

High Temperature Vapour-Liquid Equilibrium of a Ternary System Involving Water, Ethanol and 1-Propanol: Experimental Measurements and Prediction Using CPA EOS

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The knowledge and the capacity to describe the vapour–liquid equilibria of systems composed of water and alcohols are crucial for the design of separation processes. In this work we present the study of the ternary system water+ethanol+1-propanol completing the cycle of previous studies [1-3]. For systems of this kind, the data is scarce and some obtained many years ago. With the resources that we have nowadays, more accurate data can be obtained. To obtain the experimental data of this ternary system we used a flow apparatus described in previous work [4]. The Cubic-Plus-Association equation of state (CPA EoS) [5] was used to predict the experimental results. This equation already showed to be able to properly describe the VLE of the binary systems constituting this ternary system, using a single, constant for all the alcohol systems and temperature independent binary interaction parameter. The information taken from the binary data CPA EoS prediction is here transferred for the ternary system phase equilibria description.

References

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