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

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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 oC.
* 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.

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| 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.  |