

Densities, Viscosities, and Refractive Indices for Binary and Ternary Mixtures of N,N-Dimethylacetamide, 2-Methylbutan-2-ol, and Ethyl Acetate at 298.15 K in the Liquid Region and at Ambient Pressure

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Densities, viscosities, and refractive indices of the ternary system: N,N-dimethylacetamide + 2-methylbutan-2-ol + ethyl acetate, and the binary systems: N,N-dimethylacetamide + 2-methylbutan-2-ol, N,N-dimethylacetamide + ethyl acetate, and 2-methylbutan-2-ol + ethyl acetate, were measured at $T = 298.15$ K for the liquid region and at ambient pressure for the whole composition range. Excess molar volumes, deviations in the viscosity from the mole fraction average, and deviations in the refractive index from the volume fraction average for the mixtures were derived from the experimental data. The binary and ternary excess molar volume data, deviations in the viscosity, and deviations in the refractive index were correlated as a function of the mole fraction, using the Redlich–Kister and Cibulka equations, respectively. The results are consistent with the self-association of alcohols and the polar and nonpolar characteristics of the ester and amide used. The McAlisters' multibody and Kalidas-Laddha interaction models are used for correlating the kinematic viscosity with the mole fraction of binary and ternary mixtures, respectively. The experimental results for the binary and ternary mixtures are analyzed, in order to discuss the nature and strength of the intermolecular interactions in these mixtures.