

# A model fire extinguisher 2

Some fire extinguishers work by releasing a stream of carbon dioxide gas. Carbon dioxide is released when sodium hydrogencarbonate powder reacts with dilute sulphuric acid.

You are going to carry out an investigation to find out how much of each chemical is needed to produce the largest amount of carbon dioxide.

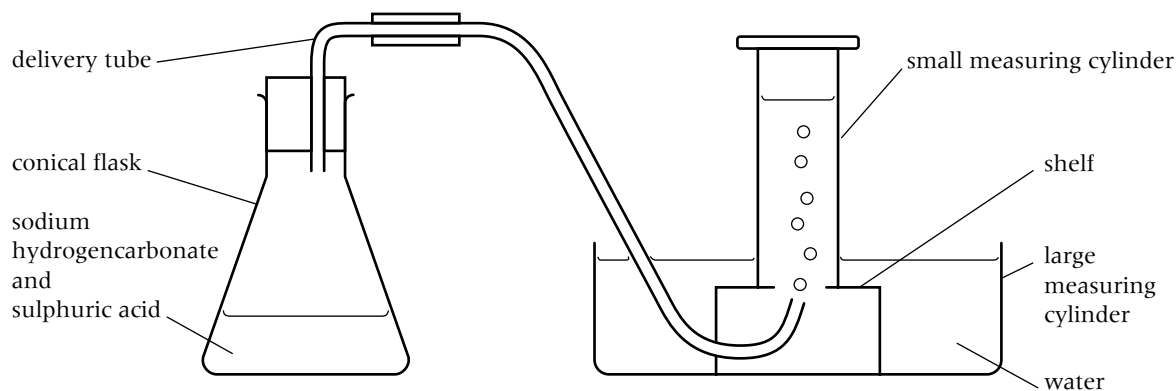
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## Apparatus

- Sodium hydrogencarbonate
- Large measuring cylinder
- Small measuring cylinder
- Bung and delivery tube
- Eye protection
- Sulphuric acid
- Trough
- Shelf
- Conical flask
- Clamp and stand



Wear eye protection.



## Planning

- 1 Decide what you are going to investigate. You could investigate the effect of:
  - the mass of sodium hydrogencarbonate
  - the volume of sulphuric acid
  - the concentration of sulphuric acid.
- 2 Write a plan for your investigation. Remember to say:
  - how you will make sure that you are carrying out a fair test
  - which variable you are investigating
  - how many times you will carry out the experiment
  - how much of each chemical you will use.

## A model fire extinguisher 2 (continued)

3 Show your plan to your teacher before you start.

### Recording your results

4 Plot a graph to show your results. The quantity (or concentration) of the chemical you were investigating should go on the horizontal axis, and the volume of carbon dioxide should go on the vertical axis.

### Considering your results/conclusion

5 Look at your results carefully. Can you see a pattern? If so, what is it?

6 How much dilute acid and sodium hydrogencarbonate should you use to make the most carbon dioxide?

### Evaluation

7 Is there any way that you could improve your experiment if you had time to do it again?

8 Is there anything else that you could investigate to try to make the most carbon dioxide from your chemicals?

**S** planning, observing, presenting, considering, evaluating

