

Specific conductivity and pH of solution NaCl–H₂SO₄–H₂O

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Abstract

Studies of the electrical conductivity (κ) and pH made use of compensatory contact method using the AC bridge. Control of pH of solutions and temperature conducted by the device pH55. The solutions were changed in the interval, the aggregate (NaCl + H₂SO₄) concentration ΣM from 0.1 to 2.0 mol/L and varying inside the interval, the concentration of H₂SO₄ from 0 to 2 mol/L. is established that with increasing total concentration of the reagents increases the conductivity. The electrical conductivity values with the introduction of NaCl markedly lower than those for aqueous solution of H₂SO₄, indicating significant changes in the ionic composition of the solvent. Statistical analysis of experimental data showed that they are well described by quadratic equations of temperature dependence of conductivity the total concentration of reagents is most accurately represented in exponential form: $\text{Ln}\kappa_t = \text{Ln}\kappa_0 - E/RT$. A weak dependence of the activation energy of electrical conductivity from solution composition (7.095 kJ/mol) indicates the identity of the ions involved in the transfer charge in the solution in the studied compositions. Of changes in the values κ_0 in order to increase ΣM and the proportion of NaCl in the sum indicates the reduction of the share of the relay mechanism of charge transfer of the hydrogen ion in hydronium. Data on the dependence of the pH value from the composition of the solution also point to the decline in the percentage change values ΣM in order to increase ΣM and the proportion of NaCl in the amount also indicated that decline.

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