

Thermophysical Properties of Choline Acetate + Water Mixtures

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The growing awareness on the effects of climate change, along with the increase in energy consumption worldwide, makes it urgent to find renewable energy alternatives and improve and develop more efficient equipment, since the majority of the energy produced is generated from burning fossil fuels [1,2]. In the case of absorption refrigeration, ionic liquids (ILs) were proposed as alternative absorbents due to their unique properties such as low flammability, negligible vapor pressure, high chemical and thermal stabilities and easy recycling. In recent studies, the most common ILs (imidazolium and pyridinium based) presented high toxicity and nonbiodegradability [3] although choline based ILs show that can be a less toxic and biodegradable alternative to common ILs [4,5].

In this work, the thermophysical properties of the binary system water and choline acetate [Cho][OAc] with an assay $\geq 95\%$, have been measured to analyze its possible use as working mixtures for absorption refrigeration. The thermophysical properties studied are density, speed of sound, viscosity, electrical conductivity and refractive index (and derived excess properties), for temperatures between 283 to 353 K.

References

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