

**Isothermal vapor-liquid equilibrium for the ternary mixtures of dibutyl ether(DBE)  
+ ethanol+ benzene, and DBE+ ethanol+ toluene**

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Vast amounts of thermodynamic data needed for process modeling and the development of the parameters for thermodynamic models. However, the number of phase equilibria and mixing properties for the other ether compounds, such as ETBE, TAME, IPE and DBE, are much smaller than those of MTBE.

In this work, isothermal vapor-liquid equilibrium(VLE) at 323.15 K for the ternary systems of dibutyl ether(DBE) + ethanol + benzene, and DBE + ethanol + toluene were measured with the help of headspace gas chromatography(HSGC). The experimental VLE data were correlated with three gE model equations of Wilson, NRTL and UNIQUAC. All the measured data in this work showed good agreements with the calculated values.