

Evaluation of Thermo-Acoustical Parameters of Some Binary Liquid Mixtures from Volume Expansivity Data - Part II

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Volume expansivity data is highly useful in evaluating the Gruneisen parameter, which is a useful quantity in studying the internal structure, molecular order, and thermo-acoustical properties of liquids and polymers. The importance of volume expansivity in evaluating various thermo-acoustic properties has been amply demonstrated by earlier researchers in the field. In this paper, an attempt is made to analyze the relationship between different parameters that are used for system description, such as the Moelwyn Hughes parameter, isobaric, isothermal, and isochoric acoustical parameters, fractional free volume, the repulsive exponent in the Mie's potential, Huggin's parameter, Sharma's Parameter, and Beyer's non-linear parameter for several organic binary mixtures (which are industrially important), have been evaluated for the entire range of mole fractions. For the same group of binary mixtures the densities have been measured at three different temperatures for the entire range of mole fractions in order to facilitate the calculation of the above said parameters. It is interesting to note that all of these thermo-acoustical parameters are linked to a single experimentally determinable quantity: volume expansivity.