

## Density Measurement of Mixed Refrigerants R32+R1234yf and R125+R290 from 0°C to 100°C and at Pressures up to 10 MPa

**Authors :** Xiaoci Li, Yonghua Huang, Hui Lin

**Abstract :** Optimization of the concentration of components in mixed refrigerants leads to potential improvement of either thermodynamic cycle performance or safety performance of heat pumps and refrigerators. R32+R1234yf and R125+R290 are two promising binary mixed refrigerants for the application of heat pumps working in the cold areas. The p- $\rho$ -T data of these mixtures are one of the fundamental and necessary properties for design and evaluation of the performance of the heat pumps. Although the property data of mixtures can be predicted by the mixing models based on the pure substances incorporated in programs such as the NIST database Refprop, direct property measurement will still be helpful to reveal the true state behaviors and verify the models. Densities of the mixtures of R32+R1234yf and R125+R290 are measured by an Anton Paar U shape oscillating tube digital densimeter DMA-4500 in the range of temperatures from 0°C to 100 °C and pressures up to 10 MPa. The accuracy of the measurement reaches 0.00005 g/cm<sup>3</sup>. The experimental data are compared with the predictions by Refprop in the corresponding range of pressure and temperature.

**Keywords :** mixed refrigerant, density measurement, densimeter, thermodynamic property

**Conference Title :** ICR 2017 : International Conference on Refrigeration

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** June 18-19, 2017