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Partial Molar Volumes and Compressibilities of α -Amino Acids from Aqueous to Aqueous-Disodium Tartrate Solutions at $T = (303.15, 308.15 \text{ And } 313.15) \text{ K}$.

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ABSTRACT: Present work reports the densities (ρ) and ultrasonic velocities (U) of four α -amino acids (viz. glycine, L-proline, L-arginine and L-asparagine) in aqueous disodium tartrate (Na_2Tar) (0.50, 1.00 and 1.50 $\text{mol}\cdot\text{kg}^{-1}$) solutions at $T = (303.15, 308.15 \text{ and } 313.15) \text{ K}$. Apparent molar volumes ($V_{2,\phi}$) and apparent molar isentropic compressibilities ($\kappa_{S,2,\phi}$) of amino acids have been calculated from density and ultrasonic velocity data respectively. Standard molar volumes ($V_{2,\phi}^o$) and standard molar compressibilities ($\kappa_{S,2,\phi}^o$) were determined from the graphical fittings using standard relations and corresponding standard transfer volumes ($\Delta V_{2,\phi}^o$) and standard transfer compressions ($\Delta \kappa_{S,2,\phi}^o$) were calculated. Different thermodynamic parameters have been used to explore solute-solute, solute-solvent interactions and effect of disodium tartrate salt on the hydration and electrostriction behavior of amino acids. A significant effect of added salt on the volumetric and acoustic behavior of studied amino acids through ion-ion, ion hydrophilic-hydrophilic and hydrogen bonding interactions has been observed.

Keywords: α -Amino Acid · Disodium tartrate · Aqueous solution · Interaction

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