

## Experimental Compressed Liquid Densities of Mixtures Containing Ionic Liquids and Water, at Temperatures from 313 to 343 K and Pressures Up to 20 MPa.

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The influence of water on the properties of ionic liquids is a matter of great interest in chemical engineering research, mainly for hydrophilic ionic liquids. This work focuses on research on the high-pressure behavior of tetrafluoroborate-based ionic liquids with water and what the differences occur when the cations change. Densities for [EMIM][BF<sub>4</sub>] + H<sub>2</sub>O and [BMIM][BF<sub>4</sub>] + H<sub>2</sub>O liquid mixtures were measured at four temperatures (313 to 343) K and up to 20 MPa by means a vibrating tube densimeter. Experimental data were compared with those obtained from literature [1-5] at atmospheric pressures using a Modified Toscani-Szwarc five-parameter Equation (MTS) [6]. Derived and excess properties such as volume isothermal compressibility and isobaric thermal expansibilities were calculated using the MTS equation. The experimental uncertainty in density was estimated to be lower than 0.2 kg·m<sup>-3</sup>. No literature data at high pressure for these mixtures were found.

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