	6709
48	0.17291	7762.68	101.9382	-104.861	119.269	1.46868	1.445	1.800	6695
50	0.17370	7668.19	101.6247	-102.241	122.917	1.54313	1.471	1.847	6679
52	0.17451	7572.91	101.2358	-99.548	126.656	1.61645	1.495	1.892	6663
54	0.17533	7477.04	100.7805	-96.786	130.482	1.68865	1.517	1.934	6646
56	0.17617	7380.73	100.2662	-93.959	134.393	1.75976	1.538	1.976	6629
58	0.17702	7284.16	99.6996	-91.068	138.387	1.82983	1.558	2.017	6610
60	0.17788	7187.50	99.0862	-88.115	142.461	1.89889	1.576	2.057	6591
62	0.17876	7090.93	98.4308	-85.104	146.613	1.96695	1.594	2.095	6571
64	0.17966	6994.61	97.7375	-82.036	150.840	2.03406	1.610	2.132	6551
66	0.18057	6898.71	97.0100	-78.914	155.141	2.10023	1.625	2.169	6531
68	0.18149	6803.40	96.2513	-75.739	159.514	2.16550	1.639	2.204	6510
70	0.18243	6708.85	95.4641	-72.517	163.955	2.22986	1.651	2.237	6490
75	0.18485	6476.84	93.3868	-64.268	175.335	2.38686	1.676	2.315	6438
80	0.18736	6253.09	91.1769	-55.753	187.105	2.53876	1.701	2.392	6383
85	0.18997	6039.94	88.8594	-47.176	199.061	2.68357	1.736	2.478	6321
90	0.19267	5839.60	86.4562	-38.092	211.647	2.82742	1.763	2.555	6261
95	0.19546	5653.99	83.9882	-28.758	224.601	2.96749	1.787	2.626	6203
100	0.19834	5484.71	81.4766	-19.082	238.010	3.10506	1.810	2.691	6147
105	0.20135	5386.32	79.1668	-9.299	251.687	3.23854	1.828	2.745	6121
110	0.20435	5276.88	76.6536	0.656	265.542	3.36744	1.848	2.795	6081
115	0.20742	5138.12	74.1700	10.795	279.658	3.49292	1.871	2.852	6024
120	0.21056	5035.03	71.6963	21.123	294.051	3.61543	1.896	2.902	5975
125	0.21375	4913.99	69.2739	31.639	308.699	3.73501	1.925	2.958	5914
130	0.21700	4813.78	66.9335	42.358	323.631	3.85213	1.958	3.013	5858
140	0.22365	4626.34	62.5194	64.436	354.333	4.07961	2.033	3.129	5743
150	0.23051	4456.00	58.4507	87.441	386.230	4.29963	2.121	3.253	5626
160	0.23756	4326.82	54.7165	111.436	419.368	4.51345	2.218	3.375	5523
170	0.24477	4216.37	51.2995	136.447	453.721	4.72168	2.320	3.498	5426
180	0.25212	4155.95	48.1866	162.481	489.277	4.92488	2.424	3.608	5353
190	0.25954	4083.36	45.3784	190.112	526.532	5.12618	2.546	3.741	5272
200	0.26708	4014.85	42.8272	218.254	564.443	5.32048	2.644	3.851	5205
220	0.28246	3938.21	38.3737	277.127	643.252	5.69593	2.816	4.031	5111
240	0.29812	3907.43	34.6284	338.747	725.176	6.05207	2.945	4.158	5055
260	0.31394	3910.05	31.4696	402.148	809.075	6.38798	3.030	4.232	5030
280	0.32984	3935.20	28.7913	466.515	894.058	6.70277	3.073	4.262	5028
300	0.34576	3975.17	26.5069	531.032	979.207	6.99663	3.084	4.258	5042
320	0.36171	4027.63	24.5402	595.209	1064.055	7.27054	3.070	4.229	5070
340	0.37766	4087.21	22.8347	658.662	1148.193	7.52523	3.040	4.186	5106
360	0.39359	4155.52	21.3494	721.159	1231.329	7.76291	3.001	4.134	5150
380	0.40949	4223.41	20.0420	782.597	1313.380	7.98473	2.957	4.079	5195
400	0.42539	4301.70	18.8815	842.951	1394.351	8.19249	2.913	4.023	5247
420	0.44126	4382.40	17.8418	902.248	1474.215	8.38730	2.870	3.970	5299
440	0.45709	4467.91	16.9061	960.560	1553.044	8.57070	2.830	3.919	5354
460	0.47287	4559.31	16.0555	1017.956	1630.897	8.74376	2.795	3.872	5409
480	0.48859	4654.27	15.2787	1074.529	1707.842	8.90728	2.763	3.828	5465
500	0.50422	4751.35	14.5671	1130.361	1783.942	9.06276	2.736	3.787	5520
520	0.51978	4848.90	13.9136	1185.537	1859.275	9.21063	2.712	3.751	5574
540	0.53681	4943.28	13.4606	1235.008	1930.827	9.34084	2.648	3.704	5660
560	0.55249	5041.76	12.9301	1288.415	2004.552	9.47441	2.628	3.678	5717
580	0.56812	5140.91	12.4408	1341.445	2077.853	9.60289	2.611	3.655	5774
600	0.58373	5240.60	11.9879	1394.130	2150.765	9.72654	2.597	3.635	5830
650	0.62261	5491.64	10.9912	1524.401	2331.433	10.01605	2.570	3.596	5967
700	0.66132	5744.53	10.1515	1653.320	2510.535	10.28177	2.552	3.569	6101
800	0.73837	6253.74	8.8142	1908.429	2865.516	10.75613	2.534	3.537	6360
1000	0.89149	7279.85	6.9927	2414.016	3569.575	11.54126	2.521	3.509	6852
2000	1.65170	12482.93	3.4741	4974.582	7115.535	13.99255	2.657	3.634	8893
3000	2.41104	17746.16	2.3185	7763.364	10888.583	15.50898	2.929	3.908	10472
4000	3.17115	23034.45	1.7408	10829.287	14939.764	16.86833	3.195	4.178	11814
5000	3.93757	28334.96	1.3938	14237.114	19341.027	18.68341	3.649	4.665	12954

* TWO-PHASE BOUNDRY

7000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 45.676	5.81353	781.45	12.439	45760.61	0.0022332	0.11308	3.739	0.01115	1.30907	2.0774
46	5.80942	783.11	12.405	45640.13	0.0022385	0.11345	3.675	0.01114	1.30883	2.0444
48	5.78328	792.69	12.201	44893.78	0.0022707	0.11547	3.322	0.01109	1.30731	1.8646
50	5.75690	802.29	12.003	44144.96	0.0023021	0.11712	3.029	0.01102	1.30579	1.7193
52	5.73028	810.90	11.818	43394.89	0.0023329	0.11846	2.782	0.01093	1.30425	1.5995
54	5.70343	818.52	11.650	42644.75	0.0023633	0.11952	2.573	0.01083	1.30269	1.4993
56	5.67637	825.83	11.485	41895.70	0.0023932	0.11984	2.394	0.01068	1.30113	1.4215
58	5.64909	832.59	11.328	41148.88	0.0024229	0.11999	2.240	0.01053	1.29955	1.3557
60	5.62162	838.60	11.182	40405.39	0.0024523	0.12000	2.106	0.01038	1.29797	1.2992
62	5.59395	844.29	11.040	39666.30	0.0024815	0.11991	1.988	0.01023	1.29637	1.2506
64	5.56610	849.34	10.908	38932.65	0.0025104	0.11972	1.885	0.01009	1.29477	1.2085
66	5.53806	854.12	10.779	38205.45	0.0025392	0.11943	1.793	0.00994	1.29315	1.1723
68	5.50985	858.25	10.659	37485.70	0.0025677	0.11906	1.712	0.00981	1.29153	1.1404
70	5.48147	861.57	10.551	36774.35	0.0025959	0.11863	1.638	0.00968	1.28990	1.1120
75	5.40984	868.62	10.299	35038.70	0.0026652	0.11729	1.486	0.00937	1.28579	1.0556
80	5.33733	875.73	10.042	33374.78	0.0027319	0.11572	1.365	0.00906	1.28164	1.0163
85	5.26408	886.79	9.725	31794.75	0.0027948	0.11401	1.269	0.00874	1.27745	0.9928
90	5.19027	895.68	9.448	30309.11	0.0028525	0.11225	1.189	0.00847	1.27324	0.9744
95	5.11610	904.38	9.185	28926.38	0.0029035	0.11049	1.123	0.00822	1.26902	0.9608
100	5.04181	913.43	8.930	27652.85	0.0029464	0.10875	1.067	0.00801	1.26480	0.9505
105	4.96659	927.67	8.719	26751.64	0.0029593	0.10704	1.018	0.00785	1.26053	0.9400
110	4.89347	941.68	8.475	25822.24	0.0029685	0.10580	0.977	0.00773	1.25640	0.9290
115	4.82189	952.42	8.223	24771.33	0.0029942	0.10476	0.941	0.00762	1.25231	0.9217
120	4.74927	967.95	7.960	23912.73	0.0029982	0.10376	0.908	0.00753	1.24827	0.9147
125	4.67846	981.71	7.690	22989.88	0.0030132	0.10284	0.880	0.00743	1.24429	0.9112
130	4.60837	998.54	7.418	22183.71	0.0030172	0.10198	0.854	0.00734	1.24036	0.9086
140	4.47128	1035.29	6.876	20685.63	0.0030224	0.10048	0.810	0.00718	1.23270	0.9082
150	4.33821	1075.82	6.351	19331.04	0.0030237	0.10049	0.773	0.00712	1.22529	0.9012
160	4.20940	1123.51	5.860	18213.30	0.0030042	0.10129	0.742	0.00713	1.21814	0.8906
170	4.08546	1174.47	5.411	17225.82	0.0029781	0.10218	0.716	0.00715	1.21129	0.8826
180	3.96643	1234.24	5.011	16484.28	0.0029232	0.10386	0.632	0.00726	1.20474	0.7898
190	3.85295	1297.19	4.625	15732.98	0.0028843	0.10712	0.641	0.00743	1.19851	0.8063
200	3.74423	1351.81	4.325	15032.56	0.0028490	0.10985	0.648	0.00762	1.19257	0.8172
220	3.54035	1464.72	3.849	13942.67	0.0027522	0.11395	0.652	0.00798	1.18147	0.8307
240	3.35433	1573.62	3.505	13106.82	0.0026420	0.11661	0.651	0.00836	1.17141	0.8352
260	3.18537	1674.96	3.260	12454.96	0.0025267	0.11817	0.646	0.00877	1.16232	0.8330
280	3.03177	1765.97	3.090	11930.62	0.0024132	0.11892	0.640	0.00920	1.15410	0.8262
300	2.89220	1846.87	2.972	11497.00	0.0023056	0.11912	0.635	0.00967	1.14667	0.8170
320	2.76468	1919.10	2.891	11135.11	0.0022039	0.11896	0.630	0.01017	1.13990	0.8066
340	2.64786	1983.89	2.836	10822.36	0.0021100	0.11862	0.627	0.01070	1.13373	0.7960
360	2.54074	2044.23	2.800	10558.10	0.0020221	0.11822	0.624	0.01126	1.12809	0.7857
380	2.44207	2099.05	2.776	10313.87	0.0019432	0.11785	0.623	0.01183	1.12291	0.7764
400	2.35076	2154.77	2.758	10112.28	0.0018672	0.11758	0.623	0.01243	1.11813	0.7677
420	2.26623	2209.73	2.743	9931.54	0.0017965	0.11745	0.624	0.01305	1.11372	0.7598
440	2.18776	2265.95	2.730	9774.69	0.0017296	0.11747	0.627	0.01370	1.10964	0.7526
460	2.11474	2325.08	2.716	9641.75	0.0016652	0.11767	0.630	0.01437	1.10585	0.7460
480	2.04671	2386.38	2.701	9525.96	0.0016039	0.11803	0.634	0.01507	1.10233	0.7398
500	1.98324	2449.90	2.685	9423.10	0.0015459	0.11857	0.638	0.01579	1.09905	0.7340
520	1.92391	2514.97	2.666	9328.83	0.0014915	0.11926	0.644	0.01653	1.09599	0.7288
540	1.86286	2533.77	2.729	9208.61	0.0014617	0.12008	0.650	0.01740	1.09284	0.7212
560	1.81000	2595.55	2.718	9125.61	0.0014169	0.12105	0.656	0.01819	1.09013	0.7174
580	1.76018	2658.25	2.707	9048.92	0.0013748	0.12214	0.663	0.01899	1.08757	0.7140
600	1.71312	2722.16	2.695	8977.80	0.0013353	0.12333	0.670	0.01981	1.08516	0.7110
650	1.60615	2885.81	2.663	8820.37	0.0012461	0.12668	0.690	0.02193	1.07970	0.7048
700	1.51212	3053.80	2.631	8686.41	0.0011687	0.13046	0.711	0.02418	1.07491	0.7002
800	1.35433	3398.60	2.569	8469.62	0.0010407	0.13893	0.757	0.02900	1.06692	0.6940
1000	1.12172	4098.29	2.473	8165.93	0.0008563	0.15757	0.857	0.04003	1.05520	0.6874
2000	0.60544	7905.56	2.160	7557.61	0.0004597	0.27727	1.373	0.12602	1.02953	0.6478
3000	0.41476	12404.89	1.908	7360.37	0.0003150	0.39266	1.849	0.24228	1.02016	0.6625
4000	0.31534	17434.30	1.728	7263.75	0.0002397	0.51411	2.287	0.39019	1.01530	0.6692
5000	0.25396	24082.64	1.504	7196.06	0.0001937	0.69923	2.698	0.59025	1.01231	0.6479

* TWO-PHASE BOUNDRY

7500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 46.857	0.17063	8171.66	103.7806	-105.499	131.465	1.39053	1.425	1.758	6834
48	0.17105	8119.83	103.6477	-104.063	133.490	1.43323	1.441	1.785	6826
50	0.17180	8028.27	103.3489	-101.493	137.106	1.50704	1.468	1.831	6812
52	0.17257	7935.77	102.9748	-98.851	140.813	1.57973	1.492	1.875	6797
54	0.17335	7842.51	102.5346	-96.140	144.606	1.65130	1.514	1.917	6782
56	0.17414	7748.63	102.0361	-93.365	148.482	1.72178	1.536	1.959	6765
58	0.17495	7654.31	101.4859	-90.525	152.440	1.79121	1.556	1.999	6748
60	0.17576	7559.72	100.8899	-87.625	156.476	1.85963	1.575	2.037	6730
62	0.17660	7465.00	100.2528	-84.667	160.589	1.92705	1.593	2.075	6712
64	0.17744	7370.34	99.5790	-81.652	164.775	1.99351	1.609	2.111	6693
66	0.17830	7275.88	98.8720	-78.584	169.034	2.05904	1.625	2.147	6673
68	0.17917	7181.78	98.1349	-75.465	173.363	2.12365	1.639	2.181	6654
70	0.18005	7088.21	97.3706	-72.297	177.758	2.18735	1.651	2.213	6634
75	0.18232	6857.56	95.3551	-64.188	189.018	2.34269	1.678	2.290	6585
80	0.18467	6633.47	93.2132	-55.817	200.658	2.49291	1.704	2.366	6532
85	0.18711	6418.17	90.9685	-47.385	212.476	2.63606	1.740	2.450	6471
90	0.18964	6213.73	88.6407	-38.447	224.919	2.77827	1.768	2.526	6413
95	0.19224	6022.00	86.2476	-29.258	237.727	2.91675	1.793	2.596	6355
100	0.19493	5844.56	83.8071	-19.726	250.989	3.05283	1.817	2.662	6299
105	0.19769	5682.64	81.3379	-10.102	264.447	3.18414	1.836	2.720	6246
110	0.20058	5511.58	79.1720	-0.269	278.291	3.31294	1.856	2.772	6230
115	0.20344	5482.72	76.7363	9.742	292.285	3.43735	1.879	2.826	6180
120	0.20637	5368.63	74.3391	19.948	306.560	3.55886	1.906	2.880	6131
125	0.20935	5275.51	71.9736	30.353	321.099	3.67755	1.935	2.931	6085
130	0.21237	5152.80	69.6421	40.961	335.897	3.79362	1.968	2.990	6022
140	0.21855	4967.13	65.2200	62.836	366.360	4.01933	2.044	3.104	5912
150	0.22491	4800.19	61.1329	85.656	398.010	4.23764	2.132	3.226	5801
160	0.23144	4648.50	57.3580	109.486	430.903	4.44969	2.230	3.353	5691
170	0.23811	4532.16	53.8836	134.361	465.052	4.65688	2.333	3.476	5594
180	0.24491	4432.10	50.7024	160.276	500.405	4.85892	2.437	3.596	5505
190	0.25182	4377.95	47.8079	187.615	537.542	5.05958	2.558	3.723	5433
200	0.25878	4314.17	45.1980	215.866	575.263	5.25291	2.656	3.830	5369
220	0.27300	4215.78	40.6212	274.603	653.748	5.62681	2.827	4.015	5267
240	0.28750	4161.43	36.7599	336.154	735.427	5.98188	2.956	4.149	5202
260	0.30216	4149.81	33.4681	399.549	819.193	6.31725	3.041	4.227	5170
280	0.31694	4165.85	30.6575	463.949	904.109	6.63179	3.084	4.259	5163
300	0.33172	4197.78	28.2566	528.523	989.212	6.92549	3.094	4.257	5172
320	0.34654	4241.93	26.1798	592.779	1074.056	7.19938	3.080	4.230	5195
340	0.36136	4296.54	24.3744	656.319	1158.179	7.45403	3.050	4.187	5227
360	0.37619	4356.97	22.7957	718.915	1241.363	7.69185	3.010	4.135	5266
380	0.39098	4425.54	21.4069	780.453	1323.448	7.91377	2.966	4.079	5311
400	0.40577	4495.49	20.1743	840.910	1404.444	8.12158	2.921	4.025	5357
420	0.42053	4571.13	19.0740	900.318	1484.346	8.31649	2.878	3.973	5407
440	0.43527	4651.95	18.0826	958.752	1563.254	8.50007	2.839	3.924	5458
460	0.44998	4737.88	17.1820	1016.283	1641.214	8.67337	2.803	3.878	5510
480	0.46465	4828.85	16.3595	1073.007	1718.306	8.83720	2.772	3.835	5564
500	0.47925	4923.47	15.6048	1129.006	1794.590	8.99306	2.745	3.797	5617
520	0.49379	5020.73	14.9091	1184.363	1870.140	9.14134	2.721	3.761	5670
540	0.50960	5110.28	14.4069	1233.626	1941.353	9.27068	2.654	3.708	5752
560	0.52422	5206.96	13.8397	1287.130	2015.168	9.40442	2.634	3.682	5807
580	0.53881	5304.44	13.3162	1340.253	2088.557	9.53304	2.617	3.659	5862
600	0.55338	5402.58	12.8317	1393.028	2161.555	9.65684	2.602	3.639	5916
650	0.58966	5650.19	11.7648	1523.511	2342.423	9.94667	2.575	3.600	6050
700	0.62578	5900.15	10.8656	1652.622	2521.705	10.21266	2.557	3.572	6180
800	0.69767	6404.49	9.4334	1908.058	2876.986	10.68742	2.538	3.539	6433
1000	0.84052	7423.14	7.4829	2414.129	3581.447	11.47301	2.524	3.511	6916
2000	1.54968	12605.22	3.7178	4975.675	7127.862	13.92467	2.659	3.634	8934
3000	2.25813	17858.15	2.4818	7764.752	10900.833	15.44107	2.930	3.907	10503
4000	2.96738	23140.40	1.8637	10830.360	14951.443	16.80026	3.194	4.177	11839
5000	3.68240	28436.97	1.4924	14233.257	19347.358	18.61418	3.639	4.653	12978

