

High Pressure Phase Behavior of Carbon Dioxide + Heptadecafluoro-1-decanol System and Carbon Dioxide + Heptadecafluoro-1-decene System

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Perfluoro alkyl alcohols were used in the various industrial applications including surfactant for emulsion polymerization, CFC-alternative substance and material for perfluoro alkyl monomer synthesis. For the separation of commercial perfluoro alkyl monomer after monomer synthesis in the supercritical carbon dioxide, understanding and predicting the phase behavior of carbon dioxide + perfluoro alkyl alcohol system is important. In this work, we performed the high pressure phase behavior measurement of the binary system carbon dioxide + heptadecafluoro-1-decanol and carbon dioxide + heptadecafluoro-1-decene. In this study, we investigated -OH functional group effect on perfluoro alkyl alcohol. The static method with a variable volume view cell was employed to obtain the experimental data in the carbon dioxide at temperature from 313 to 363 K. Experimental data were correlate a with Peng-Robinson equation of state, lattice fluid theory and statistical associating fluid theory.