Property Libraries for Water, Steam, Humid Air, and other Working Fluids for Calculating Heat Cycles, Turbines, Heat Pumps, and Refrigeration Processes

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The program libraries for calculating the thermophysical properties for water and steam, for mixtures with water and steam, and for other working fluids are designed for practical use by engineers who calculate heat cycles, steam or gas turbine, boiler, heat pump, or other thermal or refrigeration processes. Thermodynamic and transport properties, thermodynamic derivatives and inverse functions can be calculated.

The following property libraries are presented here:
LibIF97 for water and steam
LibIF97-META for metastable steam
LibICE for ice
LibSeaWa for seawater
LibHuGas for humid combustion-gas mixtures also at high pressures
LibHuAir for humid air also at high pressures and with high water content
LibAmWa for ammonia/water mixtures in absorption processes and the Kalina process
LibWaLi for water/lithium bromide mixtures in absorption processes
LibIdGasMix for 25 ideal gases and their mixtures
LibRealAir for real dry air
LibCO2 for carbon dioxide including dry ice,
LibNH3 for ammonia
LibPropane for propane
LibButane_Iso and *LibButane_n* for iso-butane and n-butane
LibD4, *LibD5*, *LibD6*, *LibMDM*, *LibMD2M*, *LibMD3M*, *LibMD4M*, and *LibMM* for siloxanes used in ORC processes
LibCH3OH for methanol, *LibC2H5OH* for ethanol
LibH2 for hydrogen, *LibN2* for nitrogen, *LibHe* for helium and
LibSecRef for liquid coolants.

In addition, property libraries for a number of refrigerants and hydrocarbons are available. These libraries contain the most accurate algorithms currently available for calculating thermodynamic and transport properties.

For extremely fast property computations in CFD or non-stationary process simulations, the Spline-based Table Look-up Method (SBTL) property libraries are available.

The property libraries can be used in user-specific programs written in Fortran, C++, C#, Java, Pascal (Delphi), Python, Visual Basic, or other programming languages under the operating systems Windows, Unix/Linux, or Mac OS.

Student versions of certain property libraries are available.