Properties of water vapor

Molecular weight of water is 18.01534 g/gmole

Specific volume of water vapor:

$$V' = \frac{1}{Density_{watervapor}} = \frac{Volume_{watervapor}}{(Numberofmoles_{watervapor})(MW_{watervapor})}$$

below 66 °C use ideal gas law
above 66°C water vapor is non ideal

Specific heat of water vapor : Within a temperature range of -71 to 124°C.

$C_{pwater\ vapor}$ = 1.88 kJ/kg K can be selected for both saturated and superheated water vapor.

Enthalpy of water vapor : The heat content of saturated or superheated water vapor based on the reference temperature of 0°C.

$\Delta H_{wv}(kJ/kg) = 2501.4 + 1.88\ (T_{db} - T_{ref})$

ΔH_{wv} = 2501.4 kJ/kg at 0°C