LATEX PRACTICE

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Que)

$m_w = 0.045$ kg

$T_w = 298$ K

$m_a = 0.750$ kg

$C_a = 900.0 \frac{\text{J}}{\text{kg K}}$

$C_w = 4186 \frac{\text{J}}{\text{kg K}}$

$L_{vw} = 2.26 \times 10^6 \frac{\text{J}}{\text{kg}}$

$\frac{2.26 \times 10^6 \text{ J}}{1 \text{ kg}} = \frac{x}{0.045 \text{ kg}}$

$x = 0.045 \text{ kg} \times \frac{2.26 \times 10^6 \text{ J}}{1 \text{ kg}} = 101700$ J

$Q = mC\Delta T \; ; \; Q = mL_{vw}$

$Q_{al} = Q_w + Q_{Lvw}$

$m_a C_a \Delta T = m_w C_w \Delta T + m_w L_{vw}$

$0.750 \text{ kg} 900.0 \frac{\text{J}}{\text{kg K}} \Delta T = 0.045 \text{ kg} 4186 \frac{\text{J}}{\text{kg K}} \left(100 \text{ °C} - 25.0 \text{ °C}\right) + 0.045 \text{ kg} 2.26 \times 10^6 \frac{\text{J}}{\text{kg}}$

$\left(100 \text{ °C} - T_i\right) = \frac{0.045 \text{ kg} 4186 \frac{\text{J}}{\text{kg K}} 75.0 \text{ K} + 0.045 \text{ kg} 2.26 \times 10^6 \frac{\text{J}}{\text{kg}}}{0.750 \text{ kg} 900.0 \frac{\text{J}}{\text{kg K}}}$

$T_i = -\frac{0.045 \text{ kg} 4186 \frac{\text{J}}{\text{kg K}} 75.0 \text{ K} + 0.045 \text{ kg} 2.26 \times 10^6 \frac{\text{J}}{\text{kg}}}{0.750 \text{ kg} 900.0 \frac{\text{J}}{\text{kg K}}} + 100 \text{ °C} = 271.6 \text{ °C}$