Resumen de Termodinámica

Tipo de transformación	Ecuación	**Q** Calor Δ **Q= Δ U+ Δ W**	**W** Trabajo	**U** Energía interna	**S** Entropía
Isoterma $\Delta T = 0$ $\Delta H = 0$	PV = K	$\Delta Q = \Delta W$	$\Delta W = \Delta Q$ $W=n\cdot R\cdot T\cdot \mathrm{Ln}\frac{V_2}{V_1}$ $W=n\cdot R\cdot T\cdot \mathrm{Ln}\frac{P_1}{P_2}$	$\Delta U = 0$	$S=\frac{Q}{T}$ $S= n\cdot R\cdot T\cdot \mathrm{Ln}\frac{V_2}{V_1}$ $S= n\cdot R\cdot T\cdot \mathrm{Ln}\frac{P_1}{P_2}$
Isostérica $\Delta V = 0$	$\frac{P}{T} = \frac{P'}{T'}$	$\Delta Q_v = \Delta U$	$\Delta W = 0$	$\Delta U = n\cdot C_v\cdot \Delta T$	$S = n\cdot C_v\cdot \mathrm{Ln}\frac{T_2}{T_1}$
Isobárica $\Delta P = 0$	$\frac{V}{T} = \frac{V'}{T'}$	$\Delta Q_p = n\cdot C_p\cdot \Delta T$	$\Delta W = P\cdot \Delta V$	$\Delta U = (C_p - R)\cdot \Delta T$ $\Delta U = n\cdot C_v\cdot \Delta T$	$S = n\cdot C_p\cdot \mathrm{Ln}\frac{T_2}{T_1}$
Adiabático $\Delta Q = 0$ $\gamma = \frac{C_P}{C_V}$	$P_1V_1^{\gamma} = P_2V_2^{\gamma}$ $T\cdot V^{\gamma-1} = K$ $P^{\frac{1-\gamma}{\gamma}}\cdot T = K$	$\Delta Q = 0$	$W = \frac{p_f V_f - P_i V_i}{\gamma - 1}$ $\Delta W = -\Delta U = n\cdot C_v \Delta T$	$\Delta U = -\Delta W = n\cdot C_v \Delta T$	$\Delta S = 0$
Primer Principio **$\Delta U = Q - W$** **Entalpia** $\Delta H = U + P\cdot V$ $\Delta H = \Delta Q_P$ $\Delta U = \Delta Q_V$	$\frac{P\cdot V}{T} = K$ $Q = m\cdot C_e\cdot \Delta T$ **$C_p - C_v = R$** **Gas monoatómico** $Cv = \frac{3}{2}nR, C_p = \frac{5}{2}nR$ **Gas diatómico** $Cv = \frac{5}{2}nR, C_p = \frac{7}{2}nR$	R= 2 Cal $R = 0.082 \frac{at\cdot l.}{mol\cdot K}$ $R = 8.314 \frac{Pa\cdot m^3}{mol\cdot K}$ $R = 8.314 \frac{Jouls}{mol\cdot K}$	**Segundo Principio** **Entropía** $S=\frac{Q}{T}$ **Energía Libre** $\Delta G^0 = \Delta H - T\Delta S$ $\Delta G^0 = - R\cdot T\cdot \ln K_e$ $\Delta G^0 = - 2.3\cdot R\cdot T\cdot \log K_e$	$\Delta G^0 = -n\cdot F\cdot €$ $\Delta € = \Delta €^0 - \frac{RT}{nF}\cdot \ln K$ **Transmisión de calor** $\Phi = \frac{\Delta Q}{\Delta t} = A \bullet K \bullet \frac{\Delta T}{\Delta X}$ $R = \frac{\Phi \bullet \Delta x}{K\cdot A}$	Rendimiento $\eta = \frac{W}{Q} = \frac{Q+Q'}{Q}$ $\eta = \frac{T+T'}{T}$ Eficiencia $K = \frac{Q\_frigorífico}{W\_motor}$

Apm1451@outlook.com