

## **NIST REFPROP - Reference Fluid Thermodynamic and Transport Properties**

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The REFPROP program uses the latest high accuracy equations of state based on the Helmholtz energy for thermodynamic properties with typical uncertainties of 0.1 % in densities, vapor pressures, and speeds of sound, 0.5 % in heat capacities, and 0.1 % in pressure in the critical region. The software allows the user to calculate properties of the liquid, vapor, and supercritical states, including two-phase properties for both pure fluids and mixtures. Nearly 150 fluids are available in the program, including cryogenes, refrigerants (including new low-GWP fluids), and hydrocarbons. The latest updates to the GERG-2008 equation (for combustion gases with emphasis on water mixtures) for the properties of natural gas systems is included as a dedicated equation with very high accuracies for typical natural gases found throughout the world. This software demonstration will give the opportunity for members of the community to have in-depth discussions with the development team of REFPROP. In particular, the software demonstration will offer attendees the chance to discuss and explore the capabilities of the open-source library `teqp` which will form the next generation of REFPROP.