Liquid-Liquid Equilibrium of Ternary Aqueous Solutions of α,α,α-Trifluorotoluene in N-2,2,2-Trifuoroethanol at 298.2 K and 101 kPa

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Liquid-liquid equilibrium (LLE) and solubilities of ternary solutions of (water – α,α,α-trifluorotoluene - 2,2,2-trifluoroethanol) were established in thermostated cells at temperature 298.2 K and atmospheric pressure. The titration method was used to construct the binodal curves. Gas-liquid chromatography (Perkin Elmer, Model: Clarus 500) was used to determine the ternary compositions of the mutual phases.

The measured LLE data were reduced and correlated by the Othmer-Tobias, NRTL and UNIQUAC models. The correlated binodal and LLE phase diagrams were in good accordance with experimental data. The distribution coefficients and separation factors are reported together with the distribution coefficient at infinite dilution for a given solute-solvent pair.

The system showed some asymmetry and differences between solubility of trifuoroethanol in pure solvents which enhances its total solubility. The effect of polarities of the system components on distribution coefficients is discussed.