Conductivity, calorimetry and phase diagram of the NaHSO₄–KHSO₄ system

Physico-chemical properties of the binary system NaHSO₄–KHSO₄ were studied by calorimetry and conductivity. The enthalpy of mixing has been measured at 505 K in the full composition range and the phase diagram calculated. The phase diagram has also been constructed from phase transition temperatures obtained by conductivity for 10 different compositions and by differential thermal analysis. The phase diagram is of the simple eutectic type, where the eutectic is found to have the composition $X(KHSO_4)=0.44$ (melting point $\approx 406$ K). The conductivities in the liquid region have been fitted to polynomials of the form $\kappa(X)=A(X)+B(X)(T-T_m)+C(X)(T-T_m)^2$, where $T_m$ is the intermediate temperature of the measured temperature range and $X$ the mole fraction of KHSO$_4$. The possible role of this binary system as a catalyst solvent is also discussed. (C) 2005 Elsevier B.V. All rights reserved.

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