National 5 Assignment  
Specific Heat Capacity: Guide Sheet A

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**Specific Heat Capacity for a substance.**

**Apparatus**

Block of known mass (insulated), balance, thermometer, insulation, 12 V immersion heater (typically 60 W), power supply, 0 – 12 V rated to supply 6 A, 4 mm leads, two digital multimeters (ammeter/ voltmeter), stopwatch

Diagram of a thermometer showing thermometer and thermometer

Description automatically generated

**Instructions:**

* Insert a thermometer and the immersion heater into their respective holes in the block. You may wish to drop a small amount of oil into the thermometer hole.
* Allow the thermometer to reach thermal equilibrium.
* Set up a suitable circuit that will enable you to measure the energy input to the heater.
* Turn on the power supply, noting the time if you are measuring energy using an ammeter and a voltmeter to record power.
* Monitor and note the meter readings as the energy is supplied.
* Allow the block to heat up by about 10 °C.
* The temperature at the turn-off time is not the appropriate final temperature to record.

**Risk Assessment**

* Check all electrical wiring.
* Check the seals on the immersion heaters before use. Reject any that are obviously defective. In doubtful cases, any water which has entered during a precious activity can be removed by placing the heater in an oven for an hour at about 80 °C.
* Avoid running the immersion heaters outside the blocks, and not to cool them in water when hair-line cracks will draw water inside.
* Wear goggles when completing this experiment and when setting and clearning up.
* Do not use a mercury thermometer.
* ALL EQUIPMENT could get hot, please beware

Image:

<https://keystagewiki.com/index.php/GCSE_Physics_Required_Practical:_Determining_Specific_Heat_Capacity#/media/File%3ARequiredPracticalSHC2.png>

**Mrsphysics takes no responsibility for any health and safety. It is the responsibility of the teacher and student to risk assess any practical activity they complete!**

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