

AQA Physics GCSE

Required Practical 1

Specific Heat Capacity

Method taken from [AQA Required Practical Handbook](#)

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Aim:

To determine the specific heat capacity of one or more materials, correlating a decrease of one energy store (work done) to the increase in temperature and increase in thermal energy stored in another.

Equipment List:

- 1kg copper, iron and aluminium blocks, each with two holes (one for the heater, one for the thermometer)
- Thermometer
- Pipette
- 30W Heater
- 12V Power Supply
- Insulation to wrap around the blocks
- Stopwatch
- Balance (capable of measuring more than 1kg)
- Heatproof mat

If the power of the heater is unknown:

- Ammeter and Voltmeter
- 4mm leads

Method:

1. Set up your equipment, ensuring to wrap insulation around the base and sides of the block. The heater should fit snugly into one hole in the block.
2. If the thermometer has an air gap surrounding it when placed in the second hole, drop water into the hole using a pipette to increase thermal contact.
3. If the power of the heater is unknown, switch on the power supply and measure the current and potential. Calculate the power using the equation

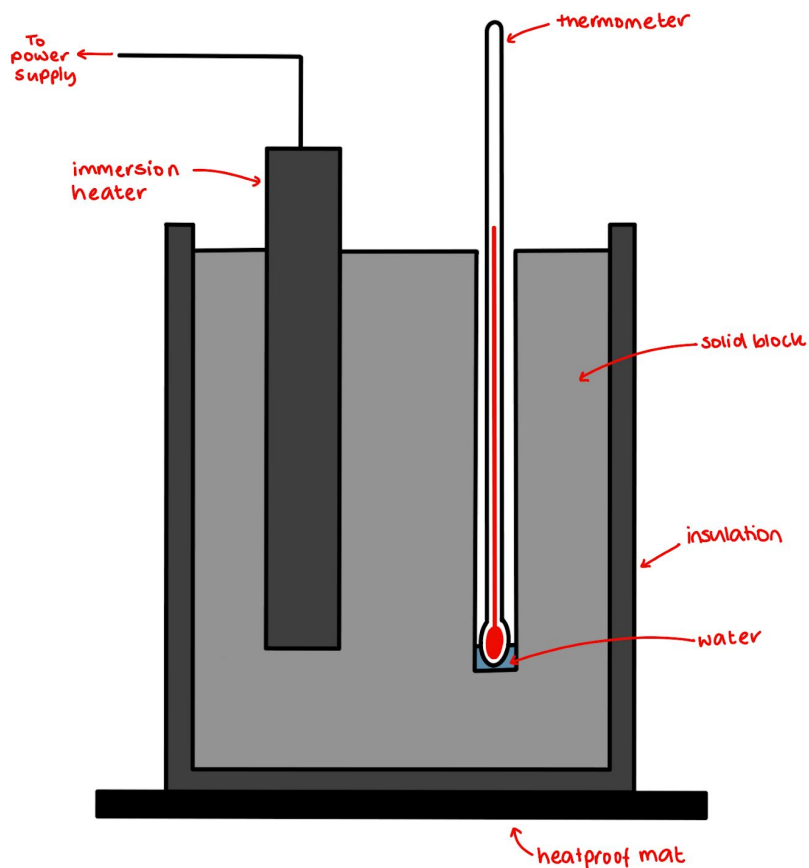
$$P = IV$$

where I is the current (measured in Amps) and V is the potential difference (measured in volts).

4. Keep the power supply on and start the timer. Measure the temperature of the block every 10 minutes.
5. Plot a graph of temperature against work done by the heater. Calculate the gradient of the line.
6. Specific heat capacity is the gradient divided by the mass of the block. Since the mass is 1kg, the inverse of the gradient = specific heat capacity of the block.



Diagram:



Safety Precautions:

- Don't handle the block or heater whilst or after heating.
- Keep the block on a heatproof mat.
- Take care not to spill water near your power supply- clean up any spills immediately.

