

Viscosity Measurements of Refrigerant Blend R-507A (50 wt % HFC-143a, 50 wt % HFC-125) in the Temperature Range 254 to 293 K and Pressures up to 10 MPa

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The refrigerant blend R-507A [50 wt % 1,1,1-trifluoroethane (HFC-143a) 50 wt % pentafluoroethane (HFC-125)] is an azeotropic mixture and seems to be an appropriate replacement for R-502 (an azeotropic mixture of HFC-22 and HFC-115). The paper reports viscosity measurements of the refrigerant blend R-507A, performed in the temperature range 254 to 293 K and at pressures up to 10 MPa. A previously described vibrating-wire viscometer has been used [1, 2] and the overall uncertainty of the measurements is estimated to be 1%. No viscosity literature data for the refrigerant blend R-507A, in the compressed liquid region, has been found in the literature.

The data obtained was correlated by means of a modified hard-sphere scheme and the overall average absolute deviation of the experimental viscosity from the one calculated by the correlation is within 0.3 %. Extrapolation of the present viscosity results to the liquid under saturation pressure has been performed with resort to the mentioned correlation scheme, which enabled the extension of the comparisons of the present results with data obtained by other authors.

Furthermore, an analysis of the relation between the viscosity of the pure components and the viscosity of the mixture will be discussed on the basis of the hard sphere model mentioned above, and recently obtained experimental data.

- [1] J. L. G. Correia da Mata, J. M. N. A. Fareleira, C. M. B. P. Oliveira, F. J. P. Caetano, and W. A. Wakeman, *High Temperatures-High Pressures* **33**, 669-676 (2001).
- [2] F. J. P. Caetano, J. L. G. Correia da Mata, J. M. N. A. Fareleira, C. M. B. P. Oliveira, and W. A. Wakeham, *Int. J. Thermophys.* **25**, 1-11 (2004).