

Measurement of The Vapor Pressure and Critical Parameters of Ethyl fluoride (HFC161)

Jing Fan, Xiaoming Zhao^{CS} and Zhigang Liu

*MEO Key Laboratory of Thermo-Fluid Science and Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China
xmzhao@mail.xjtu.edu.cn*

Nowadays, many alternative refrigerants are studied for protecting ozonosphere. HFC161 is one of these refrigerants which are friendly to environment, because its ODP (Ozone Depleting Potentials) is zero. And it has a very low global warming potential, a high cooling capacity and an excellent energy efficiency. However, through literature review, the thermophysical properties data of HFC161 are reported rather rarely. The lack of data of properties restricts the development of related science research and engineering application. In present work, the vapor pressure of HFC161 has been measured using a static type apparatus over the temperature range from (233.15 to 375.15)K, together with the vapor pressure of isobutane (R600a) measured in the temperature range from (275.60 to 343.16)K for verifying the experimental apparatus. The measured vapor pressure data and data reported by other investigators have been evaluated, and a vapor pressure data set with reasonable accuracy has been obtained. Based on this consistent and reliable data set, a Wagner type equation has been proposed. This equation contains four coefficients and correlates the measured vapor pressures with high accuracy. The Critical parameters of HFC161 also been measured in this work. We acknowledge the support of the National Natural Science Foundation of China (Grant No.51276143).