Viscosity of R134a, R32 and R125 at Saturation

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The physical properties of environmentally acceptable replacement refrigerants have become of increasing concern in the last few years. There have therefore been a considerable number of measurements of the transport properties of new materials whose properties had not been determined up to now, mainly as a result of the inadequacy of the samples provided, either because of a lack of purity or simply a lack of quantity. Given that the measurement techniques of thermophysical properties available now are much more developed it is reasonable to expect a high degree of accuracy in individual results and consequently better agreement between the results of various authors. Nevertheless there remains a considerable ambiguity with respect to the viscosity where the discrepancies exceed the limits of the mutual uncertainty claimed by the authors. The paper presents the results of viscosity measurements of refrigerants R134a, R32 and R125, in both the liquid and vapor phase, over the temperature range 220 to 343 K near saturation. The measurements of the liquid and vapor phase have been performed with two different vibrating-wire viscometers, both with an accuracy of ±0.5 - 1% and calibrated with respect to standard reference values of the viscosity. The results are compared with those of other authors using different experimental methods.