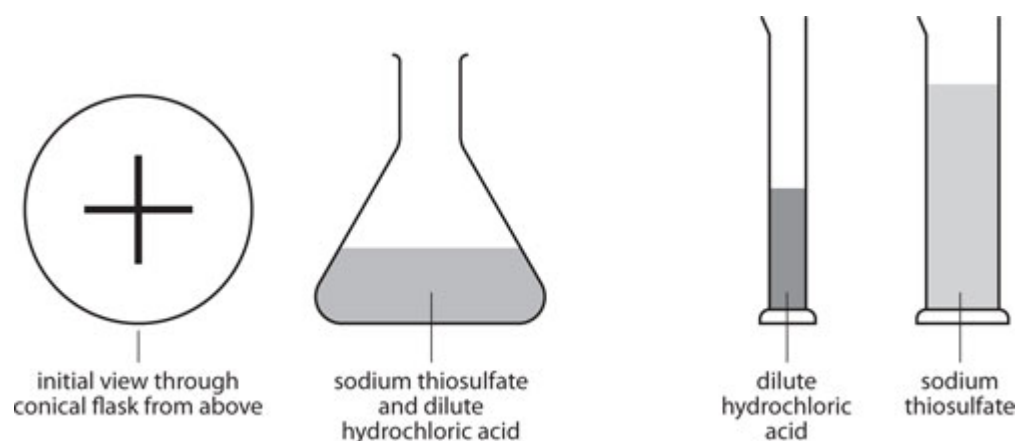


Student worksheet: The effect of concentration on a reaction rate

Introduction

In this experiment, the effect of the concentration of sodium thiosulfate on the rate of reaction is investigated.



What to record

1 Complete the table:

Volume of sodium thiosulfate solution/cm ³	Volume of water/cm ³	Time taken for cross to disappear /s	Original concentration of sodium thiosulfate solution/g dm ⁻³	1/time taken /s ⁻¹
50	0	50		
40	10			
30	20			
20	30			
10	40			

What to do

HEALTH & SAFETY: Take care not to inhale fumes. Work in a well-ventilated laboratory. Asthmatics should, if possible, use a fume-cupboard.

Reducing the volume by, for instance, using a test tube rather than a flask will be safer as less hydrogen sulphide will be produced.

- 1 Put 50 cm³ of sodium thiosulfate solution in a flask.
- 2 Measure 5 cm³ of dilute hydrochloric acid in a small measuring cylinder.



- 3 Add the acid to the flask and immediately start the clock. Swirl the flask to mix the solutions and place it on a piece of paper marked with a cross.
- 4 Look down at the cross from above. When the cross disappears stop the clock and note the time. Record this in the table.
- 5 Repeat this using different concentrations of sodium thiosulfate solution. Make up 50 cm³ of each solution. Mix different volumes of the sodium thiosulfate solution with water as shown in the table.
- 6 As soon as possible, pour the solution down the sink (in the fume cupboard if possible) and wash away.

Questions

- 1 Calculate the concentration of sodium thiosulfate in the flask at the start of each experiment. Record the results in the table.
- 2 For each set of results, calculate the value of 1/time. (This value can be taken as a measure of the rate of reaction).
- 3 Plot a graph of 1/time taken on the vertical (y) axis and concentration on the horizontal (x) axis.

Credits

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