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

7500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 46.857	5.86080	811.44	12.423	47892.52	0.0021669	0.11698	3.894	0.01135	1.31181	2.1070
48	5.84625	817.56	12.303	47470.54	0.0021834	0.11814	3.669	0.01132	1.31097	1.9960
50	5.82061	827.93	12.099	46729.45	0.0022116	0.11987	3.330	0.01125	1.30948	1.8314
52	5.79476	837.46	11.909	45985.93	0.0022393	0.12128	3.047	0.01116	1.30798	1.6961
54	5.76871	845.96	11.736	45241.15	0.0022664	0.12241	2.808	0.01107	1.30647	1.5831
56	5.74247	854.13	11.567	44496.26	0.0022931	0.12277	2.603	0.01092	1.30495	1.4952
58	5.71604	861.72	11.407	43752.36	0.0023196	0.12295	2.428	0.01076	1.30342	1.4209
60	5.68944	868.52	11.258	43010.52	0.0023457	0.12299	2.276	0.01061	1.30188	1.3571
62	5.66266	874.97	11.113	42271.78	0.0023716	0.12294	2.143	0.01046	1.30034	1.3024
64	5.63572	880.75	10.978	41537.15	0.0023973	0.12276	2.027	0.01032	1.29878	1.2549
66	5.60862	886.22	10.847	40807.63	0.0024229	0.12250	1.924	0.01017	1.29722	1.2140
68	5.58137	891.00	10.725	40084.15	0.0024482	0.12215	1.832	0.01003	1.29565	1.1780
70	5.55396	894.92	10.616	39367.64	0.0024734	0.12173	1.751	0.00990	1.29407	1.1460
75	5.48485	903.30	10.361	37612.68	0.0025352	0.12041	1.581	0.00959	1.29009	1.0823
80	5.41495	911.60	10.103	35919.90	0.0025950	0.11884	1.448	0.00928	1.28608	1.0376
85	5.34437	923.89	9.784	34301.11	0.0026521	0.11714	1.342	0.00895	1.28204	1.0103
90	5.27326	933.69	9.508	32766.63	0.0027052	0.11538	1.255	0.00866	1.27797	0.9890
95	5.20178	943.04	9.245	31325.10	0.0027533	0.11360	1.183	0.00841	1.27389	0.9733
100	5.13011	952.49	8.992	29983.20	0.0027951	0.11184	1.122	0.00819	1.26981	0.9615
105	5.05846	961.39	8.759	28745.39	0.0028296	0.11014	1.070	0.00800	1.26574	0.9515
110	4.98563	979.38	8.555	27977.24	0.0028299	0.10880	1.024	0.00787	1.26161	0.9394
115	4.91534	992.48	8.307	26949.45	0.0028474	0.10773	0.986	0.00776	1.25764	0.9308
120	4.84556	1007.73	8.051	26014.02	0.0028577	0.10671	0.951	0.00765	1.25369	0.9243
125	4.77657	1026.24	7.787	25199.36	0.0028562	0.10575	0.921	0.00755	1.24981	0.9191
130	4.70881	1041.64	7.516	24263.54	0.0028702	0.10487	0.894	0.00745	1.24600	0.9175
140	4.57557	1081.81	6.974	22727.49	0.0028697	0.10332	0.847	0.00727	1.23852	0.9166
150	4.44623	1126.36	6.448	21342.71	0.0028643	0.10330	0.809	0.00720	1.23130	0.9093
160	4.32086	1174.15	5.953	20085.51	0.0028557	0.10409	0.776	0.00718	1.22432	0.9000
170	4.19968	1227.84	5.501	19033.62	0.0028310	0.10496	0.748	0.00719	1.21760	0.8923
180	4.08315	1283.55	5.096	18096.93	0.0028017	0.10694	0.653	0.00728	1.21116	0.7699
190	3.97189	1353.88	4.706	17385.23	0.0027499	0.11023	0.662	0.00746	1.20499	0.8054
200	3.86424	1412.83	4.404	16670.97	0.0027112	0.11297	0.669	0.00763	1.19913	0.8162
220	3.66297	1526.49	3.923	15442.28	0.0026305	0.11703	0.673	0.00796	1.18814	0.8314
240	3.47832	1633.71	3.575	14474.76	0.0025396	0.11959	0.671	0.00829	1.17811	0.8378
260	3.30946	1734.71	3.326	13733.65	0.0024369	0.12104	0.665	0.00865	1.16899	0.8365
280	3.15521	1825.93	3.151	13144.13	0.0023324	0.12166	0.659	0.00905	1.16071	0.8301
300	3.01461	1906.46	3.029	12654.67	0.0022329	0.12172	0.652	0.00949	1.15319	0.8211
320	2.88565	1977.69	2.946	12240.73	0.0021387	0.12143	0.647	0.00995	1.14632	0.8107
340	2.76730	2042.22	2.888	11889.80	0.0020508	0.12097	0.642	0.01044	1.14004	0.7999
360	2.65825	2101.00	2.849	11581.92	0.0019682	0.12045	0.639	0.01096	1.13428	0.7895
380	2.55766	2157.00	2.822	11319.04	0.0018912	0.11997	0.637	0.01150	1.12898	0.7796
400	2.46444	2210.49	2.802	11078.87	0.0018210	0.11960	0.636	0.01206	1.12408	0.7708
420	2.37796	2264.08	2.787	10869.98	0.0017547	0.11937	0.637	0.01264	1.11955	0.7629
440	2.29742	2318.99	2.773	10687.50	0.0016919	0.11931	0.638	0.01324	1.11535	0.7556
460	2.22232	2376.42	2.758	10529.08	0.0016319	0.11943	0.641	0.01386	1.11144	0.7491
480	2.15217	2436.51	2.742	10392.53	0.0015742	0.11972	0.644	0.01450	1.10779	0.7429
500	2.08658	2499.42	2.725	10273.24	0.0015190	0.12019	0.648	0.01517	1.10439	0.7373
520	2.02514	2564.85	2.705	10167.69	0.0014663	0.12083	0.653	0.01586	1.10121	0.7320
540	1.96233	2581.19	2.767	10028.08	0.0014367	0.12160	0.659	0.01671	1.09797	0.7233
560	1.90759	2642.65	2.755	9932.73	0.0013933	0.12253	0.665	0.01744	1.09515	0.7193
580	1.85593	2705.09	2.742	9844.64	0.0013526	0.12358	0.671	0.01820	1.09249	0.7157
600	1.80709	2768.78	2.729	9762.95	0.0013143	0.12473	0.678	0.01897	1.08998	0.7126
650	1.69591	2932.03	2.694	9582.19	0.0012278	0.12802	0.698	0.02097	1.08428	0.7062
700	1.59800	3099.76	2.660	9428.45	0.0011524	0.13177	0.719	0.02308	1.07928	0.7013
800	1.43333	3444.32	2.594	9179.77	0.0010276	0.14023	0.765	0.02764	1.07091	0.6947
1000	1.18973	4143.77	2.492	8831.56	0.0008473	0.15902	0.865	0.03807	1.05862	0.6878
2000	0.64530	7950.78	2.167	8134.09	0.0004571	0.27727	1.391	0.11824	1.03150	0.6563
3000	0.44284	12451.26	1.912	7908.38	0.0003138	0.39265	1.880	0.22692	1.02154	0.6733
4000	0.33700	17476.30	1.731	7798.27	0.0002390	0.51381	2.330	0.36504	1.01636	0.6817
5000	0.27156	24077.21	1.510	7722.41	0.0001933	0.69641	2.752	0.55113	1.01317	0.6618

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

8000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 48.015	0.16931	8468.40	105.3468	-103.162	147.650	1.40001	1.438	1.772	6953
50	0.17002	8380.42	105.0598	-100.657	151.212	1.47269	1.464	1.817	6940
52	0.17075	8290.69	104.6956	-98.061	154.890	1.54481	1.489	1.861	6927
54	0.17150	8200.04	104.2656	-95.398	158.653	1.61582	1.512	1.902	6913
56	0.17225	8108.62	103.7778	-92.669	162.498	1.68573	1.534	1.943	6897
58	0.17301	8016.59	103.2391	-89.878	166.423	1.75460	1.555	1.982	6881
60	0.17379	7924.11	102.6553	-87.025	170.426	1.82245	1.574	2.020	6864
62	0.17458	7831.34	102.0315	-84.116	174.504	1.88930	1.592	2.057	6847
64	0.17538	7738.44	101.3719	-81.150	178.655	1.95519	1.609	2.093	6829
66	0.17619	7645.55	100.6801	-78.131	182.876	2.02014	1.625	2.128	6811
68	0.17701	7552.82	99.9594	-75.061	187.166	2.08417	1.640	2.162	6792
70	0.17785	7460.41	99.2125	-71.944	191.521	2.14729	1.652	2.193	6773
75	0.17999	7231.72	97.2454	-63.962	202.673	2.30115	1.679	2.268	6726
80	0.18221	7008.14	95.1582	-55.720	214.198	2.44989	1.706	2.342	6675
85	0.18450	6791.78	92.9735	-47.419	225.894	2.59154	1.743	2.425	6616
90	0.18687	6584.61	90.7091	-38.613	238.208	2.73229	1.772	2.500	6559
95	0.18931	6388.42	88.3809	-29.556	250.883	2.86933	1.799	2.570	6502
100	0.19182	6204.76	86.0039	-20.153	264.011	3.00403	1.823	2.636	6446
105	0.19441	6034.88	83.5935	-10.656	277.336	3.13404	1.843	2.694	6393
110	0.19706	5879.73	81.1661	-0.969	290.949	3.26068	1.864	2.750	6339
115	0.19985	5819.21	79.1367	8.933	304.984	3.38545	1.887	2.803	6327
120	0.20259	5689.45	76.7722	19.024	319.136	3.50591	1.914	2.859	6274
125	0.20538	5589.35	74.4490	29.321	333.572	3.62376	1.944	2.912	6228
130	0.20822	5483.06	72.1748	39.831	348.283	3.73915	1.978	2.969	6176
140	0.21400	5297.99	67.7627	61.521	378.539	3.96332	2.054	3.083	6069
150	0.21993	5128.08	63.6655	84.169	409.974	4.18014	2.143	3.205	5961
160	0.22601	4977.45	59.8737	107.846	442.648	4.39097	2.241	3.331	5854
170	0.23222	4843.18	56.3586	132.589	476.589	4.59670	2.344	3.457	5753
180	0.23854	4738.11	53.1164	158.396	511.771	4.79776	2.449	3.578	5663
190	0.24497	4646.75	50.1444	185.839	548.726	4.99744	2.570	3.713	5576
200	0.25148	4596.05	47.4446	213.814	586.353	5.19030	2.668	3.815	5518
220	0.26469	4481.01	42.7703	272.409	664.513	5.56264	2.838	4.003	5411
240	0.27817	4417.00	38.8108	333.875	745.953	5.91667	2.967	4.140	5343
260	0.29184	4392.63	35.4085	397.245	829.574	6.25146	3.051	4.222	5306
280	0.30563	4397.10	32.4775	461.665	914.415	6.56571	3.094	4.256	5293
300	0.31942	4420.17	29.9641	526.284	999.473	6.85925	3.104	4.256	5298
320	0.33327	4458.09	27.7862	590.603	1084.299	7.13309	3.090	4.230	5317
340	0.34711	4505.75	25.8862	654.221	1168.424	7.38774	3.059	4.187	5345
360	0.36096	4561.53	24.2180	716.904	1251.623	7.62560	3.019	4.136	5380
380	0.37479	4623.11	22.7502	778.534	1333.734	7.84759	2.975	4.081	5421
400	0.38859	4691.41	21.4463	839.082	1414.738	8.05543	2.930	4.026	5465
420	0.40240	4761.98	20.2840	898.587	1494.690	8.25046	2.887	3.975	5511
440	0.41618	4837.42	19.2366	957.124	1573.643	8.43414	2.847	3.926	5560
460	0.42994	4917.42	18.2885	1014.767	1651.672	8.60759	2.812	3.883	5609
480	0.44367	5002.82	17.4231	1071.616	1728.859	8.77163	2.780	3.842	5659
500	0.45735	5094.12	16.6292	1127.754	1805.271	8.92775	2.753	3.804	5711
520	0.47098	5188.89	15.8970	1183.265	1880.973	9.07633	2.730	3.770	5762
540	0.48577	5278.58	15.3474	1232.374	1951.981	9.20507	2.660	3.712	5843
560	0.49947	5373.39	14.7440	1285.968	2025.878	9.33896	2.640	3.686	5896
580	0.51315	5469.14	14.1869	1339.179	2099.348	9.46772	2.622	3.663	5949
600	0.52680	5565.67	13.6710	1392.039	2172.425	9.59166	2.608	3.643	6002
650	0.56080	5809.72	12.5347	1522.723	2353.480	9.88179	2.580	3.603	6132
700	0.59466	6056.62	11.5766	1652.017	2532.932	10.14803	2.561	3.575	6259
800	0.66203	6555.87	10.0500	1907.771	2888.497	10.62317	2.542	3.542	6506
1000	0.79589	7566.71	7.9711	2414.317	3593.342	11.40919	2.527	3.512	6980
2000	1.46034	12726.56	3.9607	4976.854	7140.178	13.86119	2.660	3.634	8974
3000	2.12424	17968.42	2.6446	7766.237	10913.050	15.37756	2.931	3.907	10533
4000	2.78897	23244.14	1.9864	10831.581	14963.116	16.73661	3.194	4.175	11865
5000	3.45903	28536.45	1.5908	14230.030	19354.173	18.54948	3.631	4.643	13002

* TWO-PHASE BOUNDRY

8000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$-(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 48.015	5.90635	841.16	12.406	50017.33	0.0021062	0.12076	4.050	0.01154	1.31446	2.1392
50	5.88156	852.41	12.198	49289.94	0.0021315	0.12256	3.662	0.01147	1.31302	1.9545
52	5.85640	862.87	12.003	48553.57	0.0021563	0.12404	3.337	0.01138	1.31155	1.8019
54	5.83105	872.25	11.825	47814.84	0.0021806	0.12522	3.063	0.01129	1.31008	1.6748
56	5.80554	881.28	11.652	47074.88	0.0022045	0.12563	2.830	0.01114	1.30860	1.5757
58	5.77986	889.71	11.487	46334.77	0.0022281	0.12585	2.631	0.01098	1.30712	1.4920
60	5.75403	897.31	11.335	45595.56	0.0022514	0.12592	2.459	0.01083	1.30562	1.4202
62	5.72804	904.53	11.187	44858.28	0.0022745	0.12588	2.309	0.01068	1.30412	1.3587
64	5.70191	911.04	11.049	44123.90	0.0022974	0.12573	2.178	0.01054	1.30260	1.3054
66	5.67565	917.22	10.916	43393.40	0.0023202	0.12548	2.063	0.01039	1.30109	1.2594
68	5.64924	922.67	10.792	42667.70	0.0023427	0.12515	1.960	0.01025	1.29956	1.2190
70	5.62271	927.20	10.681	41947.70	0.0023651	0.12474	1.869	0.01012	1.29803	1.1831
75	5.55584	936.97	10.422	40178.26	0.0024203	0.12344	1.681	0.00980	1.29418	1.1115
80	5.48827	946.54	10.161	38462.53	0.0024741	0.12188	1.534	0.00949	1.29029	1.0610
85	5.42009	960.15	9.841	36812.05	0.0025256	0.12018	1.417	0.00914	1.28638	1.0294
90	5.35142	970.99	9.564	35237.00	0.0025743	0.11840	1.322	0.00885	1.28244	1.0049
95	5.28238	981.17	9.301	33746.05	0.0026190	0.11661	1.244	0.00859	1.27849	0.9868
100	5.21312	991.22	9.048	32346.16	0.0026589	0.11483	1.178	0.00836	1.27454	0.9733
105	5.14383	1000.45	8.817	31042.40	0.0026929	0.11310	1.122	0.00816	1.27059	0.9622
110	5.07467	1011.11	8.580	29837.69	0.0027203	0.11179	1.074	0.00801	1.26666	0.9511
115	5.00381	1031.28	8.379	29118.23	0.0027178	0.11061	1.031	0.00789	1.26264	0.9403
120	4.93609	1045.87	8.125	28083.66	0.0027337	0.10957	0.994	0.00776	1.25881	0.9341
125	4.86895	1064.63	7.865	27214.26	0.0027357	0.10858	0.962	0.00766	1.25501	0.9290
130	4.80263	1083.27	7.599	26333.13	0.0027408	0.10765	0.933	0.00755	1.25127	0.9266
140	4.67286	1126.44	7.059	24756.74	0.0027371	0.10604	0.884	0.00736	1.24398	0.9253
150	4.54685	1173.78	6.534	23316.61	0.0027305	0.10600	0.843	0.00727	1.23692	0.9180
160	4.42466	1225.21	6.038	22023.53	0.0027186	0.10678	0.809	0.00725	1.23010	0.9087
170	4.30634	1279.47	5.583	20856.42	0.0027022	0.10764	0.780	0.00723	1.22352	0.9021
180	4.19210	1337.94	5.175	19862.63	0.0026742	0.10992	0.673	0.00733	1.21718	0.7884
190	4.08221	1404.56	4.779	18968.99	0.0026435	0.11325	0.683	0.00747	1.21111	0.8061
200	3.97644	1469.56	4.472	18275.95	0.0025960	0.11599	0.689	0.00765	1.20529	0.8161
220	3.77803	1584.62	3.989	16929.42	0.0025264	0.12002	0.693	0.00794	1.19441	0.8326
240	3.59491	1693.62	3.639	15878.69	0.0024442	0.12250	0.691	0.00823	1.18444	0.8401
260	3.42652	1794.58	3.387	15051.45	0.0023525	0.12383	0.684	0.00856	1.17531	0.8398
280	3.27197	1885.29	3.208	14387.16	0.0022574	0.12434	0.677	0.00893	1.16698	0.8339
300	3.13064	1965.32	3.083	13837.94	0.0021654	0.12428	0.669	0.00933	1.15939	0.8251
320	3.00050	2036.21	2.997	13376.95	0.0020772	0.12387	0.663	0.00976	1.15244	0.8146
340	2.88094	2099.80	2.937	12980.78	0.0019942	0.12329	0.657	0.01022	1.14607	0.8037
360	2.77039	2158.26	2.895	12637.25	0.0019164	0.12266	0.653	0.01070	1.14020	0.7930
380	2.66819	2212.78	2.866	12335.35	0.0018443	0.12207	0.651	0.01121	1.13480	0.7830
400	2.57339	2266.57	2.845	12072.80	0.0017764	0.12160	0.649	0.01174	1.12981	0.7738
420	2.48512	2318.96	2.828	11834.08	0.0017140	0.12128	0.649	0.01228	1.12517	0.7657
440	2.40282	2372.49	2.812	11623.44	0.0016550	0.12113	0.650	0.01284	1.12085	0.7583
460	2.32591	2428.09	2.797	11437.47	0.0015990	0.12118	0.652	0.01342	1.11683	0.7518
480	2.25393	2486.38	2.780	11276.02	0.0015451	0.12141	0.655	0.01402	1.11308	0.7459
500	2.18649	2548.23	2.762	11138.22	0.0014930	0.12182	0.658	0.01464	1.10957	0.7403
520	2.12321	2612.91	2.743	11017.13	0.0014429	0.12240	0.663	0.01529	1.10629	0.7352
540	2.05860	2628.52	2.803	10866.48	0.0014124	0.12312	0.668	0.01611	1.10294	0.7252
560	2.00211	2689.68	2.790	10758.12	0.0013705	0.12401	0.674	0.01680	1.10002	0.7211
580	1.94875	2751.86	2.776	10658.00	0.0013311	0.12502	0.680	0.01751	1.09727	0.7174
600	1.89827	2815.33	2.762	10565.15	0.0012940	0.12614	0.687	0.01824	1.09467	0.7142
650	1.78317	2978.19	2.725	10359.74	0.0012099	0.12937	0.706	0.02013	1.08875	0.7075
700	1.68164	3145.69	2.688	10185.06	0.0011366	0.13308	0.726	0.02213	1.08355	0.7024
800	1.51050	3490.02	2.618	9902.61	0.0010149	0.14153	0.772	0.02645	1.07483	0.6955
1000	1.25645	4189.26	2.510	9507.17	0.0008384	0.16045	0.873	0.03636	1.06197	0.6881
2000	0.68477	7995.96	2.174	8714.79	0.0004545	0.27727	1.409	0.11142	1.03344	0.6648
3000	0.47076	12497.45	1.916	8458.75	0.0003126	0.39265	1.910	0.21347	1.02291	0.6843
4000	0.35856	17518.50	1.734	8334.31	0.0002383	0.51353	2.373	0.34303	1.01741	0.6946
5000	0.28910	24076.54	1.516	8249.85	0.0001928	0.69385	2.807	0.51696	1.01402	0.6761

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

8500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 49.152	0.16806	8761.82	106.8939	-100.803	163.712	1.40916	1.450	1.785	7069
50	0.16835	8725.29	106.7639	-99.742	165.235	1.43988	1.461	1.804	7064
52	0.16905	8638.32	106.4054	-97.190	168.887	1.51149	1.487	1.847	7052
54	0.16976	8550.28	105.9813	-94.570	172.623	1.58198	1.510	1.888	7039
56	0.17048	8461.33	105.4999	-91.886	176.440	1.65139	1.532	1.929	7024
58	0.17121	8371.62	104.9683	-89.138	180.337	1.71976	1.553	1.968	7009
60	0.17195	8281.30	104.3923	-86.330	184.310	1.78710	1.573	2.005	6994
62	0.17270	8190.54	103.7772	-83.465	188.356	1.85345	1.591	2.042	6977
64	0.17346	8099.46	103.1273	-80.544	192.475	1.91882	1.608	2.077	6960
66	0.17423	8008.24	102.4462	-77.570	196.663	1.98326	1.625	2.111	6943
68	0.17501	7917.00	101.7373	-74.546	200.918	2.04677	1.640	2.144	6925
70	0.17580	7825.89	101.0032	-71.474	205.237	2.10937	1.652	2.175	6907
75	0.17783	7599.63	99.0728	-63.608	216.295	2.26192	1.681	2.248	6862
80	0.17993	7377.20	97.0288	-55.484	227.717	2.40933	1.708	2.321	6813
85	0.18209	7160.63	94.8928	-47.302	239.303	2.54966	1.746	2.402	6756
90	0.18432	6951.80	92.6814	-38.616	251.501	2.68908	1.776	2.476	6700
95	0.18662	6752.45	90.4087	-29.678	264.056	2.82482	1.804	2.545	6644
100	0.18898	6564.09	88.0876	-20.394	277.061	2.95826	1.829	2.611	6588
105	0.19141	6388.00	85.7311	-11.013	290.263	3.08707	1.850	2.670	6535
110	0.19390	6225.18	83.3524	-1.437	303.755	3.21259	1.872	2.727	6481
115	0.19644	6076.28	80.9660	8.332	317.529	3.33504	1.896	2.783	6427
120	0.19915	6023.31	79.0701	18.321	331.773	3.45625	1.923	2.837	6417
125	0.20177	5893.40	76.7744	28.516	346.101	3.57322	1.953	2.896	6362
130	0.20444	5803.05	74.5107	38.930	360.719	3.68789	1.987	2.950	6317
140	0.20989	5632.91	70.1684	60.447	390.805	3.91079	2.064	3.063	6222
150	0.21545	5447.19	66.0592	82.938	422.044	4.12627	2.154	3.186	6111
160	0.22114	5293.25	62.2590	106.473	454.533	4.33590	2.252	3.313	6006
170	0.22695	5158.19	58.7250	131.094	488.312	4.54065	2.355	3.439	5907
180	0.23287	5039.53	55.4387	156.795	523.319	4.74070	2.460	3.562	5814
190	0.23887	4944.12	52.4040	184.153	560.129	4.93960	2.582	3.698	5727
200	0.24495	4860.12	49.6184	212.051	597.596	5.13163	2.680	3.806	5654
220	0.25731	4759.00	44.8126	270.512	675.503	5.50278	2.850	3.988	5555
240	0.26990	4678.44	40.7589	331.883	756.704	5.85578	2.978	4.127	5481
260	0.28270	4636.01	37.2852	395.211	840.177	6.18997	3.062	4.216	5438
280	0.29560	4628.43	34.2584	459.631	924.889	6.50376	3.104	4.253	5420
300	0.30856	4644.14	31.6329	524.291	1009.953	6.79732	3.114	4.254	5421
320	0.32154	4673.71	29.3548	588.663	1094.756	7.07107	3.100	4.229	5435
340	0.33451	4716.08	27.3690	652.346	1178.859	7.32566	3.069	4.188	5460
360	0.34750	4766.44	25.6188	715.106	1262.060	7.56352	3.029	4.137	5492
380	0.36048	4823.66	24.0714	776.821	1344.205	7.78561	2.984	4.082	5529
400	0.37344	4885.66	22.6992	837.457	1425.240	7.99352	2.939	4.028	5570
420	0.38639	4953.97	21.4709	897.049	1505.221	8.18863	2.895	3.976	5614
440	0.39932	5024.22	20.3710	955.675	1584.196	8.37236	2.855	3.928	5659
460	0.41224	5099.25	19.3743	1013.415	1662.273	8.54592	2.820	3.885	5705
480	0.42514	5180.23	18.4667	1070.367	1739.532	8.71011	2.788	3.846	5753
500	0.43802	5266.66	17.6343	1126.621	1816.046	8.86643	2.761	3.810	5802
520	0.45085	5356.58	16.8667	1182.262	1891.891	9.01530	2.738	3.778	5851
540	0.46472	5448.03	16.2820	1231.243	1962.697	9.14347	2.665	3.716	5932
560	0.47761	5540.92	15.6429	1284.921	2036.671	9.27749	2.645	3.690	5984
580	0.49048	5634.90	15.0526	1338.215	2110.216	9.40639	2.628	3.667	6035
600	0.50332	5729.78	14.5058	1391.156	2183.366	9.53045	2.613	3.647	6087
650	0.53531	5970.15	13.3008	1522.031	2364.596	9.82066	2.585	3.607	6213
700	0.56717	6213.87	12.2842	1651.500	2544.207	10.08733	2.566	3.578	6336
800	0.63056	6707.83	10.6640	1907.562	2900.043	10.56284	2.546	3.544	6578
1000	0.75648	7710.54	8.4573	2414.576	3605.258	11.34928	2.531	3.514	7042
2000	1.38145	12846.99	4.2027	4978.115	7152.483	13.80160	2.662	3.634	9013
3000	2.00502	18077.02	2.8069	7767.818	10925.234	15.31792	2.933	3.907	10563
4000	2.63146	23345.72	2.1087	10832.942	14974.779	16.67682	3.194	4.174	11889
5000	3.26184	28633.41	1.6890	14227.354	19361.392	18.48874	3.623	4.633	13024

