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Solubility and solution thermodynamics of sorbic acid in eight pure organic solvents

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ABSTRACT

By the gravimetric method, the solubility of sorbic acid in eight solvents including ethanol, 2-propanol, methanol, 1-butanol, ethyl acetate, methyl tert-butyl ether, acetone and acetonitrile was determined over a temperature range from 285.15 K to 323.15 K at atmospheric pressure. For the temperature range investigated, the solubility of sorbic acid in the solvents increased with increasing temperature. The experimental values were correlated with the linear solvation energy relationship, modified Apelblat equation, λh equation, non-random two-liquid (NRTL) model, and Wilson model. On the other hand, the enthalpy, entropy and Gibbs energy of dissolution were obtained from these solubility values by using the van't Hoff and Gibbs equations. The excess enthalpy of solution was estimated on the basis of λh equation. Furthermore, the *a priori* predictive model COSMO-RS was employed to

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