

INTRODUCTION

The edition suggested is a continuation of a series of works of this author devoted to many-years' theoretical researches of the structure of and interparticle interactions in aqueous solutions of electrolytes, programmed and factographic representation of experimental data and recommendations related to the methods of calculations of physicochemical parameters of binary and multicomponent systems [1–24].

In this edition, information on the specific and molar conductivity of electrolyte solutions is substantially remade in comparison with [19, 21], and new experimental data are given. Coefficients for calculating electrical conductivity of a large number of electrolytes are presented, which were obtained by a mathematical treatment (using methods of regression analysis) of experimental data available in the literature. Experimental data for most widely applied electrolytes are given for a high-temperature range.

In Part I, methods for calculating electrical conductivity and related coefficients for a wide circle of electrolytes are given; these methods make it possible to calculate, with an accuracy sufficient for practical purposes, many properties of multicomponent solutions. New regression equations (necessary for determining specific and molar electrical conductivity of solutions) were suggested for calculating densities of multicomponent solutions of electrolytes, densities of water at the saturation line in a temperature range of 0–350°C and specific volumes at temperatures of 0–500°C and pressures of 0–1000 MPa, viscosities of water at the saturation line at temperatures of 0–350°C, and dielectric constants at temperatures of 0–500°C and pressures of 1–500 MPa.

In Part II, the list of electrolytes for which specific and molar conductivities were calculated is extended in comparison with [21] (see List of Tables to Part II); the existing tables were remade. All the data are given in a single system of units of measurement. In this issue, as in [21], a logical mode of representing reference data was retained; for each

electrolyte, the maximum temperature range and the maximum range of concentrations are given. A large attention is paid to high-temperature researches. For many electrolytes, additional original experimental investigations were carried out. The author hopes that all these changes will favor the readability and applicability of the material presented.

In this edition, the following system of references is used. For each property and each electrolyte, the full bibliography is given, but many data were refined by our own experimental studies, and it is by no means necessary that all information from the references mentioned have been mathematically processed; in those cases where no references are given, this means that original data of this author were used.

The author will be very grateful to readers for any remarks and wishes.