* TWO-PHASE BOUNDRY

8500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 49.152	5.95039	870.70	12.390	52136.25	0.0020503	0.12443	4.209	0.01171	1.31702	2.1738
50	5.94002	875.80	12.300	51828.43	0.0020599	0.12519	4.028	0.01168	1.31642	2.0898
52	5.91547	887.19	12.099	51099.71	0.0020823	0.12674	3.655	0.01160	1.31499	1.9178
54	5.89076	897.45	11.916	50367.61	0.0021042	0.12798	3.342	0.01150	1.31355	1.7750
56	5.86589	907.36	11.738	49633.23	0.0021256	0.12843	3.077	0.01135	1.31211	1.6634
58	5.84088	916.62	11.569	48897.65	0.0021467	0.12868	2.851	0.01120	1.31065	1.5693
60	5.81574	925.02	11.413	48161.90	0.0021675	0.12877	2.656	0.01104	1.30920	1.4888
62	5.79046	933.02	11.262	47427.00	0.0021881	0.12876	2.487	0.01089	1.30773	1.4198
64	5.76506	940.27	11.121	46693.90	0.0022086	0.12863	2.340	0.01074	1.30626	1.3601
66	5.73953	947.18	10.985	45963.55	0.0022289	0.12840	2.211	0.01060	1.30478	1.3086
68	5.71389	953.30	10.859	45236.87	0.0022490	0.12807	2.097	0.01045	1.30330	1.2635
70	5.68813	958.46	10.746	44514.74	0.0022690	0.12767	1.995	0.01032	1.30181	1.2233
75	5.62327	969.67	10.482	42734.78	0.0023183	0.12639	1.786	0.01000	1.29806	1.1433
80	5.55779	980.57	10.218	41000.95	0.0023665	0.12483	1.624	0.00968	1.29429	1.0865
85	5.49177	995.58	9.896	39324.54	0.0024131	0.12312	1.495	0.00933	1.29049	1.0503
90	5.42530	1007.54	9.617	37715.64	0.0024574	0.12134	1.392	0.00903	1.28668	1.0222
95	5.35849	1018.67	9.354	36182.93	0.0024987	0.11953	1.306	0.00876	1.28285	1.0014
100	5.29146	1029.48	9.101	34733.59	0.0025361	0.11773	1.235	0.00852	1.27901	0.9860
105	5.22434	1039.24	8.870	33373.12	0.0025689	0.11597	1.175	0.00832	1.27518	0.9734
110	5.15731	1050.28	8.633	32105.15	0.0025962	0.11465	1.123	0.00815	1.27136	0.9614
115	5.09051	1063.06	8.388	30931.32	0.0026176	0.11351	1.078	0.00801	1.26756	0.9513
120	5.02141	1085.30	8.191	30245.48	0.0026143	0.11233	1.037	0.00788	1.26364	0.9432
125	4.95607	1101.62	7.931	29208.12	0.0026285	0.11132	1.003	0.00776	1.25994	0.9392
130	4.89131	1123.62	7.667	28384.49	0.0026251	0.11036	0.972	0.00765	1.25628	0.9355
140	4.76444	1171.34	7.134	26837.66	0.0026146	0.10868	0.920	0.00745	1.24912	0.9336
150	4.64152	1219.54	6.609	25263.27	0.0026128	0.10862	0.878	0.00734	1.24222	0.9268
160	4.52212	1273.61	6.114	23936.73	0.0026010	0.10939	0.842	0.00730	1.23553	0.9177
170	4.40619	1331.08	5.659	22727.94	0.0025838	0.11022	0.811	0.00727	1.22907	0.9113
180	4.29432	1390.64	5.248	21641.36	0.0025617	0.11280	0.693	0.00737	1.22285	0.7874
190	4.18636	1460.39	4.847	20697.87	0.0025319	0.11617	0.703	0.00750	1.21687	0.8054
200	4.08246	1521.80	4.535	19841.24	0.0025008	0.11893	0.709	0.00765	1.21113	0.8171
220	3.88644	1645.86	4.046	18495.53	0.0024229	0.12293	0.713	0.00793	1.20035	0.8330
240	3.70502	1755.20	3.695	17333.70	0.0023514	0.12534	0.710	0.00820	1.19043	0.8415
260	3.53729	1854.09	3.443	16398.88	0.0022736	0.12657	0.703	0.00849	1.18131	0.8427
280	3.38300	1943.89	3.262	15657.98	0.0021879	0.12696	0.694	0.00882	1.17296	0.8375
300	3.24087	2024.03	3.134	15051.07	0.0021017	0.12679	0.686	0.00920	1.16530	0.8288
320	3.11004	2094.09	3.045	14535.43	0.0020195	0.12626	0.679	0.00960	1.15829	0.8184
340	2.98943	2157.23	2.983	14098.37	0.0019413	0.12557	0.672	0.01003	1.15184	0.8074
360	2.87770	2215.00	2.939	13716.37	0.0018678	0.12484	0.668	0.01049	1.14590	0.7965
380	2.77408	2269.16	2.908	13381.21	0.0017989	0.12414	0.664	0.01096	1.14040	0.7861
400	2.67781	2321.59	2.885	13082.85	0.0017350	0.12358	0.662	0.01146	1.13531	0.7768
420	2.58803	2374.11	2.865	12821.03	0.0016747	0.12318	0.661	0.01197	1.13058	0.7683
440	2.50424	2426.31	2.849	12581.86	0.0016191	0.12295	0.662	0.01250	1.12617	0.7609
460	2.42575	2480.62	2.832	12369.51	0.0015663	0.12293	0.663	0.01304	1.12206	0.7543
480	2.35214	2537.62	2.816	12184.65	0.0015156	0.12309	0.665	0.01361	1.11820	0.7484
500	2.28302	2597.95	2.797	12023.89	0.0014666	0.12344	0.669	0.01419	1.11460	0.7430
520	2.21802	2661.03	2.777	11880.97	0.0014196	0.12397	0.673	0.01480	1.11121	0.7380
540	2.15684	2675.73	2.839	11723.27	0.0013889	0.12464	0.677	0.01559	1.10777	0.7272
560	2.09374	2736.60	2.824	11601.27	0.0013484	0.12549	0.683	0.01624	1.10476	0.7229
580	2.03862	2798.53	2.810	11488.54	0.0013102	0.12646	0.689	0.01692	1.10192	0.7191
600	1.98681	2861.80	2.794	11383.98	0.0012742	0.12755	0.695	0.01760	1.09923	0.7157
650	1.86807	3024.29	2.755	11152.65	0.0011926	0.13071	0.714	0.01940	1.09311	0.7088
700	1.76314	3191.56	2.715	10955.94	0.0011212	0.13439	0.734	0.02130	1.08773	0.7035
800	1.58589	3535.69	2.641	10637.90	0.0010025	0.14281	0.779	0.02541	1.07867	0.6962
1000	1.32191	4234.75	2.528	10192.61	0.0008298	0.16186	0.881	0.03485	1.06528	0.6885
2000	0.72387	8041.13	2.181	9299.61	0.0004519	0.27727	1.427	0.10540	1.03538	0.6733
3000	0.49850	12543.47	1.920	9011.38	0.0003115	0.39264	1.942	0.20159	1.02427	0.6955
4000	0.38002	17560.85	1.737	8871.78	0.0002377	0.51329	2.418	0.32360	1.01846	0.7077
5000	0.30658	24079.86	1.521	8778.30	0.0001924	0.69153	2.864	0.48685	1.01488	0.6908

* TWO-PHASE BOUNDRY

9000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 50.268	0.16386	9052.23	108.4229	-98.425	179.657	1.41803	1.462	1.798	7183
52	0.16744	8979.22	108.1099	-96.247	182.804	1.47958	1.484	1.836	7173
54	0.16812	8893.79	107.6878	-93.668	186.516	1.54962	1.503	1.876	7161
56	0.16881	8807.31	107.2090	-91.024	190.309	1.61857	1.530	1.916	7147
58	0.16951	8719.94	106.6805	-88.317	194.179	1.68649	1.552	1.955	7133
60	0.17022	8631.81	106.1085	-85.550	198.125	1.75338	1.572	1.991	7119
62	0.17093	8543.09	105.4982	-82.726	202.144	1.81926	1.590	2.027	7103
64	0.17166	8453.91	104.8540	-79.847	206.234	1.88418	1.608	2.062	7087
66	0.17240	8364.42	104.1797	-76.915	210.392	1.94816	1.625	2.096	7070
68	0.17314	8274.76	103.4784	-73.932	214.616	2.01121	1.640	2.128	7054
70	0.17389	8185.07	102.7531	-70.903	218.903	2.07335	1.653	2.158	7037
75	0.17582	7961.59	100.8493	-63.143	229.876	2.22473	1.682	2.230	6994
80	0.17781	7740.82	98.8383	-55.126	241.206	2.37095	1.710	2.301	6947
85	0.17986	7524.69	96.7410	-47.053	252.694	2.51008	1.749	2.382	6891
90	0.18197	7315.04	94.5733	-38.476	264.787	2.64831	1.780	2.455	6836
95	0.18414	7113.55	92.3476	-29.648	277.234	2.78288	1.808	2.523	6782
100	0.18637	6921.70	90.0753	-20.472	290.127	2.91517	1.834	2.588	6727
105	0.18866	6740.79	87.7670	-11.197	303.216	3.04288	1.856	2.647	6673
110	0.19100	6571.85	85.4340	-1.725	316.596	3.16736	1.879	2.705	6619
115	0.19340	6415.62	83.0879	7.946	330.261	3.28884	1.904	2.761	6565
120	0.19585	6272.53	80.7416	17.817	344.209	3.40755	1.932	2.818	6510
125	0.19834	6142.67	78.4089	27.895	358.436	3.52370	1.962	2.873	6456
130	0.20099	6109.59	76.7445	38.237	373.201	3.63954	1.996	2.933	6450
140	0.20614	5915.36	72.4165	59.590	403.131	3.86129	2.074	3.051	6349
150	0.21140	5764.39	68.3256	81.939	434.244	4.07589	2.164	3.169	6254
160	0.21674	5602.35	64.5009	105.339	466.554	4.28436	2.262	3.296	6149
170	0.22220	5464.94	60.9671	129.838	500.147	4.48798	2.366	3.423	6052
180	0.22775	5342.33	57.6763	155.438	534.998	4.68715	2.471	3.548	5961
190	0.23340	5237.11	54.5867	182.718	571.693	4.88542	2.594	3.684	5870
200	0.23911	5149.86	51.7380	210.550	609.033	5.07680	2.692	3.793	5798
220	0.25070	5018.56	46.7452	268.894	686.706	5.44684	2.861	3.976	5684
240	0.26252	4925.54	42.6346	330.162	767.671	5.79880	2.989	4.119	5608
260	0.27453	4872.41	39.0873	393.425	850.944	6.13220	3.072	4.210	5562
280	0.28667	4860.96	35.9832	457.838	935.595	6.44575	3.114	4.249	5543
300	0.29888	4867.92	33.2626	522.523	1020.618	6.73917	3.124	4.252	5540
320	0.31110	4890.98	30.8881	586.941	1105.403	7.01286	3.109	4.228	5551
340	0.32329	4925.68	28.8191	650.678	1189.452	7.26728	3.078	4.188	5572
360	0.33552	4971.29	26.9929	713.508	1272.669	7.50519	3.038	4.138	5601
380	0.34774	5023.86	25.3727	775.300	1354.830	7.72732	2.993	4.083	5635
400	0.35995	5082.33	23.9309	836.017	1435.891	7.93530	2.948	4.029	5673
420	0.37215	5144.56	22.6427	895.693	1515.896	8.13047	2.904	3.977	5713
440	0.38433	5212.47	21.4842	954.402	1594.909	8.31429	2.864	3.930	5756
460	0.39650	5283.40	20.4392	1012.226	1673.013	8.48790	2.828	3.887	5800
480	0.40865	5357.07	19.4888	1069.269	1750.315	8.65219	2.797	3.849	5844
500	0.42079	5437.04	18.6189	1125.620	1826.892	8.80864	2.769	3.815	5890
520	0.43290	5525.02	17.8190	1181.368	1902.826	8.95769	2.746	3.783	5938
540	0.44599	5618.55	17.2105	1230.226	1973.492	9.08541	2.671	3.720	6021
560	0.45816	5709.48	16.5363	1283.983	2047.535	9.21956	2.651	3.693	6071
580	0.47031	5801.63	15.9133	1337.355	2121.150	9.34858	2.633	3.670	6121
600	0.48243	5894.82	15.3359	1390.372	2194.368	9.47276	2.618	3.650	6170
650	0.51263	6131.40	14.0629	1521.429	2375.762	9.76343	2.590	3.610	6293
700	0.54271	6371.85	12.9884	1651.067	2555.525	10.03013	2.571	3.581	6413
800	0.60256	6860.33	11.2753	1907.428	2911.620	10.50598	2.550	3.547	6649
1000	0.72142	7854.61	8.9415	2414.903	3617.190	11.29282	2.534	3.515	7105
2000	1.31128	12966.55	4.4438	4979.457	7164.777	13.74545	2.664	3.634	9052
3000	1.90086	18183.99	2.9687	7769.493	10937.387	15.26171	2.934	3.907	10591
4000	2.49136	23445.17	2.2307	10834.437	14986.427	16.62048	3.194	4.173	11912
5000	3.08648	28727.91	1.7870	14225.165	19368.951	18.43151	3.616	4.624	13046

* TWO-PHASE BOUNDRY

9000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 50.268	5.99303	899.85	12.376	54250.30	0.0019986	0.12801	4.370	0.01188	1.31950	2.2102
52	5.97224	910.47	12.197	53626.01	0.0020160	0.12938	4.004	0.01180	1.31829	2.0448
54	5.94809	921.62	12.009	52901.03	0.0020356	0.13068	3.646	0.01171	1.31689	1.8845
56	5.92380	932.40	11.826	52172.79	0.0020549	0.13117	3.345	0.01156	1.31547	1.7590
58	5.89940	942.50	11.653	51442.36	0.0020738	0.13145	3.089	0.01140	1.31405	1.6534
60	5.87487	951.71	11.493	50710.78	0.0020924	0.13157	2.869	0.01125	1.31263	1.5633
62	5.85023	960.50	11.338	49979.02	0.0021108	0.13158	2.679	0.01109	1.31120	1.4861
64	5.82548	968.50	11.194	49248.06	0.0021291	0.13147	2.514	0.01094	1.30976	1.4194
66	5.80062	976.13	11.055	48518.82	0.0021472	0.13124	2.369	0.01080	1.30832	1.3619
68	5.77566	982.94	10.926	47792.20	0.0021652	0.13093	2.241	0.01065	1.30687	1.3116
70	5.75060	988.74	10.811	47069.06	0.0021830	0.13054	2.128	0.01052	1.30542	1.2668
75	5.68754	1001.42	10.543	45281.89	0.0022271	0.12927	1.896	0.01019	1.30177	1.1776
80	5.62395	1013.70	10.275	43533.94	0.0022704	0.12771	1.717	0.00987	1.29810	1.1141
85	5.55988	1030.15	9.950	41836.37	0.0023124	0.12599	1.576	0.00951	1.29441	1.0730
90	5.49541	1043.33	9.669	40199.15	0.0023526	0.12419	1.463	0.00921	1.29070	1.0410
95	5.43062	1055.50	9.405	38631.00	0.0023905	0.12236	1.370	0.00893	1.28698	1.0173
100	5.36563	1067.19	9.152	37139.26	0.0024253	0.12054	1.293	0.00868	1.28326	0.9996
105	5.30053	1077.62	8.920	35729.76	0.0024564	0.11877	1.228	0.00846	1.27953	0.9854
110	5.23547	1089.21	8.683	34406.70	0.0024831	0.11742	1.172	0.00829	1.27582	0.9722
115	5.17058	1102.44	8.439	33172.47	0.0025047	0.11627	1.124	0.00814	1.27212	0.9613
120	5.10601	1117.63	8.186	32027.62	0.0025210	0.11515	1.082	0.00800	1.26844	0.9535
125	5.04190	1134.94	7.926	30970.75	0.0025317	0.11409	1.046	0.00788	1.26480	0.9480
130	4.97833	1161.88	7.728	30397.23	0.0025247	0.11300	1.011	0.00774	1.26103	0.9452
140	4.85112	1208.93	7.197	28696.12	0.0025236	0.11125	0.956	0.00752	1.25401	0.9441
150	4.73043	1264.75	6.675	27268.05	0.0025057	0.11114	0.911	0.00741	1.24721	0.9354
160	4.61375	1320.78	6.180	25847.88	0.0024954	0.11190	0.874	0.00736	1.24066	0.9265
170	4.50045	1380.94	5.726	24594.68	0.0024789	0.11272	0.842	0.00732	1.23432	0.9204
180	4.39076	1442.89	5.315	23456.89	0.0024588	0.11560	0.712	0.00742	1.22821	0.7864
190	4.28448	1514.54	4.912	22438.33	0.0024327	0.11901	0.722	0.00754	1.22230	0.8052
200	4.18225	1578.78	4.595	21538.01	0.0024022	0.12179	0.729	0.00768	1.21664	0.8172
220	3.98877	1702.77	4.096	20017.88	0.0023352	0.12576	0.733	0.00793	1.20597	0.8340
240	3.80919	1812.62	3.745	18762.33	0.0022724	0.12810	0.729	0.00816	1.19612	0.8436
260	3.64259	1911.58	3.493	17748.18	0.0022023	0.12925	0.721	0.00843	1.18703	0.8455
280	3.48829	2002.47	3.312	16956.44	0.0021221	0.12953	0.712	0.00874	1.17865	0.8408
300	3.34586	2082.12	3.182	16287.37	0.0020422	0.12925	0.703	0.00908	1.17096	0.8324
320	3.21442	2152.04	3.090	15721.66	0.0019647	0.12862	0.695	0.00946	1.16388	0.8220
340	3.09324	2214.13	3.026	15236.33	0.0018915	0.12782	0.688	0.00987	1.15739	0.8109
360	2.98046	2271.36	2.981	14816.72	0.0018218	0.12698	0.682	0.01030	1.15136	0.7999
380	2.87570	2324.93	2.948	14447.11	0.0017562	0.12620	0.678	0.01075	1.14579	0.7893
400	2.77817	2377.17	2.922	14119.59	0.0016949	0.12555	0.675	0.01122	1.14062	0.7796
420	2.68711	2428.35	2.902	13824.02	0.0016379	0.12506	0.673	0.01170	1.13580	0.7710
440	2.60193	2480.62	2.883	13562.50	0.0015841	0.12476	0.673	0.01220	1.13131	0.7632
460	2.52208	2534.08	2.866	13325.16	0.0015339	0.12467	0.674	0.01272	1.12711	0.7565
480	2.44705	2588.95	2.848	13109.05	0.0014867	0.12476	0.676	0.01325	1.12317	0.7507
500	2.37648	2647.27	2.829	12920.99	0.0014410	0.12506	0.679	0.01380	1.11948	0.7454
520	2.30998	2709.76	2.809	12762.69	0.0013962	0.12553	0.682	0.01436	1.11600	0.7405
540	2.24221	2722.80	2.874	12597.95	0.0013661	0.12616	0.687	0.01513	1.11247	0.7291
560	2.18264	2783.38	2.858	12461.72	0.0013270	0.12696	0.692	0.01575	1.10937	0.7247
580	2.12627	2845.08	2.842	12335.81	0.0012900	0.12790	0.698	0.01639	1.10645	0.7208
600	2.07284	2908.15	2.826	12219.02	0.0012551	0.12895	0.704	0.01704	1.10368	0.7173
650	1.95071	3070.29	2.784	11960.58	0.0011758	0.13205	0.722	0.01875	1.09737	0.7101
700	1.84260	3237.36	2.742	11740.79	0.0011063	0.13569	0.742	0.02056	1.09180	0.7046
800	1.65950	3581.31	2.664	11385.40	0.0009903	0.14409	0.787	0.02448	1.08243	0.6970
1000	1.38615	4280.24	2.545	10887.70	0.0008212	0.16326	0.889	0.03351	1.06853	0.6889
2000	0.76261	8086.28	2.187	9888.47	0.0004494	0.27727	1.445	0.10005	1.03730	0.6818
3000	0.52608	12589.34	1.923	9566.18	0.0003103	0.39264	1.973	0.19103	1.02562	0.7069
4000	0.40139	17603.29	1.740	9410.60	0.0002370	0.51306	2.463	0.30633	1.01951	0.7212
5000	0.32399	24086.57	1.525	9307.67	0.0001920	0.68940	2.923	0.46013	1.01573	0.7059

