Phase equilibrium properties of binary aqueous solutions of benzylamine, 1,2-bis(2-aminoethoxy)ethane, or 2-[2-(dimethylamino)ethoxy]ethanol

Aouicha Belabbaci, Ilham Mokbel, Ahmed Ait Kaci, Jacques Jose, Latifa Negadi

Abstract :

The vapour pressures of (benzylamine + water), {1,2-bis(2-aminoethoxy)ethane + water}, or {2-[2-(dimethylamino)ethoxy]ethanol + water} binary mixtures, and pure 2-[2-(dimethylamino)ethoxy]ethanol component were measured by means of two static devices at temperatures between (283.15 and 363.15 (or 323.15)) K. The data were correlated with the Antoine equation. From these data, excess Gibbs functions (G^E) were calculated for several constant temperatures and fitted to a fourth-order Redlich–Kister equation using the Barker's method. The (benzylamine + water) binary mixture exhibits positive deviations in G^E for ($303.15 < T/K < 323.15$) and a sinusoidal shape in G^E for $T > 323.15$ K over the whole composition range. The aqueous 1,2-bis(2-aminoethoxy)ethane or {2-[2-(dimethylamino)ethoxy]ethanol + water} solutions exhibit negative deviations in G^E for all investigated temperatures over the whole composition range.

Keywords : (Vapour + liquid) equilibria; Isoteniscope; Amines; Water; Excess Gibbs free energy.

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