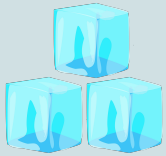
Molar Heat of Fusion and Molar Heat of Vaporization of Water

There is a specific amount of energy associated with melting/freezing and boiling/condensing different substances. The energy associated with melting/freezing is called molar heat of fusion (ΔH_{fus}). The energy associated with boiling/condensing is called molar heat of vaporization. These two terms along with "enthalpy" are used interchangeably. The molar heat of fusion (enthalpy of fusion) and molar heat of vaporization (enthalpy of vaporization) for water are below.



Ice
$H_2O_{(s)}$

ΔH_{fus} = +6.02 kJ/mol

ΔH_{fus} = -6.02 kJ/mol

melting/freezing point = 0^0C

water
$H_2O_{(l)}$

ΔH_{vap} = +40.7 kJ/mol

ΔH_{vap} = -40.7 kJ/mol

boiling/condensation point = 100^0C

water vapor
$H_2O_{(g)}$