* TWO-PHASE BOUNDRY

9500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 51.366	0.16572	9339.87	109.9348	-96.031	195.490	1.42663	1.474	1.812	7293
52	0.16592	9313.89	109.8136	-95.239	196.642	1.44894	1.482	1.825	7290
54	0.16658	9231.06	109.3902	-92.699	200.332	1.51856	1.505	1.865	7279
56	0.16724	9147.05	108.9104	-90.093	204.102	1.58711	1.528	1.905	7267
58	0.16791	9062.02	108.3816	-87.425	207.950	1.65461	1.550	1.943	7253
60	0.16859	8976.11	107.8101	-84.696	211.872	1.72110	1.570	1.979	7240
62	0.16927	8889.46	107.2010	-81.910	215.866	1.78658	1.590	2.015	7225
64	0.16997	8802.22	106.5590	-79.070	219.930	1.85109	1.607	2.049	7210
66	0.17067	8714.52	105.8878	-76.176	224.061	1.91465	1.624	2.082	7194
68	0.17138	8626.51	105.1907	-73.232	228.258	1.97729	1.640	2.114	7178
70	0.17211	8538.32	104.4706	-70.241	232.516	2.03901	1.653	2.144	7162
75	0.17394	8317.90	102.5844	-62.580	243.413	2.18934	1.683	2.214	7121
80	0.17584	8099.17	100.5974	-54.662	254.661	2.33450	1.712	2.284	7076
85	0.17778	7884.02	98.5301	-46.688	266.060	2.47256	1.751	2.364	7021
90	0.17979	7674.21	96.3975	-38.212	278.060	2.60972	1.783	2.435	6968
95	0.18184	7471.39	94.2110	-29.483	290.407	2.74322	1.812	2.503	6915
100	0.18396	7277.02	91.9806	-20.407	303.199	2.87447	1.839	2.568	6861
105	0.18612	7092.39	89.7152	-11.230	316.184	3.00117	1.862	2.626	6808
110	0.18834	6918.58	87.4239	-1.853	329.460	3.12467	1.886	2.684	6754
115	0.19060	6756.39	85.1165	7.726	343.023	3.24525	1.912	2.741	6700
120	0.19291	6606.36	82.8034	17.510	356.872	3.36312	1.940	2.798	6644
125	0.19527	6468.72	80.4961	27.506	371.007	3.47851	1.971	2.855	6588
130	0.19766	6343.37	78.2068	37.719	385.426	3.59161	2.005	2.912	6533
140	0.20269	6214.20	74.5369	58.927	415.489	3.81439	2.084	3.036	6476
150	0.20767	6042.38	70.4597	81.137	446.457	4.02800	2.174	3.158	6377
160	0.21273	5906.45	66.6429	104.415	478.641	4.23567	2.273	3.281	6285
170	0.21788	5757.95	63.0809	128.800	512.084	4.43838	2.377	3.410	6186
180	0.22313	5638.32	59.7800	154.306	546.826	4.63692	2.482	3.534	6098
190	0.22844	5531.28	56.6990	181.502	583.365	4.83435	2.605	3.672	6010
200	0.23382	5432.73	53.7993	209.272	620.589	5.02514	2.704	3.782	5934
220	0.24474	5283.05	48.6396	267.523	698.061	5.39422	2.873	3.966	5812
240	0.25587	5176.80	44.3912	328.687	778.792	5.74516	3.000	4.107	5730
260	0.26718	5117.45	40.7850	391.882	861.897	6.07789	3.083	4.200	5683
280	0.27864	5087.89	37.6455	456.262	946.437	6.39104	3.125	4.246	5659
300	0.29015	5093.33	34.8572	520.956	1031.372	6.68415	3.134	4.250	5656
320	0.30169	5109.12	32.3983	585.412	1116.130	6.95776	3.119	4.227	5664
340	0.31322	5136.80	30.2398	649.206	1200.207	7.21227	3.088	4.188	5681
360	0.32478	5171.92	28.3362	712.096	1283.422	7.45017	3.048	4.139	5705
380	0.33631	5223.76	26.6511	773.957	1365.582	7.67230	3.002	4.084	5738
400	0.34786	5277.87	25.1436	834.751	1446.684	7.88039	2.957	4.030	5773
420	0.35938	5337.34	23.7942	894.506	1526.714	8.07562	2.913	3.978	5811
440	0.37089	5399.84	22.5814	953.296	1605.753	8.25950	2.873	3.931	5851
460	0.38239	5467.08	21.4853	1011.200	1683.883	8.43317	2.837	3.888	5892
480	0.39388	5537.32	20.4920	1068.323	1761.208	8.59750	2.805	3.851	5934
500	0.40535	5613.23	19.5846	1124.759	1837.825	8.75404	2.778	3.817	5978
520	0.41681	5692.92	18.7494	1180.598	1913.822	8.90321	2.754	3.787	6022
540	0.42921	5790.05	18.1329	1229.316	1984.356	9.03052	2.677	3.723	6108
560	0.44074	5878.98	17.4241	1283.147	2058.463	9.16479	2.656	3.697	6156
580	0.45224	5969.27	16.7687	1336.592	2132.142	9.29393	2.639	3.673	6205
600	0.46372	6060.72	16.1612	1389.681	2205.425	9.41821	2.624	3.653	6253
650	0.49232	6293.42	14.8210	1520.911	2386.973	9.70913	2.595	3.613	6372
700	0.52080	6530.50	13.6892	1650.713	2566.879	9.97604	2.575	3.584	6489
800	0.57747	7013.34	11.8837	1907.363	2923.221	10.45222	2.554	3.549	6719
1000	0.69002	7998.90	9.4235	2415.294	3629.137	11.23945	2.538	3.516	7166
2000	1.24844	13085.26	4.6839	4980.876	7177.062	13.69237	2.666	3.634	9090
3000	1.80670	18289.37	3.1300	7771.260	10949.510	15.20857	2.935	3.907	10619
4000	2.36592	23542.53	2.3523	10836.060	14998.057	16.56720	3.194	4.171	11935
5000	2.92949	28819.97	1.8847	14223.412	19376.798	18.37741	3.610	4.616	13066

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

9500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DV)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 51.366	6.03437	928.72	12.363	56360.29	0.0019506	0.13149	4.533	0.01203	1.32191	2.2484
52	6.02690	932.77	12.298	56133.90	0.0019563	0.13198	4.387	0.01200	1.32148	2.1838
54	6.00326	944.81	12.105	55416.46	0.0019740	0.13334	3.980	0.01191	1.32010	2.0039
56	5.97951	956.46	11.917	54694.84	0.0019912	0.13386	3.637	0.01175	1.31872	1.8631
58	5.95564	967.41	11.739	53970.11	0.0020082	0.13417	3.347	0.01160	1.31733	1.7448
60	5.93167	977.43	11.575	53243.28	0.0020249	0.13431	3.099	0.01144	1.31593	1.6440
62	5.90760	987.00	11.416	52515.34	0.0020413	0.13434	2.886	0.01129	1.31453	1.5579
64	5.88343	995.76	11.269	51787.24	0.0020576	0.13424	2.700	0.01114	1.31313	1.4836
66	5.85917	1004.12	11.126	51059.90	0.0020738	0.13403	2.538	0.01099	1.31172	1.4195
68	5.83483	1011.63	10.994	50334.22	0.0020898	0.13373	2.396	0.01084	1.31030	1.3635
70	5.81040	1018.07	10.877	49611.04	0.0021058	0.13335	2.270	0.01070	1.30889	1.3138
75	5.74897	1032.26	10.604	47819.42	0.0021452	0.13208	2.012	0.01037	1.30533	1.2146
80	5.68709	1045.95	10.332	46060.70	0.0021840	0.13052	1.815	0.01005	1.30175	1.1438
85	5.62479	1063.90	10.003	44345.92	0.0022219	0.12879	1.661	0.00969	1.29815	1.0974
90	5.56213	1078.35	9.720	42684.99	0.0022583	0.12697	1.537	0.00937	1.29454	1.0613
95	5.49920	1091.63	9.454	41086.65	0.0022930	0.12513	1.436	0.00909	1.29092	1.0344
100	5.43607	1104.30	9.200	39558.37	0.0023252	0.12329	1.353	0.00883	1.28729	1.0142
105	5.37283	1115.49	8.968	38106.27	0.0023543	0.12148	1.283	0.00861	1.28367	0.9981
110	5.30961	1127.77	8.731	36734.96	0.0023799	0.12012	1.223	0.00843	1.28005	0.9835
115	5.24652	1141.60	8.487	35447.50	0.0024012	0.11895	1.171	0.00827	1.27645	0.9717
120	5.18367	1157.32	8.234	34245.23	0.0024180	0.11781	1.127	0.00812	1.27286	0.9633
125	5.12122	1175.09	7.974	33127.74	0.0024299	0.11672	1.087	0.00798	1.26931	0.9575
130	5.05928	1195.04	7.708	32092.89	0.0024369	0.11570	1.053	0.00785	1.26579	0.9537
140	4.93353	1248.80	7.250	30658.53	0.0024312	0.11375	0.992	0.00759	1.25867	0.9533
150	4.81535	1304.25	6.730	29096.17	0.0024216	0.11361	0.945	0.00747	1.25199	0.9455
160	4.70075	1366.96	6.237	27764.72	0.0024003	0.11435	0.905	0.00741	1.24554	0.9353
170	4.58966	1428.39	5.783	26427.05	0.0023870	0.11516	0.872	0.00736	1.23931	0.9296
180	4.48166	1493.79	5.374	25269.06	0.0023657	0.11831	0.730	0.00747	1.23328	0.7855
190	4.37747	1568.25	4.972	24213.03	0.0023417	0.12176	0.741	0.00757	1.22747	0.8050
200	4.27685	1633.49	4.653	23234.99	0.0023154	0.12456	0.748	0.00770	1.22188	0.8177
220	4.08592	1760.19	4.143	21586.12	0.0022533	0.12853	0.752	0.00793	1.21132	0.8351
240	3.90830	1872.08	3.786	20232.49	0.0021941	0.13081	0.747	0.00815	1.20155	0.8449
260	3.74274	1972.37	3.535	19153.25	0.0021294	0.13187	0.739	0.00839	1.19249	0.8474
280	3.58880	2059.43	3.357	18259.44	0.0020617	0.13205	0.729	0.00867	1.18410	0.8440
300	3.44649	2140.29	3.227	17554.13	0.0019857	0.13167	0.719	0.00899	1.17639	0.8358
320	3.31465	2209.65	3.134	16934.94	0.0019131	0.13093	0.710	0.00934	1.16927	0.8254
340	3.19263	2271.13	3.067	16399.89	0.0018439	0.13004	0.702	0.00973	1.16271	0.8143
360	3.07905	2326.16	3.020	15924.62	0.0017794	0.12910	0.696	0.01013	1.15663	0.8033
380	2.97341	2380.32	2.986	15532.36	0.0017158	0.12823	0.691	0.01056	1.15099	0.7924
400	2.87473	2432.01	2.958	15172.46	0.0016572	0.12750	0.688	0.01100	1.14574	0.7825
420	2.78254	2483.18	2.936	14851.33	0.0016022	0.12693	0.686	0.01147	1.14085	0.7735
440	2.69618	2534.38	2.916	14558.94	0.0015510	0.12656	0.685	0.01194	1.13628	0.7657
460	2.61511	2587.39	2.896	14297.05	0.0015028	0.12639	0.685	0.01243	1.13200	0.7587
480	2.53886	2641.64	2.878	14058.50	0.0014576	0.12643	0.687	0.01293	1.12799	0.7527
500	2.46701	2698.96	2.858	13847.89	0.0014143	0.12667	0.689	0.01345	1.12422	0.7474
520	2.39919	2758.93	2.837	13658.40	0.0013727	0.12709	0.692	0.01399	1.12066	0.7426
540	2.32987	2769.69	2.907	13490.05	0.0013442	0.12767	0.696	0.01472	1.11704	0.7309
560	2.26894	2830.01	2.891	13339.03	0.0013062	0.12844	0.701	0.01531	1.11386	0.7264
580	2.21123	2891.48	2.874	13199.42	0.0012704	0.12933	0.706	0.01592	1.11086	0.7224
600	2.15649	2954.38	2.857	13069.88	0.0012365	0.13036	0.712	0.01655	1.10801	0.7188
650	2.03120	3116.19	2.812	12783.18	0.0011594	0.13339	0.730	0.01818	1.10152	0.7114
700	1.92011	3283.06	2.768	12539.29	0.0010917	0.13699	0.749	0.01991	1.09579	0.7057
800	1.73168	3626.87	2.687	12144.87	0.0009785	0.14537	0.794	0.02365	1.08611	0.6978
1000	1.44923	4325.72	2.562	11592.28	0.0008129	0.16465	0.897	0.03231	1.07172	0.6893
2000	0.80100	8131.43	2.193	10481.28	0.0004469	0.27727	1.463	0.09526	1.03920	0.6904
3000	0.55349	12635.08	1.927	10123.06	0.0003092	0.39263	2.006	0.18158	1.02697	0.7185
4000	0.42267	17645.79	1.742	9950.67	0.0002364	0.51285	2.510	0.29087	1.02055	0.7351
5000	0.34136	24096.17	1.529	9837.89	0.0001916	0.68744	2.984	0.43624	1.01657	0.7215

* TWO-PHASE BOUNDRY

10000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 52.446	0.15462	9624.98	111.4301	-93.622	211.215	1.43497	1.485	1.824	7402
54	0.16511	9562.51	111.0923	-91.670	214.073	1.48869	1.503	1.855	7394
56	0.16575	9480.98	110.6084	-89.101	217.823	1.55686	1.527	1.894	7382
58	0.16639	9398.29	110.0761	-86.468	221.649	1.62400	1.549	1.932	7370
60	0.16705	9314.60	109.5018	-83.776	225.550	1.69012	1.569	1.968	7357
62	0.16771	9230.05	108.8909	-81.026	229.522	1.75523	1.589	2.003	7343
64	0.16837	9144.77	108.2479	-78.221	233.562	1.81937	1.607	2.037	7329
66	0.16905	9058.91	107.5766	-75.363	237.670	1.88257	1.624	2.070	7314
68	0.16973	8972.60	106.8805	-72.455	241.842	1.94484	1.640	2.101	7299
70	0.17042	8885.97	106.1624	-69.501	246.074	2.00618	1.653	2.131	7284
75	0.17218	8668.84	104.2857	-61.930	256.902	2.15557	1.684	2.200	7244
80	0.17399	8452.47	102.3146	-54.103	268.076	2.29978	1.714	2.269	7201
85	0.17585	8238.70	100.2694	-46.222	279.396	2.43687	1.753	2.347	7148
90	0.17775	8029.27	98.1643	-37.838	291.311	2.57306	1.786	2.418	7096
95	0.17971	7825.76	96.0099	-29.202	303.569	2.70560	1.816	2.485	7044
100	0.18171	7629.65	93.8149	-20.217	316.268	2.83589	1.844	2.549	6991
105	0.18377	7442.21	91.5869	-11.130	329.158	2.96166	1.867	2.607	6939
110	0.18587	7264.53	89.3334	-1.841	342.338	3.08428	1.892	2.665	6885
115	0.18802	7097.49	87.0622	7.653	355.806	3.20400	1.918	2.722	6831
120	0.19020	6941.71	84.7820	17.356	369.563	3.32109	1.948	2.780	6775
125	0.19243	6797.54	82.5019	27.275	383.609	3.43576	1.980	2.838	6719
130	0.19470	6665.03	80.2323	37.417	397.945	3.54820	2.015	2.896	6662
140	0.19951	6515.07	76.5952	58.437	427.881	3.76993	2.093	3.022	6602
150	0.20424	6325.31	72.4699	80.518	458.711	3.98258	2.184	3.146	6497
160	0.20906	6188.39	68.6352	103.683	490.798	4.18963	2.283	3.269	6407
170	0.21394	6055.81	65.0813	127.964	524.120	4.39160	2.388	3.395	6316
180	0.21890	5919.61	61.7692	153.370	558.710	4.58928	2.493	3.522	6225
190	0.22393	5811.77	58.6912	180.486	595.137	4.78611	2.616	3.662	6139
200	0.22902	5721.42	55.7897	208.197	632.287	4.97651	2.715	3.772	6068
220	0.23934	5559.25	50.5166	266.365	709.561	5.34464	2.885	3.957	5943
240	0.24983	5419.77	46.0596	327.451	790.070	5.69463	3.012	4.098	5845
260	0.26053	5345.80	42.4238	390.565	873.001	6.02666	3.094	4.194	5794
280	0.27135	5300.99	39.2139	454.892	957.365	6.33915	3.135	4.242	5765
300	0.28229	5309.82	36.3922	519.588	1042.312	6.63231	3.144	4.248	5765
320	0.29324	5325.08	33.8628	584.075	1127.068	6.90591	3.129	4.226	5772
340	0.30412	5350.17	31.6346	647.911	1211.066	7.16017	3.098	4.187	5788
360	0.31507	5381.32	29.6555	710.858	1294.281	7.39808	3.057	4.139	5809
380	0.32601	5419.50	27.9011	772.784	1376.475	7.62030	3.011	4.086	5836
400	0.33693	5473.22	26.3371	833.647	1457.558	7.82834	2.966	4.032	5871
420	0.34788	5528.25	24.9279	893.479	1537.649	8.02372	2.922	3.980	5906
440	0.35878	5588.80	23.6611	952.346	1616.714	8.20766	2.881	3.932	5944
460	0.36968	5651.46	22.5158	1010.327	1694.871	8.38140	2.845	3.889	5983
480	0.38056	5717.83	21.4759	1067.527	1772.220	8.54578	2.813	3.852	6022
500	0.39143	5786.56	20.5297	1124.039	1848.861	8.70236	2.786	3.819	6062
520	0.40229	5863.19	19.6624	1179.959	1924.898	8.85161	2.762	3.790	6105
540	0.41408	5962.45	19.0491	1228.506	1995.279	8.97848	2.682	3.726	6194
560	0.42503	6049.35	18.3061	1282.407	2069.447	9.11285	2.662	3.700	6241
580	0.43595	6137.75	17.6189	1335.921	2143.186	9.24209	2.644	3.676	6288
600	0.44685	6227.43	16.9816	1389.078	2216.528	9.36648	2.629	3.656	6334
650	0.47402	6456.15	15.5750	1520.475	2398.222	9.65764	2.600	3.616	6450
700	0.50106	6689.78	14.3863	1650.433	2578.265	9.92475	2.580	3.587	6564
800	0.55488	7166.83	12.4892	1907.366	2934.845	10.40125	2.558	3.551	6789
1000	0.66173	8143.41	9.9033	2415.746	3641.095	11.18885	2.541	3.518	7227
2000	1.19184	13203.15	4.9231	4982.372	7189.337	13.64204	2.668	3.634	9127
3000	1.72190	18393.19	3.2907	7773.118	10961.605	15.15817	2.937	3.906	10647
4000	2.25295	23637.84	2.4737	10837.807	15009.669	16.51667	3.194	4.170	11957
5000	2.78812	28909.62	1.9823	14222.053	19384.891	18.32612	3.604	4.609	13086

