Compressed Liquid Speed of Sound Measurements of Trans-1-Chloro-3,3,3-Trifluoropropene (R-1233zd(E)) and of Cis-1-Chloro-2,3,3,3,-Tetrafluoropropane (R-1224yd(Z)) over the Temperature Range of (273.15 to 353.15) K

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This study reports accurate speed of sound measurements of trans-1-chloro-3,3,3-trifluoropropene (R-1233zd(E), (E)-CF3-CH=CCIH) and of cis-1-chloro-2,3,3,3,-tetrafluoropropane (R-1224yd(Z), (Z)-CF3-CF=CHCl) in the compressed liquid region along six isotherms over the temperature range of (273.15 to 353.15) K and for pressures up to 35 MPa. The speed of sound measurements were made using the double pulse-echo method, with the expanded uncertainty at the 95 % confidence estimated to be lower than 0.07 %. The experimental results are compared with predictions from the fundamental Helmholtz free energy equations of state developed by Mondéjar et al. [1] for R1233zd(E) and by Akasaka et al. [2] for R1224yd(Z).

References:

[1] M. E. Mondéjar, M. O. McLinden, E. W. Lemmon, J. Chem. Eng. Data, 60 (8) 2015.
[2] Akasaka, R., Fukushima, M., Lemmon, E. W., "A Helmholtz Energy Equation of State for cis-1-chloro-2,3,3,3-tetrafluoropropene (R-1224yd(Z))", European Conference on Thermophysical Properties, Graz, Austria, September 3-8, 2017.