

Problema 1

Tuesday, September 6, 2022

5:05 PM



$$b) \begin{array}{l} 0,5g \\ 85\% \text{ pur.} \end{array} \quad \begin{array}{l} 7 \text{ ml} \\ 20\% \text{ p/p} \\ \delta = 1g/\text{ml} \end{array}$$

$$\text{Ca(OH)}_2: \begin{array}{l} 100g \text{ impuro} \longrightarrow 85g \text{ puro} \\ 0,5g \text{ impuro} \longrightarrow X = 0,425g \text{ Ca(OH)}_2 \text{ puro} \end{array}$$

$$\downarrow \text{PM} = 74g/\text{mol}$$

$$5,74 \times 10^{-3} \text{ mol Ca(OH)}_2$$

$$\text{HClO}_4: \begin{array}{l} \delta = 1g/\text{ml} \\ 7 \text{ ml} \longrightarrow 7g \text{ sol HClO}_4 \end{array}$$

$$100g \text{ sol} \longrightarrow 20g \text{ HClO}_4$$

$$7g \text{ sol} \longrightarrow X = 1,4g \text{ HClO}_4$$

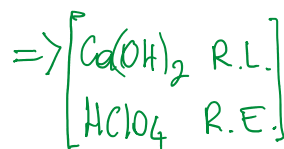
$$\downarrow \text{PM} = 100,5g/\text{mol}$$

$$0,0139 \text{ mol HClO}_4$$

Por estequiometría: $1 \text{ mol Ca(OH)}_2 \longrightarrow 2 \text{ moles HClO}_4$

$$5,74 \times 10^{-3} \text{ mol Ca(OH)}_2 \longrightarrow X = 0,0115 \text{ mol HClO}_4$$

$$< 0,0139 \text{ mol}$$



$$c) \text{Sal formada} = \text{Ca(ClO}_4)_2$$

↳ perclorato de calcio

$$d) \text{HClO}_4: c = 20\% \text{ p/p}, \delta = 1g/\text{ml}$$

$$20\% \text{ p/p} = \frac{20g \text{ HClO}_4}{100g \text{ sol}}$$

$$100g \text{ sol} \xrightarrow{\delta = 1g/\text{ml}} 100 \text{ ml sol} = 0,1 \text{ L sol}$$

$$20g \text{ HClO}_4 \xrightarrow{\text{PM}} 0,199 \text{ mol HClO}_4$$

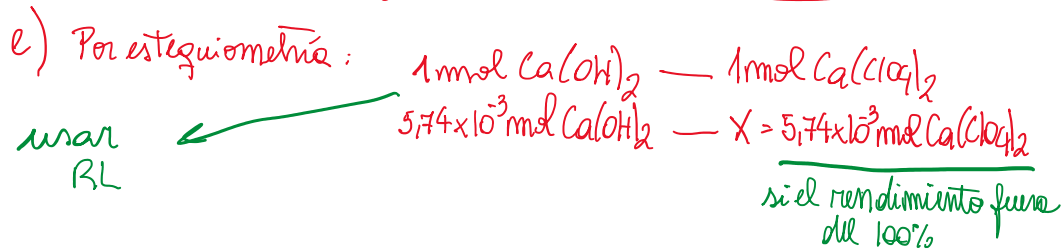
$$\rightarrow c = \frac{0,199 \text{ mol HClO}_4}{0,1 \text{ L sol}} = \underline{\underline{1,99 \text{ mol/L}}} \text{ MOLARIDAD}$$

$$\uparrow 0,199 \text{ mol}$$

$$\begin{aligned} \text{masa sol} &= \text{masa STO} + \text{masa SVTE} \\ 100\text{g} &= 20\text{g} + \text{masa SVTE} \end{aligned} \quad \left[\begin{array}{l} \uparrow 0,199\text{mol} \\ 20\text{g HClO}_4 \text{ cada} \\ 80\text{g solvente (H}_2\text{O)} \end{array} \right]$$

MOLALIDAD: $\text{moles STO} / \text{kg SVTE}$

$$C = \frac{0,199\text{mol HClO}_4}{0,08\text{kg SVTE}} = \underline{\underline{2,49\text{mol/kg SVTE}}}$$



$$\text{Rendimiento} = 75\% = \frac{\text{moles producto reales}}{\text{moles producto teóricos}} \cdot 100$$

$$\rightarrow \text{moles prod. reales} = \frac{75}{100} \times 5,74 \times 10^{-3}\text{mol Ca(ClO}_4)_2$$

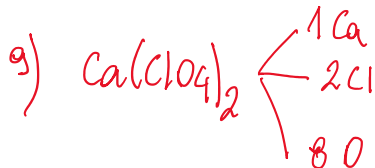
$$= \underline{\underline{4,31 \times 10^{-3}\text{mol Ca(ClO}_4)_2}}$$

$$\downarrow \text{PM} = 239\text{g/mol}$$

$$\underline{\underline{1,03\text{g Ca(ClO}_4)_2}}$$

f) Moléculas = $N_A = 6,02 \times 10^{23}\text{mol}^{-1}$

$$\text{Para } 4,31 \times 10^{-3}\text{mol} \longrightarrow \underline{\underline{2,59 \times 10^{21}\text{moléculas Ca(ClO}_4)_2}}$$



\rightarrow 8 oxígenos cada 1 $\text{Ca(ClO}_4)_2$

$$\Rightarrow \underline{\underline{2,072 \times 10^{22}\text{ átomos O}}}$$