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

10000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 52.446	6.07450	957.10	12.356	58466.93	0.0019059	0.13487	4.699	0.01217	1.32426	2.2876
54	6.05648	967.07	12.202	57915.11	0.0019182	0.13594	4.345	0.01210	1.32320	2.1344
56	6.03319	979.59	12.009	57200.53	0.0019337	0.13650	3.956	0.01194	1.32185	1.9764
58	6.00981	991.39	11.827	56481.95	0.0019489	0.13684	3.628	0.01178	1.32048	1.8441
60	5.98634	1002.22	11.658	55760.39	0.0019638	0.13700	3.348	0.01163	1.31911	1.7316
62	5.96279	1012.58	11.496	55036.84	0.0019785	0.13705	3.108	0.01147	1.31774	1.6356
64	5.93915	1022.09	11.345	54312.23	0.0019931	0.13697	2.900	0.01132	1.31637	1.5528
66	5.91544	1031.19	11.199	53587.48	0.0020075	0.13677	2.719	0.01117	1.31499	1.4817
68	5.89165	1039.40	11.064	52863.48	0.0020218	0.13648	2.561	0.01102	1.31360	1.4194
70	5.86780	1046.50	10.943	52141.07	0.0020361	0.13610	2.421	0.01089	1.31222	1.3643
75	5.80785	1062.22	10.665	50347.34	0.0020713	0.13484	2.135	0.01055	1.30874	1.2544
80	5.74751	1077.35	10.388	48580.67	0.0021061	0.13327	1.918	0.01022	1.30524	1.1758
85	5.68682	1096.83	10.056	46852.01	0.0021401	0.13152	1.749	0.00985	1.30173	1.1237
90	5.62582	1112.59	9.770	45171.23	0.0021732	0.12969	1.614	0.00953	1.29821	1.0832
95	5.56458	1127.05	9.503	43547.09	0.0022047	0.12782	1.504	0.00924	1.29468	1.0527
100	5.50316	1140.75	9.247	41987.20	0.0022344	0.12596	1.414	0.00898	1.29115	1.0299
105	5.44165	1152.82	9.015	40497.88	0.0022615	0.12413	1.338	0.00875	1.28761	1.0117
110	5.38013	1165.87	8.777	39084.14	0.0022857	0.12275	1.274	0.00856	1.28409	0.9956
115	5.31871	1180.41	8.532	37749.53	0.0023063	0.12156	1.219	0.00840	1.28057	0.9826
120	5.25750	1196.79	8.279	36496.07	0.0023230	0.12040	1.171	0.00824	1.27707	0.9734
125	5.19662	1215.18	8.019	35324.19	0.0023356	0.11929	1.129	0.00809	1.27360	0.9671
130	5.13617	1235.71	7.753	34232.72	0.0023437	0.11824	1.092	0.00795	1.27016	0.9632
140	5.01220	1288.51	7.301	32654.83	0.0023456	0.11620	1.028	0.00767	1.26312	0.9626
150	4.89626	1344.60	6.776	30970.40	0.0023400	0.11603	0.978	0.00753	1.25656	0.9549
160	4.78340	1409.95	6.284	29601.57	0.0023186	0.11674	0.937	0.00747	1.25019	0.9444
170	4.67424	1476.74	5.832	28306.27	0.0022992	0.11752	0.902	0.00741	1.24405	0.9381
180	4.56834	1542.11	5.424	27042.80	0.0022841	0.12094	0.749	0.00752	1.23812	0.7850
190	4.46575	1619.29	5.024	25953.92	0.0022614	0.12444	0.760	0.00761	1.23239	0.8050
200	4.36636	1688.83	4.707	24981.75	0.0022332	0.12727	0.767	0.00773	1.22685	0.8179
220	4.17813	1819.24	4.190	23227.23	0.0021749	0.13124	0.770	0.00794	1.21641	0.8362
240	4.00271	1929.91	3.821	21693.77	0.0021232	0.13346	0.766	0.00814	1.20673	0.8463
260	3.83829	2028.46	3.573	20518.71	0.0020676	0.13444	0.757	0.00835	1.19771	0.8499
280	3.68524	2113.48	3.394	19535.40	0.0020073	0.13453	0.746	0.00860	1.18935	0.8471
300	3.54247	2195.86	3.267	18809.85	0.0019347	0.13405	0.735	0.00891	1.18159	0.8392
320	3.41022	2266.43	3.173	18159.72	0.0018647	0.13321	0.726	0.00924	1.17443	0.8288
340	3.28813	2328.46	3.106	17592.07	0.0017982	0.13222	0.717	0.00960	1.16785	0.8175
360	3.17390	2383.57	3.056	17079.77	0.0017363	0.13120	0.710	0.00999	1.16171	0.8062
380	3.06734	2434.28	3.021	16623.47	0.0016784	0.13024	0.704	0.01039	1.15600	0.7955
400	2.96793	2486.59	2.992	16244.16	0.0016213	0.12942	0.700	0.01082	1.15070	0.7853
420	2.87459	2537.16	2.968	15891.47	0.0015686	0.12878	0.698	0.01126	1.14573	0.7762
440	2.78720	2588.56	2.946	15577.12	0.0015190	0.12834	0.696	0.01171	1.14109	0.7680
460	2.70506	2640.83	2.925	15287.52	0.0014728	0.12811	0.696	0.01218	1.13675	0.7609
480	2.62771	2694.61	2.905	15024.81	0.0014294	0.12809	0.697	0.01266	1.13267	0.7547
500	2.55474	2750.04	2.885	14783.15	0.0013887	0.12827	0.699	0.01315	1.12882	0.7493
520	2.48575	2809.26	2.863	14574.39	0.0013491	0.12864	0.702	0.01366	1.12520	0.7446
540	2.41496	2816.40	2.941	14399.11	0.0013229	0.12918	0.706	0.01436	1.12149	0.7328
560	2.35278	2876.48	2.923	14232.78	0.0012862	0.12990	0.710	0.01492	1.11824	0.7282
580	2.29383	2937.73	2.905	14078.95	0.0012514	0.13076	0.715	0.01551	1.11516	0.7240
600	2.23787	3000.45	2.887	13936.20	0.0012185	0.13176	0.721	0.01610	1.11225	0.7203
650	2.10964	3161.97	2.840	13620.13	0.0011435	0.13473	0.738	0.01766	1.10558	0.7127
700	1.99576	3328.67	2.794	13351.19	0.0010775	0.13828	0.757	0.01932	1.09969	0.7068
800	1.80221	3672.37	2.709	12916.10	0.0009670	0.14663	0.801	0.02291	1.08973	0.6986
1000	1.51118	4371.19	2.579	12306.20	0.0008047	0.16602	0.904	0.03123	1.07487	0.6897
2000	0.83904	8176.59	2.199	11077.96	0.0004444	0.27727	1.482	0.09094	1.04109	0.6990
3000	0.58075	12580.70	1.929	10681.94	0.0003081	0.39263	2.039	0.17306	1.02831	0.7303
4000	0.44386	17688.32	1.745	10491.93	0.0002358	0.51266	2.559	0.27695	1.02159	0.7493
5000	0.35866	24108.26	1.533	10368.87	0.0001912	0.68563	3.048	0.41477	1.01742	0.7375

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

11000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 54.556	0.16256	10188.30	114.3736	-88.769	242.359	1.45093	1.506	1.849	7612
56	0.16299	10132.84	114.0071	-86.956	245.048	1.49958	1.523	1.876	7605
58	0.16360	10054.85	113.4595	-84.389	248.838	1.56608	1.546	1.914	7594
60	0.16420	9975.62	112.8713	-81.763	252.702	1.63157	1.567	1.949	7583
62	0.16482	9895.29	112.2481	-79.078	256.635	1.69605	1.587	1.984	7571
64	0.16543	9814.01	111.5947	-76.339	260.636	1.75956	1.605	2.017	7558
66	0.16606	9731.90	110.9149	-73.547	264.702	1.82212	1.623	2.049	7544
68	0.16669	9649.10	110.2123	-70.704	268.831	1.88376	1.639	2.080	7531
70	0.16733	9565.74	109.4897	-67.815	273.020	1.94446	1.653	2.108	7517
75	0.16895	9355.66	107.6108	-60.408	283.731	2.09224	1.685	2.176	7481
80	0.17061	9144.70	105.6505	-52.745	294.778	2.23481	1.716	2.243	7440
85	0.17232	8934.64	103.6285	-45.029	305.961	2.37024	1.757	2.319	7391
90	0.17406	8727.14	101.5580	-36.809	317.729	2.50476	1.791	2.388	7342
95	0.17584	8523.76	99.4485	-28.337	329.833	2.63562	1.822	2.453	7292
100	0.17766	8325.92	97.3066	-19.516	342.370	2.76426	1.851	2.516	7240
105	0.17953	8134.90	95.1378	-10.591	355.094	2.88840	1.876	2.573	7190
110	0.18143	7951.84	92.9471	-1.459	368.104	3.00944	1.902	2.631	7138
115	0.18338	7777.67	90.7394	7.882	381.403	3.12766	1.931	2.689	7084
120	0.18536	7613.16	88.5201	17.439	394.992	3.24333	1.961	2.747	7028
125	0.18737	7458.82	86.2953	27.220	408.876	3.35667	1.995	2.806	6972
130	0.18942	7314.97	84.0717	37.233	423.057	3.46790	2.032	2.866	6914
140	0.19360	7058.64	79.6591	57.987	452.323	3.68473	2.113	2.987	6798
150	0.19787	6841.52	75.3509	79.757	482.796	3.89493	2.205	3.107	6683
160	0.20250	6753.02	72.4291	102.720	515.186	4.10400	2.304	3.248	6641
170	0.20693	6590.27	68.7774	126.813	548.312	4.30478	2.409	3.377	6542
180	0.21142	6470.95	65.4358	152.044	582.683	4.50122	2.515	3.501	6460
190	0.21597	6352.17	62.3146	179.003	618.909	4.69696	2.638	3.641	6373
200	0.22056	6249.42	59.4416	206.577	655.840	4.88625	2.737	3.755	6303
220	0.22990	6104.10	54.1396	264.584	732.867	5.25322	2.908	3.942	6191
240	0.23933	5963.96	49.4036	325.590	813.082	5.60192	3.036	4.078	6092
260	0.24888	5796.93	45.3716	388.575	895.518	5.93198	3.117	4.176	5998
280	0.25863	5728.18	42.1300	452.777	979.584	6.24337	3.157	4.231	5964
300	0.26851	5723.87	39.2263	517.405	1064.343	6.53589	3.165	4.242	5961
320	0.27846	5730.05	36.6694	581.901	1149.088	6.80945	3.149	4.227	5970
340	0.28830	5762.38	34.3361	645.808	1233.057	7.06363	3.117	4.188	5989
360	0.29822	5789.33	32.2215	708.861	1316.309	7.30166	3.076	4.140	6007
380	0.30812	5822.47	30.3324	770.905	1398.521	7.52393	3.030	4.086	6031
400	0.31803	5857.41	28.6428	831.898	1479.695	7.73221	2.985	4.034	6056
420	0.32790	5905.19	27.1349	891.864	1559.770	7.92755	2.940	3.983	6088
440	0.33778	5961.82	25.7696	950.877	1638.896	8.11163	2.899	3.935	6122
460	0.34765	6017.81	24.5281	1009.008	1717.128	8.28554	2.863	3.892	6156
480	0.35749	6080.88	23.4018	1066.358	1794.527	8.45002	2.831	3.854	6193
500	0.36731	6142.85	22.3746	1123.018	1871.202	8.60668	2.803	3.821	6229
520	0.37714	6210.42	21.4324	1179.085	1947.274	8.75600	2.779	3.792	6266
540	0.38790	6309.79	20.8629	1227.160	2017.275	8.88184	2.693	3.731	6364
560	0.39784	6392.52	20.0531	1281.189	2091.551	9.01642	2.673	3.705	6407
580	0.40776	6477.02	19.3035	1334.831	2165.399	9.14585	2.655	3.682	6451
600	0.41766	6563.06	18.6078	1388.116	2238.852	9.27042	2.639	3.662	6495
650	0.44233	6783.59	17.0704	1519.823	2420.815	9.56201	2.609	3.621	6604
700	0.46690	7010.10	15.7698	1650.079	2601.113	9.82950	2.589	3.592	6712
800	0.51578	7475.14	13.6916	1907.557	2958.144	10.30660	2.567	3.555	6926
1000	0.61280	8433.05	10.8564	2416.822	3665.037	11.09493	2.548	3.520	7346
2000	1.09395	13436.63	5.3983	4985.584	7213.862	13.54863	2.672	3.633	9200
3000	1.57524	18596.34	3.6105	7777.101	10985.714	15.06459	2.940	3.906	10699
4000	2.05762	23822.42	2.7152	10841.657	15032.827	16.42282	3.195	4.168	11999
5000	2.54372	29081.83	2.1765	14220.377	19401.681	18.23090	3.594	4.595	13124

* TWO-PHASE BOUNDRY

11000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.556	6.15141	1012.96	12.348	62672.37	0.0018249	0.14124	5.037	0.01242	1.32875	2.3732
56	6.13518	1023.22	12.201	62166.80	0.0018339	0.14166	4.685	0.01230	1.32780	2.2340
58	6.11264	1036.70	12.008	61461.69	0.0018460	0.14205	4.265	0.01214	1.32649	2.0688
60	6.09004	1049.16	11.830	60751.95	0.0018579	0.14226	3.911	0.01198	1.32516	1.9290
62	6.06739	1061.11	11.659	60038.56	0.0018696	0.14234	3.608	0.01183	1.32384	1.8102
64	6.04467	1072.15	11.500	59322.46	0.0018812	0.14228	3.347	0.01167	1.32252	1.7082
66	6.02190	1082.74	11.347	58604.58	0.0018926	0.14210	3.122	0.01152	1.32119	1.6207
68	5.99908	1092.37	11.206	57885.78	0.0019040	0.14182	2.925	0.01137	1.31986	1.5443
70	5.97622	1100.80	11.080	57166.91	0.0019153	0.14145	2.753	0.01123	1.31852	1.4770
75	5.91884	1119.64	10.789	55374.68	0.0019433	0.14019	2.404	0.01089	1.31518	1.3430
80	5.86120	1137.72	10.503	53598.95	0.0019711	0.13860	2.141	0.01054	1.31183	1.2469
85	5.80332	1160.33	10.161	51850.58	0.0019986	0.13683	1.937	0.01017	1.30848	1.1821
90	5.74523	1178.82	9.870	50139.42	0.0020255	0.13495	1.777	0.00984	1.30511	1.1317
95	5.68696	1195.75	9.597	48474.31	0.0020516	0.13304	1.647	0.00954	1.30174	1.0935
100	5.62857	1211.69	9.339	46863.04	0.0020764	0.13112	1.541	0.00926	1.29837	1.0647
105	5.57011	1225.67	9.104	45312.31	0.0020996	0.12924	1.453	0.00902	1.29500	1.0417
110	5.51165	1240.50	8.865	43827.72	0.0021207	0.12781	1.379	0.00881	1.29163	1.0218
115	5.45325	1256.71	8.619	42413.60	0.0021394	0.12659	1.316	0.00863	1.28828	1.0060
120	5.39501	1274.68	8.365	41073.05	0.0021552	0.12539	1.261	0.00846	1.28494	0.9948
125	5.33701	1294.60	8.104	39807.80	0.0021678	0.12423	1.214	0.00829	1.28162	0.9872
130	5.27934	1316.62	7.838	38618.23	0.0021770	0.12314	1.172	0.00814	1.27832	0.9825
140	5.16539	1367.15	7.297	36460.67	0.0021848	0.12115	1.103	0.00785	1.27182	0.9791
150	5.05385	1425.65	6.762	34576.04	0.0021793	0.12091	1.047	0.00770	1.26548	0.9691
160	4.93836	1495.58	6.365	33348.84	0.0021719	0.12137	0.999	0.00757	1.25894	0.9625
170	4.83252	1563.67	5.907	31847.62	0.0021596	0.12211	0.961	0.00748	1.25296	0.9567
180	4.72995	1637.45	5.501	30607.30	0.0021379	0.12598	0.784	0.00761	1.24718	0.7839
190	4.63031	1718.70	5.101	29412.53	0.0021186	0.12959	0.796	0.00769	1.24159	0.8048
200	4.53387	1790.11	4.790	28334.03	0.0020979	0.13248	0.803	0.00778	1.23619	0.8193
220	4.34973	1933.37	4.280	26551.16	0.0020391	0.13646	0.807	0.00796	1.22593	0.8389
240	4.17833	2056.74	3.895	24919.37	0.0019825	0.13860	0.801	0.00814	1.21642	0.8487
260	4.01801	2143.91	3.622	23292.12	0.0019479	0.13943	0.791	0.00831	1.20758	0.8532
280	3.86650	2224.49	3.452	22148.05	0.0019022	0.13935	0.779	0.00852	1.19926	0.8520
300	3.72419	2305.00	3.328	21316.78	0.0018402	0.13868	0.767	0.00878	1.19147	0.8449
320	3.59124	2372.13	3.243	20577.98	0.0017820	0.13766	0.756	0.00907	1.18424	0.8357
340	3.46855	2437.91	3.175	19987.12	0.0017179	0.13650	0.746	0.00940	1.17758	0.8241
360	3.35321	2494.04	3.123	19412.81	0.0016598	0.13530	0.738	0.00975	1.17135	0.8124
380	3.24546	2545.59	3.084	18896.60	0.0016052	0.13418	0.731	0.01012	1.16555	0.8011
400	3.14435	2593.84	3.052	18417.76	0.0015552	0.13321	0.725	0.01050	1.16012	0.7908
420	3.04968	2643.41	3.026	18008.96	0.0015067	0.13243	0.722	0.01090	1.15506	0.7814
440	2.96053	2695.02	3.002	17650.16	0.0014600	0.13186	0.719	0.01132	1.15030	0.7727
460	2.87649	2746.77	2.978	17310.18	0.0014170	0.13150	0.718	0.01175	1.14583	0.7652
480	2.79729	2801.06	2.956	17010.01	0.0013758	0.13137	0.718	0.01219	1.14163	0.7585
500	2.72246	2855.87	2.932	16723.68	0.0013379	0.13145	0.719	0.01264	1.13767	0.7528
520	2.65156	2913.61	2.908	16467.32	0.0013015	0.13173	0.722	0.01310	1.13392	0.7478
540	2.57798	2909.23	3.005	16266.54	0.0012826	0.13217	0.725	0.01374	1.13005	0.7364
560	2.51357	2968.85	2.985	16068.05	0.0012480	0.13282	0.728	0.01426	1.12666	0.7316
580	2.45242	3029.73	2.965	15884.37	0.0012153	0.13361	0.733	0.01480	1.12345	0.7272
600	2.39428	3092.14	2.945	15713.81	0.0011842	0.13454	0.738	0.01535	1.12041	0.7233
650	2.26073	3253.13	2.894	15335.90	0.0011131	0.13738	0.754	0.01678	1.11344	0.7153
700	2.14178	3419.56	2.844	15014.06	0.0010503	0.14085	0.772	0.01831	1.10725	0.7090
800	1.93882	3763.14	2.751	14492.98	0.0009447	0.14914	0.816	0.02164	1.09675	0.7003
1000	1.63185	4462.07	2.611	13761.48	0.0007889	0.16873	0.919	0.02937	1.08101	0.6905
2000	0.91412	8267.00	2.210	12282.63	0.0004395	0.27727	1.518	0.08348	1.04482	0.7163
3000	0.63482	12771.66	1.935	11805.39	0.0003058	0.39262	2.107	0.15834	1.03098	0.7546
4000	0.48600	17773.42	1.749	11577.66	0.0002345	0.51231	2.660	0.25290	1.02365	0.7790
5000	0.39313	24138.63	1.540	11432.80	0.0001904	0.68239	3.181	0.37772	1.01910	0.7712

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

12000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 56.606	0.16066	10743.43	117.2566	-83.879	273.122	1.46603	1.527	1.873	7814
58	0.16105	10592.14	116.8526	-82.124	275.752	1.51193	1.543	1.899	7807
60	0.16162	10617.37	116.2407	-79.557	279.585	1.57690	1.564	1.934	7797
62	0.16220	10541.29	115.5955	-76.932	283.487	1.64087	1.585	1.968	7787
64	0.16278	10464.04	114.9218	-74.251	287.455	1.70386	1.604	2.000	7775
66	0.16336	10385.75	114.2238	-71.517	291.488	1.76591	1.622	2.032	7763
68	0.16395	10306.55	113.5048	-68.732	295.582	1.82703	1.639	2.062	7751
70	0.16455	10226.57	112.7679	-65.901	299.735	1.88721	1.654	2.090	7738
75	0.16606	10023.97	110.8624	-58.638	310.351	2.03367	1.686	2.156	7705
80	0.16760	9819.07	108.8885	-51.119	321.294	2.17490	1.719	2.221	7667
85	0.16917	9613.59	106.8655	-43.546	332.365	2.30898	1.761	2.296	7621
90	0.17078	9409.17	104.8062	-35.469	344.013	2.44212	1.795	2.363	7574
95	0.17242	9207.32	102.7187	-27.141	355.989	2.57160	1.828	2.427	7526
100	0.17410	9009.45	100.6086	-18.461	368.391	2.69885	1.858	2.488	7477
105	0.17580	8816.85	98.4796	-9.675	380.975	2.82164	1.884	2.545	7428
110	0.17755	8630.65	96.3349	-0.681	393.842	2.94134	1.911	2.602	7377
115	0.17932	8451.88	94.1773	8.527	406.995	3.05826	1.941	2.659	7325
120	0.18113	8281.35	92.0097	17.955	420.439	3.17269	1.973	2.718	7270
125	0.18297	8119.75	89.8357	27.614	434.180	3.28487	2.008	2.778	7214
130	0.18483	7967.52	87.6594	37.512	448.224	3.39503	2.046	2.839	7157
140	0.18864	7692.04	83.3195	58.064	477.238	3.60999	2.131	2.964	7040
150	0.19254	7454.44	79.0371	79.671	507.499	3.81871	2.225	3.088	6923
160	0.19650	7250.72	74.8681	102.370	538.998	4.02196	2.326	3.211	6809
170	0.20085	7152.68	72.3226	126.258	572.562	4.22541	2.431	3.359	6767
180	0.20496	6966.82	68.7509	151.351	606.793	4.42105	2.537	3.487	6660
190	0.20914	6833.37	65.5089	178.172	642.887	4.61608	2.661	3.627	6569
200	0.21332	6775.26	62.6485	205.617	679.641	4.80447	2.759	3.736	6519
220	0.22184	6583.52	57.3924	263.420	756.376	5.17004	2.931	3.934	6398
240	0.23047	6487.84	52.6575	324.355	836.478	5.51826	3.059	4.068	6322
260	0.23911	6363.50	48.3703	387.331	918.656	5.84728	3.141	4.154	6243
280	0.24786	6216.32	44.6845	451.460	1002.234	6.15687	3.181	4.204	6170
300	0.25684	6067.51	41.7593	515.969	1086.678	6.44829	3.187	4.240	6115
320	0.26591	6137.75	39.1647	580.406	1171.273	6.72138	3.170	4.217	6150
340	0.27499	6120.33	36.8303	644.318	1255.370	6.97594	3.137	4.192	6156
360	0.28409	6168.70	34.6554	707.440	1338.707	7.21420	3.096	4.143	6184
380	0.29308	6221.37	32.6781	769.585	1420.825	7.43623	3.050	4.087	6215
400	0.30213	6258.08	30.8776	830.702	1502.065	7.64468	3.004	4.034	6240
420	0.31113	6288.93	29.2575	890.795	1582.153	7.84006	2.959	3.984	6263
440	0.32017	6325.34	27.7933	949.940	1661.378	8.02438	2.918	3.938	6289
460	0.32916	6376.94	26.4722	1008.208	1739.633	8.19833	2.881	3.895	6320
480	0.33817	6439.02	25.2646	1065.702	1817.145	8.36306	2.849	3.856	6355
500	0.34714	6491.53	24.1588	1122.508	1893.870	8.51982	2.820	3.824	6385
520	0.35609	6558.33	23.1476	1178.719	1969.988	8.66923	2.796	3.794	6420
540	0.36600	6660.26	22.6522	1226.144	2039.427	8.79371	2.704	3.736	6529
560	0.37510	6736.67	21.7775	1280.288	2113.799	8.92845	2.683	3.710	6570
580	0.38419	6819.15	20.9671	1334.046	2187.746	9.05806	2.665	3.687	6611
600	0.39326	6901.42	20.2143	1387.447	2261.296	9.18280	2.649	3.667	6652
650	0.41586	7113.47	18.5492	1519.442	2443.505	9.47478	2.619	3.626	6755
700	0.43836	7332.57	17.1386	1649.977	2624.039	9.74262	2.598	3.596	6857
800	0.48311	7785.10	14.8821	1907.975	2981.492	10.22029	2.575	3.559	7060
1000	0.57194	8723.46	11.8006	2418.108	3689.001	11.00931	2.556	3.522	7464
2000	1.01224	13667.20	5.8693	4989.077	7238.355	13.46348	2.677	3.633	9271
3000	1.45283	18793.70	3.9278	7781.430	11009.724	14.97924	2.943	3.905	10749
4000	1.89460	23999.19	2.9553	10845.959	15055.895	16.33721	3.196	4.166	12039
5000	2.33979	29244.77	2.3698	14219.915	19419.103	18.14407	3.586	4.584	13158

