

Compressed Liquid Densities of Pentane, Hexane and Nonane at Temperatures from (313 to 363) K and Pressures up to 25 MPa

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This work is part of a systematic study to obtain densities for n-alkanes (C5 to C15) in the temperature range from (313 to 363) K and pressure from 0.1 to 25 MPa. These fluids are important in the oil industry and for applications using supercritical fluids. Although experimental data are already available for these fluids we perform these measurements to obtain experimental densities in the application range of supercritical fluids. Also, the uncertainty of the data is better or equal to data from the literature. Cibulka et al. [1] did a critical review concerning densities of alkanes.

Measurements of compressed liquid densities of pentane, hexane and nonane were carried out at temperatures from (313 to 363) K and pressures up to 25 MPa. A vibrating tube densitometer, with two reference calibration fluids, was used to obtain density. The global uncertainty was estimated to be 0.2 kg m^{-3} , as previously reported. [1] Two explicit density empirical equations were used to correlate the experimental densities. The eleven-parameter BWRS equation of state was also used to correlate the experimental densities. Similar deviations between experimental and calculated data were obtained for three equations. Our results were compared with the correlations obtained by Cibulka et al. [1].

[1] I. Cibulka, and L. Hnedkovsky, J. Chem. Eng. Data **41**, 657 (1996).

[2] A. Zúñiga-Moreno, and L.A. Galicia-Luna, J. Chem. Eng. Data **50**, 1224 (2005).