

Answer on Question #73036, Physics / Molecular Physics | Thermodynamics

When $Q = 300$ J of heat is added to $m = 25$ g of sample of a material its temperature rises from $t_1 = 25^\circ\text{C}$ to $t_2 = 45^\circ\text{C}$ then thermal capacity of sample and specific of the material are:

Solution:

Thermal capacity by definition

$$C = \frac{Q}{\Delta t}$$

Thus

$$C = \frac{300}{45 - 25} = 15 \frac{\text{J}}{^\circ\text{C}}$$

The specific thermal capacity

$$c = \frac{C}{m} = \frac{15}{25} = 0.6 \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}} = 600 \frac{\text{J}}{\text{kg} \cdot ^\circ\text{C}}$$

Answer: $15 \frac{\text{J}}{^\circ\text{C}}$, $600 \frac{\text{J}}{\text{kg} \cdot ^\circ\text{C}}$

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