

Formulas

Ideal Gas Law: $PV = nRT$

Combined Gas Law: $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$

Pressure Formula: $P = \frac{F}{A}$

Mass-Energy Formula: $E = mc^2$

Calorimetric Formulas –

No Phase Change: $Q = m(\Delta T)C_p$

Latent Heat of Fusion: $Q = m\Delta H_{\text{fus}}$

Latent Heat of Vaporization: $Q = m\Delta H_{\text{vap}}$

Constants

Volume of Ideal Gas at STP: $22.4 \frac{\text{L}}{\text{mol}}$

Speed of Light in a Vacuum: $c = 3.00 \times 10^8 \frac{\text{m}}{\text{s}}$

Specific Heat of Water: $C_p(\text{H}_2\text{O}) = 1.00 \frac{\text{cal}}{(\text{g}^\circ\text{C})} = 4.18 \frac{\text{J}}{(\text{g}^\circ\text{C})}$

Latent Heat of Fusion of Water: $\Delta H_{\text{fus}}(\text{H}_2\text{O}) = 80 \frac{\text{cal}}{\text{g}} = 334 \frac{\text{J}}{\text{g}}$

Latent Heat of Vaporization of Water: $\Delta H_{\text{vap}}(\text{H}_2\text{O}) = 540 \frac{\text{cal}}{\text{g}} = 2260 \frac{\text{J}}{\text{g}}$

Unit Conversions

Calorie-Joule Conversion: $1 \text{ cal} = 4.184 \text{ J}$

Absolute Temperature Conversion: $\text{K} = ^\circ\text{C} + 273$

Pressure Conversions: $1 \text{ atm} = 760 \text{ mm Hg} = 760 \text{ Torr} = 101.325 \text{ kPa} = 14.7 \frac{\text{lbs.}}{\text{in.}^2} = 29.92 \text{ in. Hg}$