Measurement of liquid densities with compositions and temperatures for ternary mixtures containing choline chloride

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Unconventional solvents like ionic liquids (ILs) are promising in the future. For example, the solvents could resolve a problem of azeotropic deadlock at the distillation process. Experimental investigation on physical property of such innovative solvents is of considerable importance for the development and design of new processes utilizing these solvents. Accordingly, main purpose of this work is volumetric property of solutions including choline chloride (ChCl) and analyze the data for the development and design of solution process. In this study, densities were measured by using a vibrational density meter at atmospheric pressure. The solution densities of ChCl+ glycerol which exhibits a deep eutectic and IL-like feature mixed with methanol, ethanol or 2-propanol were measured in the wide temperature ranges with respect to alcohol compositions. With the obtained density data, regression analysis was performed for isothermal data sets and excess molar volumes were calculated with the composition of the solvent.
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