

Study on Isochoric Specific Heat Capacity of Liquid R410A and HFE-347pc-f

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Recently, refrigerants which have less impact on the environment have attracted attention for use in refrigerators and heat pumps. Reliable equations of state for refrigerants are necessary to evaluate the cycle performance of refrigeration systems. In order to develop a reliable equation of state for a fluid, various thermodynamic property measurements of the fluid are required. Among them, isochoric heat capacity (c_v) measurements in the liquid phase provide a very useful check for calculations of the second derivative of the pressure with respect to temperature, which is essential information to develop, but is challenging to measure accurately. In this work, measured c_v for 49.81 mass % R32+50.19 mass % R125 mixture (R410A) and HFE-347pc-f are examined. The measurements were carried out in a temperature range from 270 K to 390 K, and at pressures up to 30 MPa. The measured data for R410A are carefully compared with the data reported by other researchers. Also, the measured c_v for R410A are compared with reliable mixing rules.