

Simultaneous Measurement of Dynamic Viscosity and Density of Propanol, Pentanol, and Heptanol at High Pressures

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In this work, simultaneous measurements of dynamic viscosities and densities for propanol, pentanol, and heptanol are presented. The viscosity has been measured with a modified capillary viscometer designed and built to operate at pressures up to 40 MPa and temperatures up to 473.15 K. The experimental equipment is a coiled tube capillary viscometer coupled with an Anton Paar vibrating tube densimeter. The density of fluids in the study has been simultaneously determined (at the same conditions as the viscosity measurements). The dynamic viscosity and densities were measured at pressures up to 30 MPa and temperatures up to 353 K. The total uncertainties of the dynamic viscosity measurements were estimated to be less than 0.7 %. The measured dynamic viscosities and densities were compared with data, predictions, and correlations previously reported in the literature, where the differences between the literature and the measurements reported here are less than 0.4 % for viscosity and less than 0.05 % for density.