* TWO-PHASE BOUNDRY

12000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 56.606	6.22429	1068.36	12.336	66870.21	0.0017535	0.14682	5.385	0.01259	1.33302	2.4733
58	6.20906	1078.77	12.197	66386.15	0.0017601	0.14711	5.022	0.01248	1.33213	2.3337
60	6.18718	1092.86	12.009	65691.59	0.0017695	0.14736	4.573	0.01232	1.33085	2.1605
62	6.16527	1106.40	11.829	64989.86	0.0017787	0.14747	4.192	0.01215	1.32957	2.0141
64	6.14332	1118.97	11.662	64283.93	0.0017877	0.14743	3.867	0.01200	1.32828	1.8889
66	6.12134	1131.06	11.501	63574.69	0.0017967	0.14727	3.587	0.01184	1.32699	1.7817
68	6.09933	1142.12	11.353	62863.03	0.0018056	0.14700	3.344	0.01169	1.32571	1.6886
70	6.07729	1151.90	11.221	62149.79	0.0018145	0.14663	3.131	0.01154	1.32442	1.6068
75	6.02207	1173.91	10.916	60365.06	0.0018365	0.14536	2.705	0.01120	1.32120	1.4445
80	5.96670	1195.02	10.619	58587.40	0.0018586	0.14374	2.388	0.01085	1.31797	1.3282
85	5.91118	1220.82	10.268	56827.68	0.0018805	0.14193	2.144	0.01046	1.31474	1.2487
90	5.85554	1242.14	9.969	55095.79	0.0019023	0.14001	1.954	0.01012	1.31151	1.1870
95	5.79980	1261.66	9.691	53400.63	0.0019235	0.13804	1.801	0.00981	1.30827	1.1400
100	5.74399	1279.99	9.428	51750.20	0.0019441	0.13607	1.677	0.00952	1.30504	1.1042
105	5.68814	1296.05	9.190	50151.50	0.0019636	0.13413	1.575	0.00927	1.30181	1.0757
110	5.63231	1312.86	8.949	48610.54	0.0019818	0.13266	1.489	0.00905	1.29858	1.0513
115	5.57654	1330.97	8.701	47132.28	0.0019981	0.13140	1.416	0.00886	1.29537	1.0321
120	5.52091	1350.77	8.447	45720.58	0.0020124	0.13016	1.354	0.00867	1.29217	1.0183
125	5.46546	1372.49	8.185	44378.18	0.0020243	0.12896	1.301	0.00849	1.28898	1.0088
130	5.41029	1396.28	7.918	43106.60	0.0020335	0.12781	1.254	0.00832	1.28581	1.0027
140	5.30107	1450.37	7.376	40776.08	0.0020433	0.12572	1.176	0.00800	1.27956	0.9981
150	5.19385	1512.85	6.838	38717.27	0.0020414	0.12544	1.114	0.00782	1.27344	0.9878
160	5.08918	1582.50	6.323	36900.19	0.0020289	0.12609	1.064	0.00772	1.26749	0.9758
170	4.97883	1654.14	5.976	35611.95	0.0020309	0.12654	1.019	0.00757	1.26123	0.9742
180	4.87895	1724.15	5.554	33990.74	0.0020226	0.13075	0.817	0.00768	1.25558	0.7843
190	4.78159	1809.12	5.149	32674.35	0.0020049	0.13448	0.830	0.00775	1.25009	0.8055
200	4.68768	1893.83	4.843	31760.28	0.0019725	0.13744	0.837	0.00785	1.24481	0.8193
220	4.50765	2034.09	4.344	29676.24	0.0019340	0.14146	0.841	0.00798	1.23473	0.8424
240	4.33895	2174.65	3.967	28150.39	0.0018706	0.14354	0.836	0.00813	1.22533	0.8527
260	4.18214	2285.23	3.682	26613.03	0.0018175	0.14425	0.825	0.00830	1.21663	0.8550
280	4.03446	2359.42	3.482	25079.45	0.0017817	0.14401	0.812	0.00849	1.20848	0.8531
300	3.89354	2398.79	3.365	23624.09	0.0017677	0.14318	0.798	0.00867	1.20074	0.8512
320	3.76070	2485.25	3.285	23082.27	0.0016967	0.14199	0.786	0.00895	1.19347	0.8401
340	3.63647	2533.49	3.228	22256.42	0.0016548	0.14066	0.775	0.00923	1.18670	0.8311
360	3.52003	2596.05	3.180	21713.99	0.0015960	0.13931	0.765	0.00955	1.18037	0.8189
380	3.41207	2655.05	3.140	21227.74	0.0015394	0.13803	0.757	0.00990	1.17453	0.8066
400	3.30979	2705.88	3.106	20712.97	0.0014907	0.13693	0.750	0.01026	1.16901	0.7957
420	3.21407	2752.32	3.076	20213.06	0.0014475	0.13601	0.745	0.01062	1.16386	0.7860
440	3.12336	2799.10	3.050	19756.30	0.0014068	0.13531	0.742	0.01100	1.15900	0.7774
460	3.03801	2850.73	3.024	19373.20	0.0013664	0.13485	0.740	0.01139	1.15444	0.7695
480	2.95708	2906.17	2.999	19040.70	0.0013269	0.13460	0.739	0.01180	1.15012	0.7624
500	2.88072	2959.65	2.973	18700.26	0.0012919	0.13458	0.740	0.01222	1.14606	0.7565
520	2.80824	3010.68	2.948	18417.37	0.0012568	0.13477	0.741	0.01265	1.14221	0.7510
540	2.73223	3001.26	3.066	18197.35	0.0012448	0.13513	0.743	0.01324	1.13818	0.7399
560	2.66592	3060.48	3.045	17964.78	0.0012122	0.13570	0.747	0.01372	1.13468	0.7349
580	2.60288	3121.01	3.023	17749.41	0.0011813	0.13642	0.751	0.01422	1.13136	0.7303
600	2.54286	3183.16	3.001	17549.32	0.0011519	0.13729	0.755	0.01473	1.12820	0.7263
650	2.40468	3343.72	2.945	17105.62	0.0010844	0.14002	0.770	0.01606	1.12095	0.7178
700	2.28125	3509.97	2.891	16727.40	0.0010246	0.14340	0.788	0.01748	1.11450	0.7112
800	2.06990	3853.59	2.792	16114.40	0.0009235	0.15161	0.831	0.02058	1.10353	0.7019
1000	1.74844	4552.85	2.641	15252.42	0.0007737	0.17139	0.935	0.02783	1.08697	0.6914
2000	0.98791	8357.59	2.220	13501.91	0.0004347	0.27727	1.555	0.07725	1.04850	0.7337
3000	0.68831	12862.34	1.939	12935.94	0.0003036	0.39261	2.178	0.14605	1.03362	0.7799
4000	0.52782	17858.49	1.752	12667.18	0.0002333	0.51201	2.767	0.23283	1.02571	0.8105
5000	0.42739	24175.64	1.546	12498.89	0.0001896	0.67956	3.324	0.34689	1.02078	0.8072

* TWO-PHASE BOUNDRY

13000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 58.600	0.15889	11291.32	120.0809	-78.960	303.533	1.48038	1.547	1.897	8009
60	0.15927	11241.90	119.6261	-77.194	306.206	1.52547	1.562	1.921	8002
62	0.15981	11170.06	118.9503	-74.622	310.082	1.58902	1.584	1.955	7993
64	0.16036	11096.85	118.2479	-71.994	314.024	1.65159	1.603	1.987	7983
66	0.16091	11022.41	117.5231	-69.313	318.030	1.71322	1.622	2.018	7972
68	0.16145	10946.85	116.7793	-66.580	322.096	1.77391	1.639	2.048	7960
70	0.16202	10870.32	116.0197	-63.801	326.219	1.83368	1.654	2.075	7949
75	0.16343	10675.47	114.0666	-56.667	336.758	1.97906	1.688	2.140	7919
80	0.16487	10477.03	112.0582	-49.275	347.616	2.11920	1.721	2.203	7884
85	0.16634	10276.72	110.0137	-41.829	358.594	2.25216	1.764	2.277	7839
90	0.16784	10076.14	107.9451	-33.879	370.143	2.38416	1.799	2.342	7795
95	0.16936	9876.78	105.8598	-25.675	382.013	2.51250	1.832	2.405	7749
100	0.17091	9680.04	103.7625	-17.120	394.303	2.63860	1.864	2.465	7702
105	0.17249	9487.22	101.6556	-8.457	406.769	2.76023	1.891	2.521	7655
110	0.17410	9299.46	99.5408	0.417	419.514	2.87880	1.919	2.577	7606
115	0.17573	9117.82	97.4194	9.507	432.542	2.99461	1.950	2.634	7554
120	0.17740	8943.20	95.2924	18.822	445.861	3.10797	1.983	2.693	7501
125	0.17909	8776.35	93.1613	28.372	459.478	3.21914	2.020	2.754	7446
130	0.18080	8617.87	91.0282	38.167	473.400	3.32834	2.059	2.815	7389
140	0.18430	8327.50	86.7668	58.535	502.187	3.54161	2.146	2.942	7272
150	0.18787	8073.23	82.5370	79.994	532.253	3.74900	2.244	3.071	7155
160	0.19151	7853.20	78.3775	102.586	563.597	3.95124	2.347	3.197	7040
170	0.19519	7662.51	74.3346	126.316	596.184	4.14877	2.454	3.319	6929
180	0.19935	7525.02	72.0710	151.168	631.055	4.34792	2.559	3.473	6879
190	0.20315	7426.07	68.6239	177.898	666.921	4.54173	2.684	3.604	6798
200	0.20701	7276.56	65.5217	205.243	703.572	4.72959	2.783	3.719	6712
220	0.21485	7035.58	60.1892	262.845	780.035	5.09385	2.954	3.922	6579
240	0.22275	6909.50	55.5774	323.643	859.890	5.44101	3.082	4.068	6500
260	0.23078	6870.70	51.3024	386.619	942.169	5.77045	3.165	4.147	6458
280	0.23876	6755.28	47.3811	450.798	1025.557	6.07933	3.205	4.187	6394
300	0.24681	6616.88	44.0033	515.286	1109.410	6.36871	3.211	4.202	6333
320	0.25503	6429.46	41.3372	579.610	1193.521	6.64023	3.193	4.217	6272
340	0.26336	6471.83	39.0334	643.463	1277.431	6.89427	3.159	4.187	6304
360	0.27176	6422.10	36.8645	706.565	1360.755	7.13253	3.116	4.158	6301
380	0.28024	6565.05	34.8775	768.778	1443.393	7.35598	3.069	4.093	6369
400	0.28849	6519.99	33.0331	829.992	1524.464	7.56401	3.023	4.039	6401
420	0.29688	6656.66	31.3054	890.214	1604.867	7.76017	2.978	3.987	6426
440	0.30515	6707.41	29.7482	949.491	1684.063	7.94443	2.937	3.938	6455
460	0.31343	6742.73	28.3354	1007.891	1762.400	8.11656	2.900	3.896	6479
480	0.32168	6779.15	27.0547	1065.518	1839.870	8.28321	2.867	3.860	6503
500	0.32992	6833.72	25.8844	1122.462	1916.658	8.44010	2.839	3.827	6533
520	0.33820	6902.25	24.8052	1178.814	1992.934	8.58981	2.814	3.796	6567
540	0.34740	7013.70	24.4175	1225.420	2061.697	8.71271	2.714	3.740	6691
560	0.35579	7087.65	23.4796	1279.668	2136.154	8.84761	2.693	3.714	6729
580	0.36417	7163.97	22.6098	1333.532	2210.189	8.97737	2.675	3.691	6768
600	0.37254	7242.33	21.8014	1387.040	2283.829	9.10226	2.659	3.671	6806
650	0.39338	7445.60	20.0112	1519.303	2466.263	9.39460	2.629	3.630	6902
700	0.41413	7657.04	18.4927	1650.101	2647.017	9.66277	2.608	3.601	6999
800	0.45540	8096.59	16.0608	1908.598	3004.869	10.14097	2.584	3.563	7192
1000	0.53729	9014.62	12.7357	2419.586	3712.972	10.93066	2.563	3.525	7579
2000	0.94298	13895.08	6.3359	4992.837	7262.820	13.38528	2.681	3.633	9339
3000	1.34307	18985.53	4.2425	7786.096	11033.644	14.90083	2.946	3.905	10797
4000	1.75543	24168.38	3.1936	10850.694	15078.868	16.25853	3.198	4.165	12076
5000	2.16700	29398.66	2.5618	14220.504	19437.002	18.06429	3.580	4.573	13190

* TWO-PHASE BOUNDRY

13000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 58.600	6.29359	1122.75	12.331	71062.90	0.0016898	0.15214	5.743	0.01274	1.33709	2.5781
60	6.27859	1133.59	12.194	70584.43	0.0016948	0.15232	5.356	0.01263	1.33622	2.4321
62	6.25740	1148.72	12.005	69895.53	0.0017018	0.15246	4.879	0.01246	1.33497	2.2519
64	6.23609	1162.82	11.829	69201.01	0.0017088	0.15245	4.473	0.01230	1.33372	2.0987
66	6.21478	1176.41	11.660	68501.79	0.0017156	0.15230	4.125	0.01214	1.33247	1.9680
68	6.19345	1188.90	11.505	67798.75	0.0017224	0.15203	3.825	0.01199	1.33122	1.8550
70	6.17211	1200.05	11.366	67092.75	0.0017292	0.15166	3.565	0.01184	1.32997	1.7560
75	6.11871	1225.28	11.047	65320.08	0.0017463	0.15038	3.046	0.01149	1.32684	1.5604
80	6.06526	1249.46	10.737	63545.90	0.0017634	0.14873	2.664	0.01113	1.32372	1.4205
85	6.01176	1278.50	10.376	61781.14	0.0017807	0.14687	2.373	0.01073	1.32059	1.3242
90	5.95821	1302.71	10.068	60035.74	0.0017980	0.14489	2.147	0.01038	1.31747	1.2495
95	5.90463	1324.91	9.784	58318.74	0.0018152	0.14287	1.968	0.01006	1.31436	1.1925
100	5.85104	1345.72	9.515	56638.28	0.0018320	0.14084	1.823	0.00976	1.31124	1.1487
105	5.79745	1363.99	9.273	55001.63	0.0018482	0.13884	1.704	0.00950	1.30814	1.1139
110	5.74390	1382.90	9.029	53415.14	0.0018635	0.13732	1.605	0.00928	1.30503	1.0844
115	5.69042	1403.05	8.780	51884.25	0.0018776	0.13602	1.522	0.00907	1.30194	1.0611
120	5.63707	1424.85	8.524	50413.44	0.0018902	0.13473	1.451	0.00887	1.29886	1.0441
125	5.58389	1448.53	8.261	49006.17	0.0019010	0.13349	1.390	0.00868	1.29579	1.0322
130	5.53094	1474.26	7.994	47664.90	0.0019098	0.13230	1.337	0.00850	1.29274	1.0243
140	5.42598	1532.25	7.451	45184.87	0.0019203	0.13011	1.250	0.00815	1.28671	1.0176
150	5.32273	1598.75	6.912	42971.62	0.0019207	0.12978	1.182	0.00794	1.28080	1.0064
160	5.22167	1672.85	6.394	41006.82	0.0019113	0.13041	1.126	0.00781	1.27503	0.9942
170	5.12324	1752.85	5.912	39256.89	0.0018935	0.13109	1.081	0.00771	1.26942	0.9854
180	5.01628	1819.03	5.615	37747.61	0.0019093	0.13530	0.849	0.00777	1.26335	0.7841
190	4.92257	1920.05	5.195	36555.33	0.0018773	0.13914	0.862	0.00784	1.25804	0.8040
200	4.83064	1995.19	4.874	35150.44	0.0018640	0.14219	0.871	0.00791	1.25285	0.8197
220	4.65447	2133.83	4.378	32746.92	0.0018380	0.14627	0.875	0.00801	1.24294	0.8447
240	4.48906	2270.11	4.017	31017.14	0.0017918	0.14830	0.869	0.00812	1.23369	0.8582
260	4.33309	2406.59	3.741	29771.37	0.0017232	0.14890	0.857	0.00829	1.22500	0.8596
280	4.18627	2500.39	3.530	28292.96	0.0016747	0.14853	0.843	0.00847	1.21697	0.8559
300	4.05176	2559.96	3.382	26810.01	0.0016413	0.14755	0.829	0.00867	1.20943	0.8496
320	3.92117	2571.84	3.302	25210.97	0.0016397	0.14620	0.815	0.00884	1.20225	0.8462
340	3.79712	2635.91	3.254	24574.30	0.0015884	0.14472	0.802	0.00910	1.19546	0.8357
360	3.67973	2665.46	3.215	23631.64	0.0015600	0.14322	0.791	0.00936	1.18905	0.8273
380	3.56833	2749.34	3.184	23426.24	0.0014888	0.14180	0.782	0.00971	1.18299	0.8129
400	3.46630	2805.69	3.152	22946.90	0.0014395	0.14056	0.775	0.01004	1.17746	0.8015
420	3.36841	2855.95	3.121	22422.37	0.0013962	0.13952	0.769	0.01039	1.17217	0.7910
440	3.27707	2909.59	3.091	21980.67	0.0013534	0.13871	0.765	0.01075	1.16725	0.7814
460	3.19048	2958.09	3.063	21512.59	0.0013172	0.13813	0.762	0.01111	1.16260	0.7734
480	3.10872	3006.79	3.036	21074.52	0.0012838	0.13778	0.760	0.01148	1.15822	0.7665
500	3.03105	3062.22	3.008	20713.37	0.0012496	0.13767	0.760	0.01187	1.15406	0.7602
520	2.95687	3123.35	2.981	20409.09	0.0012154	0.13777	0.760	0.01227	1.15011	0.7543
540	2.87853	3092.51	3.125	20189.15	0.0012094	0.13806	0.762	0.01282	1.14594	0.7433
560	2.81061	3151.36	3.102	19920.62	0.0011787	0.13855	0.765	0.01327	1.14234	0.7381
580	2.74594	3211.60	3.078	19671.82	0.0011494	0.13921	0.768	0.01373	1.13891	0.7334
600	2.68429	3273.52	3.054	19440.55	0.0011214	0.14002	0.773	0.01421	1.13565	0.7292
650	2.54208	3433.74	2.995	18927.31	0.0010573	0.14262	0.786	0.01545	1.12816	0.7204
700	2.41470	3599.88	2.937	18489.42	0.0010002	0.14592	0.803	0.01678	1.12148	0.7135
800	2.19585	3943.69	2.831	17778.92	0.0009034	0.15406	0.845	0.01969	1.11006	0.7036
1000	1.86120	4643.54	2.670	16778.00	0.0007591	0.17400	0.949	0.02652	1.09276	0.6924
2000	1.06047	8448.43	2.228	14735.31	0.0004300	0.27727	1.593	0.07197	1.05213	0.7512
3000	0.74125	12952.87	1.943	14073.04	0.0003015	0.39261	2.251	0.13564	1.03624	0.8061
4000	0.56934	17943.49	1.754	13759.91	0.0002321	0.51174	2.881	0.21583	1.02775	0.8439
5000	0.46147	24217.82	1.551	13566.55	0.0001888	0.67706	3.479	0.32082	1.02245	0.8460

