

Experimental Densities of the Thiophene + Octane and Thiophene + Decane Mixtures up to 353 K and 20 MPa

Jose Domenzain-Gonzalez, Luis A. Galicia-Luna^{C, S}, Jose J. Castro-Arellano and Alfredo Pimentel-Rodas
Laboratorio de Termodinamica, Instituto Politecnico Nacional, Mexico, Mexico DF, México
lgalicial@ipn.mx

The thermodynamic properties obtained experimentally are the basis for obtaining models semi - empirical used to represent and predict the behavior of fluids. The volumetric properties are important in the chemical industry, are used for the design, simulation and optimization of processes such as distillation, liquid-liquid extraction separation, among others. In addition, knowledge of the density data is the basis for the determination of other properties such as solubility and dynamic viscosity. In this work, experimental densities of two binary mixtures: thiophene (1) + octane (2) and thiophene (1) + decane (3) in the range of 313 to 353 K and up 20 MPa are reported. The two mixtures densities were measured at five different compositions between $x= 0$ and 1. The measurement system was based on a vibrating tube densimeter (VTD) with a coupled data acquisition system. The densities of nitrogen and water were taken as calibration fluids for the calibration of vibrating tube densimeter. The total uncertainties of the densities measurements were estimated to be less than 0.04%.