Properties of Water

Boiling Point (at 1 atm): 100°C = 373.15 K
Heat of Fusion: 335 J/g
Heat of Vaporization: 2259 J/g
Triple Point: 0.01°C/611.73 Pa
Critical Point: 373.99°C/22.064 MPa
Melting Point (at 1 atm): 0°C = 273.15 K
Molal Boiling Point Elevation Constant: 0.51°C/m
Molal Freezing Point Depression Constant: -1.86°C/m
Molar Mass: 18.02 g
Specific Heat: 4.184 J/g°C = 1 cal/g°C
Ion product constant: 1.0 × 10¹⁴
Density at 25°C: 1.00 g/mL (rounded)

Vapor Pressure Approximation

The formula given below is acceptable for approximating the vapor pressure (in mm Hg) of water from 0 to 100°C. The temperature substituted into the formula must be in kelvin.

\[ P = e^{\frac{(20.386 - 5132)}{T}} \]

Solubility Rules

- All common compounds of alkali metal ions and ammonium salts are soluble
- All common nitrates, acetates, and most perchlorates are soluble
- All common chlorides, bromides, and iodides are soluble, except those of Ag⁺, Pb²⁺, Cu⁺, and Hg₂⁺²
- All common fluorides are soluble, except Pb²⁺ and those of the alkali earth metals
- All common sulfates are soluble, except Ca²⁺, Sr²⁺, Ba²⁺, Ag⁺, and Pb²⁺
- All common metal hydroxides are insoluble, except those of the alkali metals and the alkali earth metals greater than or equal to Ca²⁺
- All common carbonates and phosphates are insoluble, except those of the alkali metals and NH₄⁺
- All common sulfides are insoluble except those of the alkali metals, alkali earth metals, and NH₄⁺