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

14000 PSIA ISOBAR

EMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 60.543	0.15724	11832.71	122.8473	-74.020	333.614	1.49405	1.567	1.920	8197
62	0.15762	11783.29	122.3245	-72.177	336.429	1.53999	1.582	1.944	8191
64	0.15813	11714.11	121.5858	-69.598	340.350	1.60223	1.602	1.976	8182
66	0.15865	11643.51	120.8267	-66.965	344.333	1.66351	1.621	2.007	8172
68	0.15918	11571.62	120.0508	-64.280	348.377	1.72386	1.639	2.036	8161
70	0.15971	11498.56	119.2610	-61.548	352.476	1.78328	1.654	2.063	8151
75	0.16104	11311.60	117.2419	-54.529	362.951	1.92779	1.689	2.126	8123
80	0.16239	11119.90	115.1808	-47.253	373.740	2.06703	1.723	2.189	8090
85	0.16377	10925.14	113.0966	-39.920	384.642	2.19907	1.767	2.261	8048
90	0.16517	10728.91	111.0008	-32.082	396.109	2.33014	1.803	2.325	8006
95	0.16659	10532.71	108.9003	-23.989	407.890	2.45752	1.837	2.387	7962
100	0.16804	10337.92	106.7988	-15.544	420.086	2.58265	1.869	2.446	7917
105	0.16951	10145.82	104.6978	-6.990	432.453	2.70332	1.897	2.501	7871
110	0.17100	9957.61	102.5979	1.777	445.094	2.82092	1.926	2.556	7824
115	0.17252	9774.35	100.4990	10.763	458.016	2.93579	1.958	2.613	7774
120	0.17407	9597.00	98.4008	19.976	471.226	3.04823	1.992	2.672	7721
125	0.17563	9426.38	96.3031	29.428	484.734	3.15850	2.030	2.732	7667
130	0.17722	9263.17	94.2064	39.131	498.549	3.26686	2.070	2.794	7611
140	0.18045	8961.00	90.0192	59.331	527.132	3.47863	2.160	2.923	7496
150	0.18375	8692.91	85.8532	80.653	557.020	3.68478	2.259	3.055	7379
160	0.18711	8458.69	81.7321	103.143	588.221	3.88610	2.366	3.185	7263
170	0.19051	8255.44	77.6887	126.811	620.705	4.08299	2.475	3.311	7152
180	0.19394	8077.72	73.7612	151.633	654.408	4.27561	2.584	3.428	7046
190	0.19738	7917.88	69.9907	178.157	689.850	4.46711	2.709	3.557	6940
200	0.20148	7908.28	68.4825	205.350	727.665	4.66100	2.806	3.697	6948
220	0.20859	7512.78	62.6419	262.824	803.576	5.02267	2.978	3.904	6755
240	0.21598	7308.66	58.0227	323.469	883.374	5.36961	3.105	4.060	6654
260	0.22337	7227.70	53.9393	386.360	965.435	5.69822	3.188	4.155	6606
280	0.23089	7248.06	50.0377	450.588	1049.155	6.00838	3.229	4.184	6596
300	0.23827	7141.74	46.4329	515.176	1132.860	6.29725	3.236	4.188	6544
320	0.24568	7034.05	43.3153	579.540	1216.436	6.56704	3.218	4.172	6500
340	0.25326	6745.92	40.8489	643.302	1299.848	6.81952	3.182	4.181	6408
360	0.26114	6781.29	38.7775	706.336	1383.322	7.05819	3.138	4.146	6443
380	0.26873	6819.65	36.7966	768.515	1465.179	7.27954	3.091	4.099	6474
400	0.27567	6893.77	35.0007	829.762	1547.018	7.48958	3.043	4.051	6520
420	0.28453	6978.15	33.2477	890.075	1627.689	7.68639	2.998	3.995	6564
440	0.29219	7067.62	31.6323	949.475	1706.953	7.87081	2.956	3.941	6607
460	0.29987	7118.50	30.1412	1008.010	1785.393	8.04517	2.919	3.896	6635
480	0.30747	7136.97	28.7764	1065.776	1862.871	8.20983	2.886	3.861	6651
500	0.31508	7181.09	27.5335	1122.856	1939.667	8.36673	2.857	3.828	6676
520	0.32267	7217.74	26.3973	1179.344	2015.846	8.51626	2.833	3.801	6698
540	0.33139	7370.07	26.1594	1224.953	2084.051	8.63779	2.724	3.744	6850
560	0.33918	7439.39	25.1598	1279.297	2158.586	8.77283	2.703	3.718	6885
580	0.34595	7511.38	24.2322	1333.259	2232.701	8.90273	2.685	3.695	6921
600	0.35471	7585.71	23.3694	1386.866	2306.424	9.02776	2.669	3.675	6957
650	0.37405	7779.90	21.4567	1519.380	2489.067	9.32043	2.638	3.635	7047
700	0.39330	7983.40	19.8323	1650.428	2670.027	9.58891	2.617	3.605	7138
800	0.43159	8409.54	17.2276	1909.406	3028.259	10.06762	2.592	3.566	7321
1000	0.50752	9306.50	13.6617	2421.239	3736.939	10.85796	2.570	3.527	7692
2000	0.88350	14120.46	6.7980	4996.851	7287.261	13.31301	2.686	3.632	9405
3000	1.25998	19172.06	4.5545	7791.089	11057.483	14.82632	2.950	3.904	10842
4000	1.63781	24330.22	3.4302	10855.845	15101.747	16.18575	3.200	4.163	12110
5000	2.01867	29543.70	2.7527	14222.021	19455.266	17.99051	3.574	4.564	13219

* TWO-PHASE BOUNDRY

14000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 60.543	6.35967	1176.18	12.331	75252.14	0.0016325	0.15724	6.112	0.01288	1.34098	2.6868
62	6.34454	1188.31	12.186	74759.60	0.0016362	0.15734	5.686	0.01275	1.34009	2.5296
64	6.32378	1203.95	12.001	74077.49	0.0016413	0.15734	5.181	0.01259	1.33887	2.3424
66	6.30303	1219.03	11.824	73389.36	0.0016464	0.15720	4.751	0.01243	1.33765	2.1835
68	6.28228	1232.96	11.661	72696.11	0.0016514	0.15694	4.382	0.01227	1.33643	2.0465
70	6.26153	1245.48	11.515	71998.60	0.0016564	0.15657	4.063	0.01212	1.33521	1.9272
75	6.20959	1273.96	11.180	70241.53	0.0016691	0.15526	3.433	0.01176	1.33217	1.6924
80	6.15788	1301.24	10.858	68475.01	0.0016821	0.15357	2.973	0.01139	1.32913	1.5252
85	6.10611	1333.55	10.485	66710.05	0.0016953	0.15166	2.626	0.01099	1.32610	1.4095
90	6.05436	1360.70	10.168	64956.71	0.0017088	0.14963	2.359	0.01063	1.32308	1.3199
95	6.00265	1385.64	9.876	63224.14	0.0017224	0.14755	2.149	0.01030	1.32006	1.2514
100	5.95097	1409.01	9.602	61520.65	0.0017360	0.14545	1.980	0.00999	1.31705	1.1987
105	5.89934	1429.58	9.355	59853.71	0.0017492	0.14338	1.842	0.00972	1.31405	1.1566
110	5.84779	1450.68	9.108	58229.98	0.0017619	0.14182	1.728	0.00949	1.31106	1.1213
115	5.79632	1472.97	8.856	56655.28	0.0017739	0.14047	1.633	0.00927	1.30807	1.0933
120	5.74498	1496.86	8.597	55134.56	0.0017847	0.13914	1.552	0.00907	1.30510	1.0726
125	5.69380	1522.61	8.334	53671.90	0.0017943	0.13785	1.483	0.00886	1.30214	1.0578
130	5.64283	1550.40	8.065	52270.48	0.0018023	0.13661	1.423	0.00866	1.29919	1.0477
140	5.54172	1612.49	7.522	49659.30	0.0018127	0.13433	1.325	0.00829	1.29336	1.0381
150	5.44207	1683.15	6.982	47307.43	0.0018148	0.13396	1.249	0.00806	1.28764	1.0253
160	5.34434	1761.64	6.464	45206.12	0.0018080	0.13457	1.188	0.00791	1.28204	1.0125
170	5.24895	1846.59	5.979	43332.33	0.0017929	0.13522	1.139	0.00778	1.27658	1.0036
180	5.15622	1935.96	5.536	41650.49	0.0017710	0.13962	0.879	0.00798	1.27130	0.7769
190	5.06636	2038.41	5.101	40114.80	0.0017448	0.14359	0.893	0.00797	1.26619	0.7966
200	4.96332	2119.16	4.918	39251.38	0.0017447	0.14673	0.902	0.00800	1.26035	0.8186
220	4.79410	2244.71	4.387	36017.03	0.0017392	0.15088	0.908	0.00806	1.25079	0.8453
240	4.63012	2368.05	4.035	33839.95	0.0017146	0.15290	0.901	0.00813	1.24158	0.8617
260	4.47683	2492.60	3.779	32357.17	0.0016670	0.15341	0.889	0.00825	1.23301	0.8669
280	4.33104	2624.58	3.578	31391.66	0.0015940	0.15292	0.874	0.00844	1.22489	0.8609
300	4.19700	2703.60	3.419	29973.85	0.0015491	0.15180	0.858	0.00864	1.21745	0.8527
320	4.07040	2757.41	3.307	28631.37	0.0015129	0.15031	0.843	0.00885	1.21046	0.8427
340	3.94858	2726.51	3.251	26636.81	0.0015336	0.14868	0.830	0.00901	1.20376	0.8401
360	3.82935	2776.50	3.227	25967.96	0.0014933	0.14704	0.818	0.00926	1.19722	0.8301
380	3.72119	2827.22	3.200	25377.24	0.0014500	0.14550	0.807	0.00954	1.19131	0.8190
400	3.61436	2883.54	3.182	24916.55	0.0014047	0.14413	0.799	0.00984	1.18549	0.8083
420	3.51460	2946.97	3.156	24525.39	0.0013556	0.14297	0.792	0.01018	1.18008	0.7968
440	3.42243	3013.49	3.127	24188.46	0.0013077	0.14204	0.787	0.01053	1.17509	0.7859
460	3.33480	3068.79	3.096	23738.80	0.0012697	0.14136	0.783	0.01088	1.17036	0.7770
480	3.25234	3114.28	3.066	23211.83	0.0012397	0.14092	0.781	0.01122	1.16592	0.7700
500	3.17383	3168.47	3.036	22791.57	0.0012081	0.14072	0.780	0.01158	1.16170	0.7634
520	3.09912	3220.71	3.007	22368.66	0.0011801	0.14074	0.780	0.01195	1.15770	0.7580
540	3.01761	3183.02	3.182	22239.98	0.0011762	0.14094	0.781	0.01248	1.15335	0.7466
560	2.94831	3241.53	3.157	21933.65	0.0011471	0.14137	0.783	0.01290	1.14965	0.7413
580	2.88225	3301.51	3.132	21649.70	0.0011193	0.14196	0.786	0.01333	1.14614	0.7364
600	2.81920	3363.23	3.106	21385.65	0.0010928	0.14271	0.790	0.01377	1.14279	0.7321
650	2.67346	3523.19	3.042	20799.26	0.0010316	0.14519	0.802	0.01494	1.13508	0.7229
700	2.54259	3689.31	2.981	20298.52	0.0009770	0.14841	0.818	0.01619	1.12819	0.7157
800	2.31703	4033.43	2.868	19485.19	0.0008841	0.15647	0.860	0.01894	1.11637	0.7053
1000	1.97037	4734.12	2.697	18337.28	0.0007450	0.17656	0.964	0.02541	1.09838	0.6933
2000	1.13186	8539.60	2.236	15982.37	0.0004253	0.27727	1.630	0.06744	1.05571	0.7689
3000	0.79366	13043.35	1.945	15216.18	0.0002993	0.39260	2.328	0.12670	1.03884	0.8336
4000	0.61057	18028.44	1.756	14855.30	0.0002309	0.51151	3.002	0.20124	1.02978	0.8796
5000	0.49538	24264.13	1.555	14635.22	0.0001881	0.67483	3.647	0.29850	1.02411	0.8879

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

15000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB -R	CP	VELOCITY OF SOUND FT/SEC
* 62.440	0.15569	12368.20	125.5560	-69.066	363.389	1.50710	1.586	1.943	8379
64	0.15608	12317.21	124.9445	-67.085	366.439	1.55535	1.601	1.967	8373
66	0.15657	12250.45	124.1444	-64.496	370.404	1.61636	1.621	1.998	8364
68	0.15707	12182.22	123.3296	-61.855	374.429	1.67643	1.639	2.027	8354
70	0.15757	12112.65	122.5032	-59.166	378.509	1.73557	1.655	2.053	8345
75	0.15884	11933.66	120.4016	-52.254	388.932	1.87937	1.690	2.116	8319
80	0.16012	11748.84	118.2715	-45.081	399.665	2.01788	1.725	2.177	8289
85	0.16142	11559.89	116.1315	-37.850	410.505	2.14917	1.769	2.248	8248
90	0.16274	11368.37	113.9927	-30.113	421.904	2.27946	1.807	2.311	8208
95	0.16407	11175.78	111.8614	-22.120	433.612	2.40605	1.841	2.371	8166
100	0.16543	10983.51	109.7404	-13.773	445.729	2.53037	1.874	2.430	8122
105	0.16581	10792.83	107.6306	-5.316	458.012	2.65022	1.903	2.483	8078
110	0.16821	10604.96	105.5315	3.356	470.565	2.76700	1.933	2.538	8032
115	0.16962	10420.98	103.4420	12.248	483.396	2.88106	1.965	2.594	7983
120	0.17106	10241.89	101.3607	21.370	496.512	2.99270	2.000	2.653	7932
125	0.17252	10068.56	99.2862	30.735	509.926	3.10220	2.039	2.713	7879
130	0.17400	9901.74	97.2173	40.353	523.647	3.20982	2.080	2.775	7824
140	0.17700	9590.08	93.0945	60.400	552.047	3.42024	2.172	2.906	7710
150	0.18008	9310.31	88.9936	81.592	581.771	3.62526	2.273	3.040	7594
160	0.18320	9063.53	84.9256	103.984	612.838	3.82571	2.382	3.173	7479
170	0.18636	8848.45	80.9109	127.590	645.226	4.02202	2.494	3.303	7368
180	0.18955	8661.47	76.9769	152.388	678.871	4.21430	2.605	3.425	7263
190	0.19274	8496.86	73.1558	178.927	714.289	4.40568	2.732	3.555	7157
200	0.19594	8347.06	69.4815	206.066	750.311	4.59030	2.833	3.655	7064
220	0.20316	8121.94	65.1787	263.274	827.559	4.95840	3.003	3.882	6975
240	0.20992	7582.19	60.0829	323.826	906.887	5.30328	3.130	4.063	6752
260	0.21678	7568.62	56.0675	386.608	988.731	5.63104	3.212	4.152	6732
280	0.22390	7492.81	52.3739	450.777	1072.674	5.94203	3.252	4.204	6698
300	0.23082	7619.00	48.8444	515.454	1156.574	6.23158	3.260	4.187	6733
320	0.23764	7523.92	45.5144	579.962	1240.020	6.50096	3.243	4.164	6690
340	0.24449	7477.36	42.6121	643.827	1322.920	6.75189	3.208	4.122	6672
360	0.25128	7002.37	40.3204	706.826	1404.775	6.98595	3.164	4.141	6516
380	0.25866	6943.56	38.4452	768.901	1487.340	7.20928	3.114	4.116	6521
400	0.26614	7209.91	36.6357	830.100	1569.337	7.41973	3.065	4.041	6637
420	0.27326	7104.77	35.0231	890.417	1649.419	7.61513	3.019	4.021	6622
440	0.28077	7333.26	33.3906	949.876	1729.734	7.80204	2.976	3.952	6717
460	0.28790	7411.41	31.8775	1008.530	1808.192	7.97646	2.939	3.907	6756
480	0.29507	7459.67	30.4399	1066.427	1886.005	8.14184	2.905	3.866	6782
500	0.30214	7542.51	29.1313	1123.651	1962.874	8.29890	2.877	3.828	6819
520	0.30918	7561.40	27.9243	1180.283	2039.047	8.44842	2.852	3.801	6833
540	0.31745	7729.37	27.8785	1224.716	2106.466	8.56810	2.734	3.747	7006
560	0.32471	7793.87	26.8188	1279.148	2181.072	8.70327	2.713	3.722	7038
580	0.33196	7861.38	25.8346	1333.201	2255.260	8.83330	2.694	3.699	7071
600	0.33920	7931.52	24.9186	1386.900	2329.059	8.95846	2.678	3.679	7105
650	0.35723	8116.30	22.8859	1519.652	2511.898	9.25145	2.647	3.638	7189
700	0.37519	8311.61	21.1575	1650.939	2693.052	9.52021	2.626	3.608	7274
800	0.41088	8723.89	18.3825	1910.382	3051.649	9.99940	2.601	3.570	7448
1000	0.48166	9599.10	14.5787	2423.050	3760.895	10.79038	2.578	3.529	7802
2000	0.83186	14343.53	7.2553	5001.107	7311.679	13.24586	2.691	3.632	9470
3000	1.18262	19353.53	4.8637	7796.399	11081.249	14.76091	2.954	3.903	10885
4000	1.53483	24484.91	3.6649	10861.399	15124.534	16.11807	3.202	4.161	12142
5000	1.88992	29680.08	2.9422	14224.374	19473.810	17.92191	3.569	4.555	13246

* TWO-PHASE BOUNDRY

THERMODYNAMIC PROPERTIES OF PARAHYDROGEN

15000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HP-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 62.440	6.42285	1229.24	12.328	79439.05	0.0015805	0.16213	6.492	0.01299	1.34470	2.8005
64	6.40702	1242.56	12.178	78916.62	0.0015832	0.16213	6.011	0.01286	1.34377	2.6258
66	6.38674	1259.14	11.992	78240.44	0.0015867	0.16200	5.479	0.01270	1.34257	2.4328
68	6.36648	1274.52	11.821	77557.89	0.0015902	0.16173	5.026	0.01253	1.34138	2.2673
70	6.34625	1288.41	11.667	76869.86	0.0015936	0.16136	4.636	0.01238	1.34019	2.1236
75	6.29574	1320.15	11.316	75131.20	0.0016026	0.16003	3.872	0.01202	1.33722	1.8427
80	6.24535	1350.57	10.980	73375.62	0.0016119	0.15830	3.320	0.01164	1.33426	1.6435
85	6.19507	1386.16	10.595	71614.29	0.0016216	0.15633	2.908	0.01123	1.33131	1.5053
90	6.14489	1416.29	10.268	69857.36	0.0016318	0.15424	2.593	0.01086	1.32837	1.3988
95	6.09480	1444.02	9.968	68114.12	0.0016423	0.15209	2.347	0.01052	1.32544	1.3173
100	6.04479	1470.00	9.687	66393.04	0.0016529	0.14993	2.150	0.01021	1.32252	1.2544
105	5.99488	1492.92	9.436	64701.79	0.0016635	0.14779	1.991	0.00993	1.31961	1.2042
110	5.94507	1516.31	9.184	63047.27	0.0016738	0.14618	1.859	0.00969	1.31671	1.1623
115	5.89538	1540.81	8.928	61435.63	0.0016837	0.14478	1.750	0.00947	1.31382	1.1290
120	5.84582	1566.87	8.668	59872.21	0.0016930	0.14340	1.658	0.00925	1.31094	1.1040
125	5.79642	1594.76	8.402	58361.59	0.0017012	0.14206	1.579	0.00903	1.30808	1.0858
130	5.74722	1624.68	8.133	56907.50	0.0017083	0.14078	1.512	0.00883	1.30523	1.0731
140	5.64956	1690.98	7.588	54179.76	0.0017183	0.13841	1.402	0.00843	1.29958	1.0598
150	5.55320	1765.87	7.049	51702.00	0.0017213	0.13799	1.318	0.00818	1.29403	1.0448
160	5.45852	1848.67	6.531	49473.48	0.0017166	0.13857	1.250	0.00800	1.28858	1.0308
170	5.36592	1938.24	6.046	47480.12	0.0017041	0.13920	1.196	0.00785	1.28327	1.0217
180	5.27575	2032.91	5.600	45695.72	0.0016846	0.14376	0.908	0.00796	1.27811	0.7786
190	5.18825	2142.54	5.161	44083.83	0.0016595	0.14786	0.923	0.00802	1.27312	0.7993
200	5.10358	2240.95	4.806	42599.88	0.0016310	0.15108	0.933	0.00810	1.26831	0.8126
220	4.92233	2381.20	4.410	39978.83	0.0016303	0.15533	0.939	0.00813	1.25803	0.8447
240	4.76381	2442.43	4.029	36120.15	0.0016634	0.15734	0.933	0.00813	1.24909	0.8670
260	4.61300	2585.63	3.783	34914.04	0.0016059	0.15778	0.920	0.00824	1.24062	0.8715
280	4.46633	2686.04	3.606	33465.34	0.0015650	0.15718	0.904	0.00837	1.23242	0.8705
300	4.33241	2829.43	3.458	33008.63	0.0014797	0.15594	0.888	0.00860	1.22496	0.8579
320	4.20611	2896.56	3.336	31661.47	0.0014375	0.15432	0.871	0.00881	1.21807	0.8465
340	4.09015	2958.31	3.248	30583.52	0.0013933	0.15256	0.857	0.00905	1.21155	0.8333
360	3.97965	2861.86	3.203	27866.99	0.0014469	0.15079	0.844	0.00915	1.20547	0.8340
380	3.86615	2873.77	3.194	26844.83	0.0014321	0.14911	0.832	0.00937	1.19924	0.8270
400	3.75738	2988.27	3.182	27090.35	0.0013524	0.14763	0.823	0.00972	1.19329	0.8108
420	3.65953	2985.25	3.170	26000.13	0.0013470	0.14636	0.815	0.00995	1.18795	0.8061
440	3.56167	3091.60	3.150	26118.61	0.0012784	0.14532	0.809	0.01032	1.18263	0.7919
460	3.47346	3154.80	3.123	25743.24	0.0012383	0.14454	0.804	0.01065	1.17785	0.7825
480	3.38905	3211.20	3.092	25281.23	0.0012041	0.14401	0.801	0.01099	1.17329	0.7743
500	3.30972	3279.94	3.060	24963.61	0.0011669	0.14372	0.799	0.01135	1.16901	0.7664
520	3.23441	3329.10	3.027	24456.66	0.0011418	0.14366	0.799	0.01168	1.16496	0.7609
540	3.15009	3272.87	3.237	24348.22	0.0011450	0.14379	0.799	0.01218	1.16043	0.7499
560	3.07953	3331.06	3.210	24002.26	0.0011173	0.14415	0.801	0.01258	1.15666	0.7444
580	3.01238	3390.79	3.183	23681.47	0.0010909	0.14468	0.803	0.01298	1.15307	0.7394
600	2.94812	3452.34	3.156	23383.04	0.0010657	0.14537	0.807	0.01340	1.14964	0.7349
650	2.79930	3612.10	3.088	22719.97	0.0010073	0.14774	0.818	0.01451	1.14174	0.7254
700	2.66535	3778.25	3.023	22153.33	0.0009551	0.15087	0.834	0.01569	1.13465	0.7179
800	2.43378	4122.83	2.904	21232.04	0.0008658	0.15884	0.874	0.01828	1.12248	0.7070
1000	2.07617	4824.60	2.724	19929.38	0.0007315	0.17907	0.979	0.02444	1.10385	0.6943
2000	1.20212	8631.17	2.243	17242.70	0.0004208	0.27727	1.668	0.06351	1.05924	0.7867
3000	0.84558	13133.89	1.947	16364.90	0.0002972	0.39260	2.409	0.11894	1.04141	0.8622
4000	0.65154	18113.35	1.757	15952.84	0.0002297	0.51129	3.132	0.18658	1.03180	0.9178
5000	0.52912	24313.79	1.558	15704.39	0.0001873	0.67284	3.829	0.27916	1.02577	0.9333

