

Isothermal Vapor-Liquid Equilibrium for the Binary and Ternary Mixtures of Di-methyl carbonate (DMC) + ethanol + benzene at 333.15 K

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The addition of fuel oxygenates to gasoline raises combustion temperatures and improves engine efficiencies. The results are lower levels of carbon monoxide and unburned hydrocarbons in auto exhaust. Recently, environmentally friendly Di-methyl carbonate (DMC) is considered as a suitable gasoline additive and ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME) and di-isopropyl ether (DIPE) are also considered as the most possible candidate among ether compounds. We have reported the phase equilibria and mixture properties systematically for several candidates of gasoline additive (octane booster), because the accurate data of such properties are strongly related to the processing of their compounds. In this work, we report the vapor-liquid equilibrium (VLE) data at 333.15 K for the binary systems DMC (1) + ethanol (2), DMC (1) + benzene (2), ethanol (1) + benzene (2), and also for the ternary system DMC (1) + ethanol (2) + benzene (3) by using headspace gas chromatography (HSGC).