

Which is the Best Fuel?

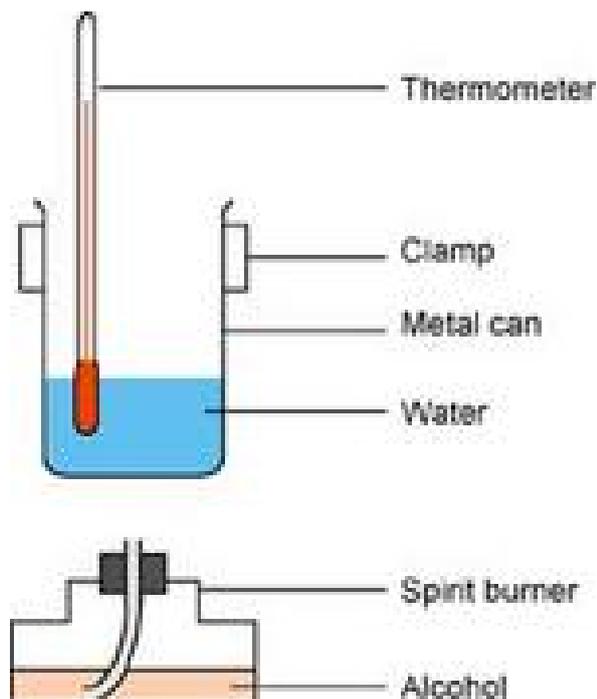
Teacher Notes

Possible meaning of 'best fuel'

1. The best fuel is the one that heats the water the fastest.
2. The best fuel is the one of which the least amount is used to heat the water
3. The best fuel is the one that is most economical, in terms of cost, to heat the water.

Student Worksheet 1

Experimental Guidelines to Determine the 'Best' Fuel



Developer: Jack Holbrook

Institute: ICASE
Country: UK

Procedure

1. Half fill the spirit burner with the fuel supplied. (This may be done for you already).
2. Weigh the spirit burner containing the fuel.
3. Set up the apparatus for burning the fuel and heating the water as in the diagram.
4. Measure out 200 cm³ water and pour into the can to be heated.
5. Take the temperature of the water in the can.
6. Light the burner and at the same time start the stop clock.
7. Put draught shields around the can and burner (if necessary).
8. Stir the water slowly.
9. Note the temperature of the water by reading the thermometer at half minute intervals.
10. When the water is at about 50°C, extinguish the burner.
11. Stop the stop-clock and record the time for which the fuel was burning
12. Continue to stir the water in the can and then record the highest water temperature reached. Determine the temperature rise of the water.
13. Weigh the burner + the remaining fuel.
14. Calculate the amount of fuel used in the experiment.

Repeat the experiment with other fuels if instructed to do so by the teacher.

Student Handout 2

Recording of Results and Giving an Interpretation

Results

Complete the following table

	Fuel 1	Fuel 2	Fuel 3
Amount of fuel used for a 10°C rise in water temperature			
Time taken for a 10°C rise in water temperature			
Cost of the fuel used			

Interpretation

The amount of fuel used for the 10°C rise in temperature is a measure of the heat of combustion of the fuel. (In textbooks this value is standardised using internationally agreed specifications – 1°C rise per mole)

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Decide on the 'best' fuel.

I suggest the best fuel is

My reason for this is

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I think the calorific value or heat of combustion of a fuel (is/is not) a good measure of the 'best' fuel.

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