* TWO-PHASE BOUNDRY

Tables C-5a, C-5c, C-2a, C-2c

for normal hydrogen are located on microfiche in an envelope inside the back cover

Table C-12

Virial Coefficients for Parahydrogen

Temperature °K	B (cm^3/g mol)	C ($(cm^3/g\ mol)^2$)
14	-2.372×10^2	-6.713×10^4
16	-1.992×10^2	-2.265×10^3
18	-1.698×10^2	-7.121×10^3
20	-1.467×10^2	-1.503×10^2
22	-1.281×10^2	5.656×10^3
24	-1.129×10^2	1.323×10^3
26	-1.003×10^1	1.580×10^3
28	-8.969×10^1	1.640×10^3
30	-8.066×10^1	1.615×10^3
32	-7.290×10^1	1.550×10^3
34	-6.615×10^1	1.467×10^3
36	-6.025×10^1	1.376×10^3
38	-5.504×10^1	1.290×10^3
40	-5.042×10^1	1.214×10^3
45	-4.086×10^1	1.066×10^2
50	-3.343×10^1	9.638×10^2
60	-2.264×10^1	8.351×10^2
70	-1.522×10^1	7.510×10^2
80	-9.824×10	6.878×10^2
90	-5.725×10	6.405×10^2
100	-2.510×10	6.085×10^2
120	2.144×10	5.491×10^2
140	5.342×10	5.063×10^2
160	7.654×10	4.726×10^2
180	9.388×10^1	4.449×10^2
200	1.073×10^1	4.217×10^2
250	1.300×10^1	3.768×10^2
300	1.438×10^1	3.438×10^2
400	1.589×10^1	2.976×10^2
500	1.660×10^1	2.661×10^2

Table C-14. Fixed Point Properties of Parahydrogen

PROPERTIES ↓ / CONDITIONS →		Triple Point			Normal Boiling Point		Critical	Standard Conditions		References
		Solid	Liquid	Vapor	Liquid	Vapor	Point ††	STP(0°C)	NTP(20°C)	and Notes ‡
Temperature (K)		13.803			20.268		32.976	273.15	293.15	1
Pressure (mmHg)		52.82			760		9696.8	760	760	1
Density (mole/cm^3) x 10^3		42.91[a]	38.207	0.0623	35.11	0.6636	15.59	0.05459	0.04155	1, 3
Specific Volume (cm^3/mole) x 10^{-3}		0.02330[a]	0.026173	16.057	0.028482	1.5069	0.064144	22.425	24.069	1, 3
Compressibility Factor, $Z = \frac{PV}{RT}$		—	0.001606	0.9850	0.01712	0.9061	0.3025	1.0005	1.0006	a
Heats of Fusion & Vaporization (J/mole)		117.5[4]	905.5		898.3		0	—	—	b
Specific Heat (J/mole-K)	C_s, @ saturation	5.73[5]	13.85	-46.94	18.91	-33.28	(very large)	—	—	5, 6
	C_p, @ constant pressure	—	13.13	21.20	19.53	24.50	(very large)	30.35	30.02	1, 3
	C_v, @ constant volume	—	9.50	12.52	11.57	13.11	19.7	21.87	21.70	1, 3
Specific Heat Ratio, $\gamma = C_p/C_v$		—	1.382	1.693	1.688	1.869	(large)	1.388	1.383	c
Enthalpy (J/mole)		-740.2[4]	-622.7	282.8	-516.6	381.7	77.6	7656.6	8260.6	1, 3, d
Internal Energy (J/mole)		-740.4*	-622.9	169.8	-519.5	229.0	5.7	5384.5	5822.0	1, 3, d
Entropy (J/mole-K)		1.49[4]	10.00	75.63	16.08	60.41	35.4	127.77	129.90	1, 3, d
Velocity of Sound (m/sec)			1273	305	1093	355	350	1246	1294	1, 7
Viscosity, μ	(N-sec/m^2) x 10^3	—	0.026	0.00073	0.0133	0.0011	0.0035	0.00834	0.00875	8, 9, 10
	(centipoise) ‡‡	—	0.026	0.00073	0.0133	0.0011	0.0035	0.00834	0.00875	8, 9, 10
Thermal Conductivity (mW/cm-K), k		9.0[11]	0.73	0.104	1.00	0.163	(*)	1.826	1.897	8, 9, 12
Prandtl Number, $N_{pr} = \mu C_p/k$		—	2.33	0.738	1.288	0.8202		0.6873	0.6867	c
Dielectric Constant, ϵ		1.286	1.252	1.00038	1.230	1.0040	1.098	1.00027	1.00026	13
Index of Refraction, $n = \sqrt{\epsilon}$ †		1.134	1.119	1.00019	1.109	1.0020	1.048	1.00013	1.00012	14, e
Surface Tension (N/m) x 10^3		—	2.99	—	1.93	—	0	—	—	15
Equiv. Vol. /Vol. Liquid at NBT		0.8181	0.9190	563.8	1	52.91	2.252	787.4	845.1	f

† Long Wavelengths
* Anomalously Large
‡ Apply to all items on the line except for specific values separately referenced by superscript

Gas Constant: R = 62,362.7 cm^3-mmHg/mole-K[1]
†† Values in parenthesis are estimates

Molecular Weight = 2.01594[16]
"mole" = gram mole
‡‡ Units for poise are: g/cm-sec

Notes and References for Tables C-14 and C-14a

a. Compressibility factor calculated from the tabulated data using the gas constant, R, from reference 1.

b. Heats of vaporization calculated from enthalpy differences given in references 1 and 3.

c. Calculated from property values given in this table.

d. Base point (zero values) for enthalpy, internal energy, and entropy are 0 K for the ideal gas at 1 atmosphere pressure.

e. Index of refraction calculated from the dielectric constant data given in reference 13, in good agreement with the values reported in reference 14.

f. Ratio of specific volumes reported in reference 1 and 3, or 5 and 17.

g. These temperatures given in reference 5 are based on the IPTS-1968 temperature scale. To compare with the corresponding temperatures given in reference 1 for para-hydrogen which are based on the NBS-1955 temperature scale, 0.01 K should be subtracted, i.e., use 13.947, 20.380 and 33.18 respectively for the triple point, normal boiling point and critical point when determining property differences between normal and para hydrogen.

h. Heats of fusion and vaporization calculated from enthalpy differences and as reported in references 4, 5, and 17.

Tables 11-2, 11-3	This Report	
1.	[29210]	
2.	[23790]	
3.	[12540]	
4.	[12596]	
5.	[6368]	
6.	not used	Johnson, V. J., (General Editor) - A Compendium of the Properties of Materials as Low Temperatures - Phase 1: Part I. Properties of Fluids. Nat. Bur. Stand. Cryogenic Engineering Lab., WADD Tech. Rept. 60-56, Pt. I. (July 1960) Contr. No. AF 33(616)58-4.
7.	[80777]	
8.	[27674]	
9.	[74127]	
10.	not used	Hilsenrath, J., (Editor) - Tables of Thermal Properties of Gases. Nat. Bur. Stand. Circ. No. 564 (1955).
11.	not used	Ho, C. Y., Powell, R. W., and Liley, P. E., - Standard Reference Data on the Thermal Conductivity of Selected Materials, Part 3. Purdue Univ., T.P.R.C., W. Lafayette, Ind., Final Rept. NBS-NSRDS Contr. CST-1346 (Sep. 1968).
12.	[65729]	
13.	not used	Corruccini, R. J. - Dielectric Constant of Liquid Para-hydrogen. Nat. Bur. Stand. Tech. Note No. 144 (Apr. 1962).
14.	[54546]	
15.	not used	Corruccini, R. J., - Surface Tensions of Normal and Para Hydrogen. Nat. Bur. Stand. Tech. Note No. 322 (Aug 1965).
16.	not used	IUPAC Revises Atomic Weight Values, Chem. Engr. News 39, 42-43 (Nov 20, 1961).
17.	[6560]	
18.	not used	Hust, J. G., and Stewart, R. B., - A Compilation of the Property Differences of Ortho and Para Hydrogen or Mixtures of Ortho and Para Hydrogen, Nat. Bur. Stand. Rept. No. 8812 (May 1965).

Table C-14a. Fixed Point Properties of Normal Hydrogen

PROPERTIES ↓ / CONDITIONS →		Triple Point			Normal Boiling Point		Critical Point ††	Standard Conditions		References and Notes ‡
		Solid	Liquid	Vapor	Liquid	Vapor		STP(0°C)	NTP(20°C)	
Temperature (K)		13.957[s]			20.390[s]		33.19[s]	273.15	293.15	5
Pressure (mmHg)		54.04			760		9865	760	760	5
Density (mole/cm³) x 10³		43.01[2]	38.30	0.0644	35.20	0.6604	14.94	0.04460	0.04155	5, 17
Specific Volume (cm³/mole) x 10⁻³		0.02325[2]	0.026108	15.519	0.028409	1.5143	0.066949	22.423	24.066	5, 17
Compressibility Factor, $Z = \frac{PV}{RT}$		—	0.001621	0.9635	0.01698	0.9051	0.3191	1.00042	1.00049	a
Heats of Fusion & Vaporization (J/mole)		117.1	911.3		899.1		0	—	—	4, h
Specific Heat (J/mole-K)	C_s, @ saturation	5.73	13.85	-46.94	18.91	-33.28	(very large)	—	—	5, 6
	C_p, @ constant pressure	—	13.23	21.22	19.70	24.60	(very large)	28.59	28.89	5, 6, 17
	C_v, @ constant volume	—	9.53	12.52	11.60	13.2	(19.7)	20.30	20.40	5, 6, 17
Specific Heat Ratio, $\gamma = C_p/C_v$		—	1.388	1.695	1.698	1.863	(large)	1.408	1.416	c
Enthalpy (J/mole)		321.6	438.7	1350.0	548.3	1447.4	1164	7749.2	8324.1	5, 17, d
Internal Energy (J/mole)		317.9°	435.0	1234.8	545.7	1294.0		5477.1	5885.4	5, 17, d
Entropy (J/mole-K)		20.3	28.7	93.6	34.92	78.94	54.57	139.59	141.62	5, 17, d
Velocity of Sound (m/sec)			1282	307	1101	357		1246	1294	6, 18
Viscosity, u	(N-sec/m²) x 10³	—	0.0256	0.00074	0.0133	0.00111	(0.0035)	0.00834	0.00875	18
	(centipoise) ‡‡	—	0.0256	0.00074	0.0133	0.00111	(0.0035)	0.00834	0.00875	18
Thermal Conductivity (mW/cm-K), k		9.0[11]	0.74	0.105	1.00	0.165	(*)	1.739	1.842	6, 9
Prandtl Number, $N_{pr} = u\ C_p/k$		—	2.27	0.742	1.30	0.821		0.680	0.681	c
Dielectric Constant, ε		1.287	1.253	1.00039	1.231	1.0040	1.0937	1.000271	1.000253	13
Index of Refraction, $n = \sqrt{\varepsilon}$ †		1.134	1.119	1.000196	1.1093	1.0020	1.0458	1.000136	1.000126	e
Surface Tension (N/m) x 10³		—	3.00	—	1.94	—	0	—	—	15
Equiv. Vol./Vol. Liquid at NBT		0.8184	0.9190	546.3	1	53.30	2.357	789.3	847.1	f

† Long Wavelengths
* Anomalously Large
‡ Apply to all items on the line except for specific values separately referenced by superscript

Gas Constant: R = 62,362.7 cm³-mmHg/mole-K [1]
†† Values in parenthesis are estimates

Molecular Weight = 2.01594[16]
"mole" = gram mole
‡‡ Units for poise are: g/cm-sec

Table C-20

Index of Refraction of Saturated Liquid Parahydrogen at Three Wavelengths

Temperature, K	Wavelength 4358 Å n	5462 Å n	6939 Å n
15	1.1222	1.1204	1.1191
16	1.1208	1.1189	1.1177
17	1.1192	1.1174	1.1162
18	1.1176	1.1158	1.1146
19	1.1159	1.1141	1.1129
20	1.1141	1.1124	1.1112
21	1.1123	1.1106	1.1095
22	1.1103	1.1086	1.1075
23	1.1082	1.1065	1.1054
24	1.1059	1.1042	1.1032
25	1.1034	1.1018	1.1008
26	1.1007	1.0991	1.0981
27	1.0977	1.0962	1.0952
28	1.0944	1.0929	1.0920
29	1.0906	1.0892	1.0883
30	1.0862	1.0849	1.0840

Table C-22

Joule-Thomson Inversion Curve of Parahydrogen

Temperature		Pressure		Density	
K	R	atm	psia	$mol/cm^3 \times 10^3$	lb_m/ft^3
28	50.4	9.87	145.1	30.06	3.783
29	52.2	15.05	221.2	29.90	3.763
30	54.0	20.08	295.1	29.73	3.742
31	55.8	25.01	367.6	29.56	3.720
32	57.6	29.85	438.7	29.40	3.700
34	61.2	39.16	575.5	29.05	3.656
36	64.8	48.06	706.3	28.70	3.612
40	72.0	64.59	949.2	27.99	3.523
50	90.0	98.93	1454.	26.16	3.292
60	108.0	124.4	1828.	24.30	3.058
80	144.0	153.5	2256.	20.58	2.590
100	180.0	161.4	2372.	17.04	2.145
120	216.0	162.1	2353.	14.12	1.777
140	252.0	140.5	2064.	10.86	1.367
160	288.0	102.2	1502.	7.176	0.9031
180	324.0	50.97	749.1	3.321	0.4179
200	360.0	.54	8.6	0.036	0.0045

Table C-24

Heats of Sublimation of Parahydrogen

Temperature	Heat of Sublimation
K	Cal/mol
13.813	244.90
13.000	242.30
12.000	238.71
11.000	234.76
10.000	230.55
9.000	226.12
8.000	221.53
7.000	216.82
6.000	212.02
5.000	207.15
4.000	202.24
3.000	197.30
2.000	192.34
1.000	187.37

Table C-38

Vapor Pressure of Parahydrogen

Temperature K	Pressure mm HG
13.813	52.89
13.000	30.13
12.000	13.78
11.000	5.567
10.000	1.917
9.000	5.343×10^{-1}
8.000	1.118×10^{-1}
7.000	1.561×10^{-2}
6.000	1.198×10^{-3}
5.000	3.570×10^{-5}
4.000	2.080×10^{-7}
3.000	4.832×10^{-11}
2.000	3.985×10^{-18}
1.000	8.255×10^{-39}

Table C-48

Ortho-Para Compositions at Equilibrium

T °K	Percentage in para form for H_2
10	99.9999
20	99.821
20.39	99.789
23.57	------
30	97.021
33.10	95.034
40	88.727
50	77.054
60	65.569
70	55.991
80	48.537
90	42.882
100	38.620
120	32.959
150	28.603
200	25.974
250	25.264
208.16	25.075
300	25.072
350	25.019
400	25.005
500	25.000

Table C-48a Heats of Conversion from Normal to Parahydrogen

T, K	cal/mol
10	253.9865
20	253.987
20.39	253.986
30	253.986
33.1	253.986
40	253.976
50	253.845
60	253.212
70	251.400
80	247.623
90	241.275
100	232.079
120	205.857
150	155.385
200	78.91
250	33.98
298.16	13.76
300	13.28

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11. Unit Conversions, Physical Constants and Symbols

A complete description of the International System of Units is given in [72728] Page, C. H. and Vigoureux, P., Natl. Bur. Standards, Spec. Publ. 330 (Jan 1971). A good general reference for physical constants and conversion factors is [25291] Mechtly, E. A., National Aeronautics and Space Administration, SP-7012 (1964). Selected unit conversion and physical constants are given in the following table.

Conversion Factors

Density

lb/ft^3		Kg/m^3		g/cm^3		mol/cm^3		Amagat
1	=	16.018	=	.016018	=	7.9458×10^{-3}	=	178.216
.062428	=	1	=	.001	=	4.9605×10^{-4}	=	11.126
62.428	=	1000	=	1	=	.49605	=	1.1126×10^{4}
125.85	=	2015.9	=	2.0159	=	1	=	2.2428×10^{4}
5.6111×10^{-3}	=	.089881	=	8.9881×10^{-5}	=	4.4586×10^{-5}	=	1

Specific Volume

ft^3/lb		m^3/Kg (liter/g)		cm^3/g		cm^3/mol
1	=	.062428	=	62.428	=	125.85
16.018	=	1	=	1000	=	2015.9
.016018	=	.001	=	1	=	2.0159
7.9458×10^{-3}	=	4.9605×10^{-4}	=	.49605	=	1

Pressure

lb_f/in^2 (psi)		MPa		Atm		Torr (mm Hg)		Bar
1	=	6.8948×10^{-3}	=	.068046	=	51.715	=	6.8948×10^{-2}
145.04	=	1	=	9.8692	=	7500.6	=	10.0
14.696	=	.10132	=	1	=	760.0	=	1.0132
.019337	=	1.3332×10^{-4}	=	1.3158×10^{-3}	=	1	=	1.332×10^{-3}
14.504	=	.1	=	.98692	=	750.06	=	1

Enthalpy, Heat of Vaporization, Heat of Conversion, Specific Energies

BTU/lb		KJ/Kg (j/g)		J/mol		cal/g
1	=	2.3244	=	4.6858	=	.55556
.43022	=	1	=	2.0159	=	.23901
.21341	=	.49605	=	1	=	.11856
1.8	=	4.1840	=	8.4345	=	1

Specific Heat, Entropy

BTU/lb-°R		KJ/Kg-K (J/g-K)		J/mol-K		cal/mol-K
1	=	4.184	=	8.4345	=	2.0159
.23901	=	1	=	2.0159	=	.48182
.11856	=	.49605	=	1	=	.23901
.49605	=	2.0755	=	4.184	=	1

Thermal Conductivity

BTU/ft-hr-°R		mW/cmkK		J/s-cm-K		cal/s-cm-K
1	=	17.296	=	.017296	=	.0041338
.057816	=	1	=	.001	=	2.3901×10^{-4}
57.816	=	1000	=	1	=	.23901
241.90	=	4184	=	4.184	=	1

Viscosity

lb/ft-s		Kg/m-s ($N\text{-}s/m^2$)		Centipoise (10^{-2} g/cm-s)		$lb\text{-}s/ft^2$ (slug/ft-s)
1	=	1.48816	=	1488.16	=	.031081
.67197	=	1	=	1000	=	.020885
6.7197×10^{-4}	=	.001	=	1	=	2.0885×10^{-5}
32.175	=	47.881	=	$4.7881 \times 10^{+4}$	=	1

32 = 0 =

Temperature

K		R		C		F
1	=	1.8	=	1	=	1.8

Velocity of Sound

ft/s		m/s
1	=	.3048
3.2808	=	1

Surface Tension

lb_f/in		N/m		dynes/cm
1	=	175.13	=	175.13 x 1
5.7102×10^{-3}	=	1	=	1000
5.7102×10^{-3}	=	.001	=	1

lb_f	=	pound force
lb	=	pound mass
g	=	gram
Kg	=	Kilogram mass
mol	=	2.01594 gram = 0.00201594 kg = 0.00444442 l
ft	=	foot
m	=	meter
cm	=	centimeter
BTU	=	British Thermal Unit
J	=	joules = watt second
W	=	watt
cal	=	calorie
R	=	absolute temperature in degrees Rankine
F	=	temperature in degrees Fahrenheit
K	=	absolute temperature in Kelvins
C	=	temperature in degrees Centigrade
N	=	Newton
MPa	=	Megapascal (pressure)
Atm	=	Atmosphere pressure
Torr	=	Milimeter of mercury pressure
cp	=	Centipoise
slug	=	32.174 lb
R	=	Gas constant = 8.31434 J/mol-K, 8.31434×10^6 N-cm^3/m^3-mol-K = 82.0562 Atm-cm^3/mol-K = 10.7314PSI-ft^3/mol-R

molecular weight = 2.01594 =

*U.S. GOVERNMENT PRINTING OFFICE: 1975 - 635-275/30