

Solubility on Tetrahydrofurfuryl (Meth)Acrylate Effect for the Poly[tetrahydrofurfuryl (meth) acrylate] in Supercritical Carbon Dioxide and Dimethyl Ether

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Experimental cloud-point curves for poly(tetrahydrofurfuryl methacrylate) [P(THFMA)] + tetrahydrofurfuryl methacrylate (THFMA) or dimethyl ether (DME) and poly(tetrahydrofurfuryl acrylate) [P(THFA)] + tetrahydrofurfuryl acrylate (THFA) or DME in supercritical CO₂ show the binary and ternary mixtures up to 496.7 K and 289.83 MPa. The location of the P(THFA) + CO₂ and P(THFMA) + CO₂ cloud-point curve shifts to lower temperatures and pressures when THFA, THFMA and DME is used as a cosolvent. P(THFMA) and P(THFA) in pure CO₂ does not dissolve at the temperature of 498 K and the pressure of 300.0 MPa. High pressures phase behavior data for the CO₂ + THFA and CO₂ + THFMA systems are presented at 313.2 ~ 393.2 K and pressure up to 22.07 MPa. The systems exhibits type-I phase behavior with a continuous mixture-critical curve and the system is adequately modeled with the Peng-Robinson equation of state.