Property Libraries for Water and 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 turbines, boilers, heat pumps, or other thermal or refrigeration processes. Thermodynamic properties, transport properties, thermodynamic derivatives and inverse functions can be calculated.

The following property libraries are being presented here: *LibIF97* for water and steam; *LibIF97_META* for metastable steam; *LibICE* for ice including melting and sublimation; *LibSeaWa* for seawater, including at high temperatures and salinities, for desalination and cooling processes; *LibHuAir* for humid air also at high temperatures and pressures; *LibHuGas* for humid combustion-gas mixtures also at high pressures; *LibAmWa* for ammonia/water mixtures in absorption processes and the Kalina process; *LibWaLi* for water/lithium bromide mixtures in absorption processes; *LibIDGAS* for combustion gas mixtures, *LibIdGasMix* for 25 ideal gases and their mixtures; *LibRealAir* for real dry air; *LibCO2* for carbon dioxide including dry ice; *LibNH3* for ammonia; *LibR134a* for the refrigerant R134a; *LibPropane* for propane; *LibButane_Iso* and *LibButane_n* for isobutane and n-butane; *LibD4*, *LibD5*, *LibD6*, *LibMDM*, *LibMD2M*, *LibMD3M*, *LibMD4M*, and *LibMM* for siloxanes used as ORC working fluids; *LibCH3OH* for methanol; *LibC2H5OH* for ethanol; *LibH2* for hydrogen; *LibN2* for nitrogen, and *LibHe* for helium. In addition, property libraries for a number of hydrocarbons are available.

The libraries contain the most recent and accurate algorithms for calculating thermodynamic and transport properties.

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

Student versions of several property libraries are available.