

Evaluating the method for finding out the enthalpy of combustion of alcohols

Education in Chemistry

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Basic method:

- Measure 100 cm³ of cold tap water using a measuring cylinder and put it into a copper calorimeter.
- Weigh the spirit burner (and cap) containing the alcohol and record this mass and the name of the alcohol.
- Record the initial temperature of the water in the calorimeter.
- Place a spirit burner under the calorimeter and light the wick.
- Allow the alcohol to heat the water so the temperature rises by about 40 °C.
- Replace the spirit burner cap to extinguish the flame.
- Re-weigh the spirit burner and cap, and record this mass.
- Work out the mass of alcohol used.
- Using some fresh cold tap water, repeat the experiment with another alcohol.

Cut out and then sort the cards into two piles: suggestions that improve accuracy; and suggestions that improve reliability. Then, order them from most to least effective within those categories.

Use a more accurate balance to determine the mass of the spirit burners before and after each experiment.	Put a lid over the copper calorimeter.
Use the same mass of water in the calorimeters for each experiment.	Position the calorimeter the same distance above the flame for each experiment.
Use the same thermometer in each experiment.	Use a pipette to measure the water into the copper calorimeter instead of a measuring cylinder.
Repeat each experiment three times and take the mean value for ΔH .	Have the same initial and final temperature for the water in each experiment.
Put the cap on the spirit burners as soon as the experiment is complete.	Position the calorimeter high enough so that there is sufficient flow of oxygen to the flame.