

4.2 Heat Capacity and Specific Heat Capacity

Heat capacity: An object that has a large heat capacity requires a bigger quantity of heat to raise the temperature to 1°C

Specific heat capacity: The amount of heat energy needed to raise the temperature of 1 kg of a material by 1°C

$$Q = mc\theta$$

where Q = heat energy [J]

m = mass [kg]

c = specific heat capacity of the material [$\text{J kg}^{-1} \text{ } ^\circ\text{C}^{-1}$]

θ = change in temperature [$^\circ\text{C}$]

4.2.1 Applications

- Water is used as a coolant in car engines because
 - Specific heat capacity is large,
 - Easily obtained and cheap,
 - Does not chemically react with the materials in the engine.
- Cooking utensils (woks, pots) are usually made of material with low specific heat capacity to ensure temperature increases quickly when heated.
- Handles are made of material with high specific heat capacity and are poor conductors.
- Clay pots are made of clay with high specific heat capacity and are poor conductors. When removed from heat, the soup inside the pot will continue to boil as heat is still being received from the pot.

