

## **An Equation of State for 1,1,1,2,2,3,4,5,5,5-decafluoropentane (Vertrel® XF)**

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The search for chemical solvents that have a minimal environmental impact has been shown to be necessary and since the implementation of the Montreal protocol has gained much attention. This search has been further accelerated due to the Kyoto protocol, which has placed focus on the global warming potential of chemicals commonly used. The result of these agreements has been the development of environmentally sustainable alternative solvents. The presence of these new environmentally favorable compounds has necessitated the need for thermophysical data to characterize them for purposes of solvent selection and implementation of industrial processes that use these solvents. The potential use of fluorine containing compounds as potential zero ODP and low global warming potential alternate solvents has been outlined in literature. In this work we present an equation of state that describes the thermodynamic data for 1,1,1,2,2,3,4,5,5,5-decafluoropentane Vertrel® (XF). The equation of state is based on the Soave-Redlich-Kwong equation which has been parameterized to experimental data. The agreement between the experimental and calculated vapor pressure values was better than 1.0 %. In addition to representing the experimental data the effect of a different functional form for the temperature dependence term "a(T)", was examined.