

# EQUILIBRIO TERMICO

acqua

$$\left[ \begin{array}{l} m_1 = 100 \text{ gr} \rightarrow t_1 = 21^\circ\text{C} \\ m_2 = 200 \text{ gr} \rightarrow t_2 = 75^\circ\text{C} \end{array} \right. \quad t_{\text{eq}} = 57^\circ\text{C}$$

$$t_1 < t_{\text{eq}} < t_2$$

$$\begin{aligned} \Delta Q_1 &= m_1 c \Delta t_1 & \Delta t_1 &= t_{\text{eq}} - t_1 \\ &= m_1 c (t_{\text{eq}} - t_1) \end{aligned}$$

$$\begin{aligned} \Delta Q_2 &= m_2 c \Delta t_2 & \Delta t_2 &= t_2 - t_{\text{eq}} \\ &= m_2 c (t_2 - t_{\text{eq}}) \end{aligned}$$

$$\Delta Q_1 = \Delta Q_2$$

$$m_1 (t_{\text{eq}} - t_1) = m_2 (t_2 - t_{\text{eq}})$$

$$m_1 t_{\text{eq}} - m_1 t_1 = m_2 t_2 - m_2 t_{\text{eq}}$$

$$(m_1 + m_2) t_{\text{eq}} = m_1 t_1 + m_2 t_2$$

$$t_{\text{eq}} = \frac{m_1 t_1 + m_2 t_2}{m_1 + m_2}$$

$$t_{\text{eq}} = \frac{100 \text{ gr} \times 21^\circ\text{C} + 200 \text{ gr} \times 75^\circ\text{C}}{300 \text{ gr}}$$

$$= \frac{2100 + 15000}{300}^\circ\text{C} = \frac{17100}{300}^\circ\text{C} = 57^\circ\text{C}$$