

IEQB Ficha 4 - Resolução

Balanços Materiais com Reacção Química

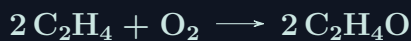
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Conteúdo

Questão 1	2	(i)	2
(i) $\text{mol}_{\text{C}_2\text{H}_4}$	2	(ii)	2
1 - a)	2	1 - d)	2
1 - b) Excesso %	2	1 - e) K	2
1 - c)	2	Questão 2	2

Questão 1



(i) $\text{mol}_{\text{C}_2\text{H}_4}$

$$= 100 \text{ kg}_{\text{C}_2\text{H}_4} \frac{\text{mol}_{\text{C}_2\text{H}_4}}{28 \text{ g}_{\text{C}_2\text{H}_4}} \cong 3.6 \text{ kmol}_{\text{C}_2\text{H}_4}$$

1 - a)

$$\begin{aligned} 3.6 \text{ kmol}_{\text{C}_2\text{H}_4} \frac{\text{mol}_{\text{O}_2}}{2 \text{ mol}_{\text{C}_2\text{H}_4}} \frac{32 \text{ g}_{\text{O}_2}}{\text{mol}_{\text{O}_2}} &\cong \\ &\cong 57 \text{ kg}_{\text{O}_2} < 100 \text{ kg}_{\text{O}_2} \\ \therefore \text{C}_2\text{H}_4 &\text{ é o reagente limitante} \end{aligned}$$

1 - c)

(i)

$$57 \text{ kg}_{\text{O}_2}$$

1 - d)

$$\begin{aligned} 3.6 \text{ kmol}_{\text{C}_2\text{H}_4} \frac{0.30 \text{ mol}_{\text{C}_2\text{H}_4}}{\text{mol}_{\text{C}_2\text{H}_4}} \frac{2 \text{ mol}_{\text{C}_2\text{H}_4\text{O}}}{2 \text{ mol}_{\text{C}_2\text{H}_4}} &\cong \\ &\cong 1.1 \text{ kmol}_{\text{C}_2\text{H}_4\text{O}} \end{aligned}$$

1 - b) Excesso %

$$\cong 1 - \frac{100 \text{ kg}_{\text{O}_2}}{57 \text{ kg}_{\text{O}_2}} \cong 75 \%$$

(ii)

$$3.6 \text{ kmol}_{\text{C}_2\text{H}_4} \frac{2 \text{ mol}_{\text{C}_2\text{H}_4\text{O}}}{2 \text{ mol}_{\text{C}_2\text{H}_4}} \cong 3.6 \text{ kmol}_{\text{C}_2\text{H}_4\text{O}}$$

1 - e) K

$$\cong \frac{40 \text{ kg}_{\text{O}_2} \frac{\text{mol}_{\text{O}_2}}{32 \text{ g}_{\text{O}_2}} \frac{2 \text{ mol}_{\text{C}_2\text{H}_4}}{1 \text{ mol}_{\text{O}_2}}}{3.6 \text{ kmol}_{\text{C}_2\text{H}_4}} \cong 70 \%$$

Questão 2

