

# Water/Mixed Nonionic Surfactants/Mixed Oils Microemulsions: Characterization and Drug Solubilization

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## Abstract

Water/sucrose laurate/PEG-7 glycerylcoate/ isopropylmyristate/peppermint oil microemulsions were formulated and characterized. Water solubilization capacity in the microemulsions is dependent on both surfactants and oil ratios. Indomethacin was solubilized in the formulated systems. Drug solubility depends on the microemulsions microstructure. Electrical conductivity of the microemulsions increases for water content below 60-wt% then decrease for water contents above. The microemulsions were characterized also by the volumetric parameters excess volume and isentropic compressibility. Drug containing microemulsions excess volumes decrease with water content. Isentropic compressibilities increase with temperature for water contents below 60 wt% then decrease. Correlation between electrical conductivity and volumetric parameters results enabled the detection of structural transitions onset (water-in-oil to bicontinuous to oil-in-water). The particle hydrodynamic diameter of the oil-in-water microemulsions decreases with the increase in temperature.

**Keywords:** Excess Volume, Isentropic Compressibility, Particle Hydrodynamic Diameter, Solubilization Capacity, Structural Transitions, Ultrasonic Velocity