The REFPROP Database for the Thermophysical Properties of Fluids

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A revised version of the REFPROP (Reference Fluid Thermodynamic and Transport Properties) database distributed by the National Institute of Standards and Technology is presented with an emphasis on the new features implemented in the revised version. The new version includes additional fluids and mixtures (including air and ammonia/water mixtures), improved property models, additional properties, increased calculation speed, an enhanced user interface, and support for using the property routines with other applications. This program is based on the most accurate pure fluid and mixture models currently available. Properties of mixtures are calculated with a Helmholtz energy model. The viscosity and thermal conductivity models have been updated based on recently published data. The new graphical user interface (GUI) retains the overall look and feel of the previous GUI, but incorporates enhanced usability and many new features and options, greatly improved speed of calculation, and many more options to prepare plots of thermodynamic surfaces. These models are implemented in a suite of subroutines written in standard Fortran that may be used independently of the GUI. This database has become the de facto standard for refrigerant properties. It has been used to generate refrigerant property tables published by the IIR and ASHRAE.