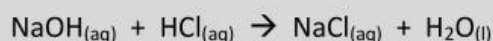


D. Aplikasi

1. Jika 50 mL larutan NaOH 1 M direaksikan dengan 50 mL larutan HCl 1 M ke dalam alat kalorimeter menyebabkan kenaikan suhu pada kalorimeter dari 29°C menjadi 35,5°C. Jika kalor jenis larutan dianggap sama dengan air yaitu 4,2 J/g°C, maka tentukanlah harga kalor reaksi dan perubahan entalpi reaksi berikut ini:



$$\begin{aligned} \text{Massa NaOH} &= \text{massa jenis} \times \text{volume} \\ &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \text{Massa HCl} &= \text{massa jenis} \times \text{volume} \\ &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$\text{Massa campuran} = \underline{\hspace{2cm}}$$

$$\begin{aligned} q_{\text{larutan}} &= m \times c \times \Delta T \\ &= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{array}{l} \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \rightarrow \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \\ \text{mula-mula : } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol} \end{array}$$

$$\text{bereaksi : } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol}$$

$$\text{setimbang : } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol } \underline{\hspace{1cm}} \text{ mol}$$

$$\Delta H = \underline{\hspace{2cm}}$$

$$\Delta H = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ kJ}$$

2. Di dalam suatu kalorimeter bom direaksikan 0,16 gram gas metana (CH_4) dengan oksigen berlebihan, sehingga terjadi reaksi berikut:



Ternyata terjadi kenaikan suhu $1,56^\circ\text{C}$. Diketahui kapasitas kalor kalorimeter adalah $958 \text{ J/}^\circ\text{C}$, massa air di dalam kalorimeter adalah 1.000 gram dan kalor jenis air $4,18 \text{ J/g}^\circ\text{C}$. Tentukanlah nilai perubahan entalpi reaksi pembakaran gas metana! (Ar C = 12, H = 1)

$$\begin{aligned} q_{\text{kalorimeter}} &= C \times \Delta T \\ &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} q_{\text{larutan}} &= m \times c \times \Delta T \\ &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$q_{\text{reaksi}} = -(q_{\text{kalorimeter}} + q_{\text{larutan}}) = \underline{\hspace{2cm}}$$

$$\text{Mol} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ mol}$$

$$\Delta H = \underline{\hspace{2cm}}$$

$$\Delta H = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ kJ}$$