

Density Measurements for Isobutanol and N-Hexanol at Pressures Up to 100 MPa and from (283 to 363) K

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Isobutanol (CAS NO: 78-83-1) and n-hexanol (CAS NO: 111-27-3) as a biofuel, which have been got more and more attention due to their high calorific value and combustion performance. The study of these compounds present obvious industrial interest in engineering applications. New density data for isobutanol and n-hexanol over 9 isotherms [(283.15 ≤ T ≤ 363.15) K] and 16 isobars [(0.1 ≤ P ≤ 100) MPa] are reported. In this work, the experiment was conducted using a high-pressure vibrating tube densimeter system, which was calibrated with vacuum and water by the method of Lagourette et al. Moreover, R134a has been used as a reference fluid to validate the densimeter. A series of experimental data points have been measured in the framework of this work. The uncertainty of each obtained datum was estimated, and the maximum expanded uncertainty with a level of confidence of 0.95 (k = 2) of density measurement for isobutanol and n-hexanol were 0.04% and 0.03%, respectively. The experimental density data were fitted with the Tait-like equation with an absolute average percentage deviation of 0.019% and 0.034% for isobutanol and n-hexanol, separately. In addition, these data were used to analyze the isothermal compressibility and the isobaric thermal expansivity for these fluids.