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Molecular interaction studies of ketones with 2–methoxyethanol: Densities, viscosities, refractive indices and excess properties at 303 K

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ABSTRACT

Densities, viscosities and refractive indices have been measured as a function of composition for the binary mixtures of ketones with 2–methoxyethanol at 303 K. Molar refraction and polarizability values are calculated by using measured refractive indices. The excess properties such as excess molar volume (V^E), deviations in viscosities (η^E), deviation in refractive indices (Δn_D), excess molar refraction ($R_m{}^E$) and excess Gibbs free energy (ΔG^{*E}) values are calculated by using the experimental values. The excess properties values are correlated with Redlich–Kister polynomial equation to obtain their coefficients and standard deviations. The experimental refractive index values are analyzed by different theoretical mixing rules and the standard deviations are predicted. A negative deviation of excess molar volume and positive deviation of excess Gibbs free energy values indicate that specific types of interaction occurred between unlike molecules. The specific force may be cited in the form of hydrogen bonding between the unlike molecules (C=O…H–O).

Keywords: Density, Viscosity, Excess property, Ketone, 2-methoxyethanol, Molecular interaction.
