

Clase 47 12 Mayo 2022

Título de la nota

12/05/2022

$$K_c = \frac{[\text{CO}]^2}{[\text{CO}_2]} \quad \frac{(\text{mol/L})^2}{(\text{mol/L})}$$

$$[\] = \frac{\text{mol}}{\text{L}} \quad = \frac{\text{mol}}{\text{L}}$$

$$P \cdot V = nRT$$

$$[i] \frac{n}{V} = \frac{P}{RT}$$

$$K_c = \frac{(P/RT)^2}{(P/RT)}$$

$$K_c = K_p (RT)^{-\Delta n}$$

Sí $\Delta n = 0$ $K_c = K_p$

$$K_p = \frac{(P_{CO})^2}{(P_{CO_2})} = \frac{\text{atm}^2}{\text{atm}} = \underline{\underline{\text{atm}}}$$

$$K_y = \frac{(y_{CO})^2}{y_{CO_2}} = \text{adimensional}$$

$$0.025 \text{ mol} = 2x$$

$$x = \frac{0.025 \text{ mol}}{2}$$

$$= \underline{0.0125 \text{ mol}}$$

$$\begin{aligned} \text{CO}_2 &= 0.04545 \text{ mol} - 0.01750 \\ &\quad \text{mol} \\ &= \underline{0.03295 \text{ mol}} \end{aligned}$$

moles totales

$$0.04545 - x + 2x$$

$$0.04545 + x$$

$$0.04545 + 0.0125$$

$$= 0.05795 \text{ moles totales}$$

$$y_{CO} = \frac{0.025}{0.05795} = 0.4314$$

$$y_{CO_2} = 1 - 0.4314 = 0.5685$$

CO ₂		V (L)	CO		moles totales
m (g)	2.00	2.00	2x=0.025mol		0.04545-x+2x
M (g/mol)	44.00	R (atmL/molK)	Equilibrio mol	0.025	0.05795
n (mol)	0.04545	0.0820	x=	0.0125	p total (atm)
fracción mol (y)	0.56863	T (K)	fracción mol (y)	0.43137	2.7872
		1173.00			Δn
pi (atm)	1.5849		pi (atm)	1.2023	1.0

Ky	Kp (atm)	Kc (mol/L)
0.32725	0.91211	0.00948



$$K_y = \frac{(y_{CO})^2}{y_{CO_2}} = \frac{(0.43137)^2}{0.56863} = 0.3272$$

$$PV = nRT$$

$$P = \frac{n_{\text{Total}} R T_{\text{eq}}}{V_{\text{total}}}$$

$$= \frac{(0.05795 \text{ mol}) (0.082 \text{ atm} \cdot \text{L} / \text{mol} \cdot \text{K}) (1173 \text{ K})}{2 \text{ L}}$$

$$= 2.7869 \text{ atm}$$

$$K_p = K_y (p_{\text{total}})^{\Delta n}$$

$$= (0.32725) (2.7872 \text{ atm})^1$$

$$= 0.9120 \text{ atm}$$

$$\begin{aligned}K_c &= K_p (RT)^{-\Delta n} \\&= 0.91211 \left[\frac{0.082 \cancel{\text{atm L}}}{\cancel{\text{mol K}}} (1173 \cancel{\text{K}}) \right]^{-1} \\&= 0.00948 \frac{\text{mol}}{\text{L}}\end{aligned}$$

equilibrio	mol/L	0.01648		0.01250
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$$K_c = \frac{\left(0.0125 \frac{\text{mol}}{\text{L}}\right)^2}{\left(0.01648 \frac{\text{mol}}{\text{L}}\right)} = 0.009481 \text{ mol/L}$$