

## Measurements and Correlation of High-Pressure VLE of Binary CO<sub>2</sub>+ 1,1,1,2-Tetrafluoroethane (HFC-134a) Systems

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Generally, vapor liquid equilibrium(VLE) data are required as one of the most important types of information in evaluating the performance of refrigeration cycles and determining their optimal compositions. A blend of Carbon dioxide and nonflammable HFC refrigerant may reduce both, global warming potential and flammability.

In this work, the VLE data of binary mixture containing 1,1,1,2-Tetrafluoroethane and Carbon dioxide were measured at various isotherms (323.15 ~ 363.15 K). To facilitate easy equilibration, both the vapor and liquid phases were circulated separately in the experimental apparatus. The equilibrium composition for both vapor and liquid phases were analyzed by a gas chromatograph. The measure data were correlated with Wong-Sandler mixing rules and the Peng-Robinson equations of state[PR-EOS]. We compared the obtained data by using the PR-EOS with experimental data and reached a satisfactory consistency.