Excess Molar Volumes and Excess Molar Enthalpies of Binary Mixtures for {1,2-dichloropropane + triethylene glycol monoalkyl ether} at 298.15 K

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The excess molar volumes V^E and excess molar enthalpies H^E at T=298.15 K and atmospheric pressure for the binary systems of 1,2-dichloropropane(1,2-DCP) and 2-(2-(2-alkoxyethoxy)ethoxy)ethanols have been determined from density and heat flux measurements, respectively. The alkoxyethanols are triethylene glycol monomethyl ether (TEGMME), triethylene glycol monoethyl ether(TEGMEE), and triethylene glycol monobutyl ether(TEGMBE). Both V^E and H^E values of the binary mixtures are negative over the whole composition range, which increase with alkyl chain length of alkoxyethanols. The minimum values of V^E and H^E are varying from -0.3016 cm^{3}mol^{-1} (TEGMME) to -0.400 cm^{3}mol^{-1} (TEGMBE) and -758.8 Jmol^{-1} (TEGMME) to -800.5 Jmol^{-1} (TEGMBE) around x_1(1,2-DCP) = 0.50, respectively. The experimental results of both V^E and H^E were fitted to Redlich-Kister equation to correlate the composition dependence. The experimental H^E data were also used to test the suitability of Wilson, NRTL, and UNIQUAC models. The NRTL equation was found to be the most suitable for these systems.