Specific Heat Capacity

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When you heat something up it is storing more thermal energy in the particles.

As it cools down a warm object reduces its store of thermal energy as it transfers energy to its surroundings.

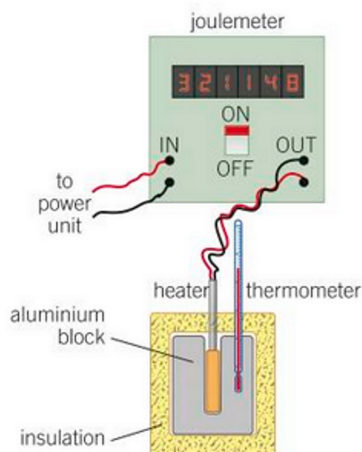We can calculate how much thermal energy is transfered using this equation.

change in thermal energy = mass × specific heat capacity× temperature change

The specific heat capacity, often written as SHC has complicated units - you don't need to remember them -
J/(Kg ^{O}C)

In science we use the symbol Δ 'delta' to mean change. So when you see it just say 'change' in your head.

Quantity	Symbol	Units
Thermal energy	ΔE	Joules (J)
Mass	m	Kg
Specific heat capacity	C	J/(Kg ^{O}C)
Temperature change	Δθ	^{O}C

Measuring the Specific Heat Capacity for Aluminium - Required Practical

In this practical you have to work out a value for C, the specific heat capacity for an aluminium block.

You will need to use this equation and the apparatus in the picture

change in thermal energy = mass × specific heat capacity× temperature change

- The joulemeter measure the amount of joules of energy supplied to the heater.
- The heater is stuck into a hole in the Aluminium block and heats up the block.
- The temperature of the block goes up, and you can measure this with the thermometer which sits snuggly into another hole in the block.
- The block is wrapped in some insulation - you want to keep energy losses to the surrounds as small as possible
- There is usually an air gap between the Aluminium block and the heater. Sometimes water or oil is put into this gap to ensure that as much heat as possible travels into the block.

1. Measure the mass of the block.
2. Set everything up
3. Measure the initial temperature of the block
4. Turn on the joulemeter.
5. Wait. Keep an eye on the thermometer. The temp will go up
6. After a period of time measure the temperature of the block, recorded the final temperature of the block
7. Now you have everything in the equation except C, which you can work out.