

## Measurement of the Thermal Conductivity of trans-1-chloro-3,3,3-trifluoropropene (R1233zd(E))

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Halogenated olefins are proposed as alternative refrigerants with near zero ozone depletion potential and reduced global warming potential near one. Thermal conductivity measurements of trans-1-chloro-3,3,3-trifluoropropene (R1233zd(E)) are reported at temperatures from 220 K to 450 K with pressures up to 70 MPa. The properties of R1233zd(E) make it a good candidate for a working fluid in large chillers and as a blowing agent in expanded-foam insulation. The measurements were made with two hot-wire apparatus with platinum wires of 12.7 mm diameter. The measurements were made with the steady-state technique for gas at pressures below 1 MPa, while the transient technique was used for liquid and supercritical gas at pressures above 1 MPa. The low-temperature apparatus was used at temperatures from 220 K to 340 K, while the high-temperature apparatus was used at temperatures above 300 K. The upper temperature and pressure limits of 450 K at 15 MPa were selected based on a series of thermal stability tests that showed signs of decomposition and corrosion at 450 K and 25 MPa. The thermal conductivity data in the critical region show contributions from the thermal conductivity critical enhancement. The critical enhancement for the thermal conductivity of this fluid is consistent with mode-coupling theory that indicates the thermal conductivity of a pure fluid is divergent at the critical point.