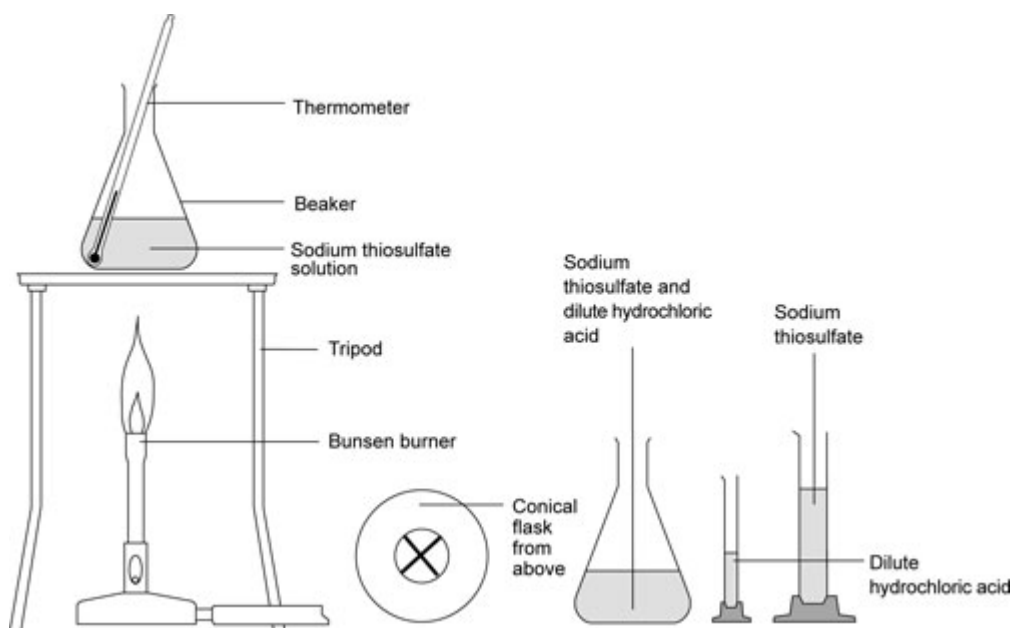


Student worksheet: The effect of temperature on reaction rate

Introduction

In this experiment the effect of temperature on the rate of reaction between sodium thiosulfate and hydrochloric acid is investigated.



What to record

Record your results in the table.

Initial temperature of the mixture in the flask/°C	Final temperature of the mixture in the flask/°C	Average temperature of the mixture in the flask/°C	Time taken for the cross to disappear/s	1/time taken/s ⁻¹

What to do

1. Put 10 cm³ of sodium thiosulfate solution and 40 cm³ of water into a conical flask. Measure 5 cm³ of dilute hydrochloric acid in a small measuring cylinder.
2. Warm the thiosulfate solution in the flask if necessary to bring it to the required temperature. The object is to repeat the experiment five times with temperatures in the range 15–55 °C.
3. Put the conical flask over a piece of paper with a cross drawn on it.
4. Add the acid and start the clock. Swirl the flask to mix the solutions and place it on a piece of white paper marked with a cross. Take the initial temperature of the mixture.



5. Look down at the cross from above. When the cross disappears, stop the clock and note the time taken. Record the final temperature of the mixture in the flask.
6. As soon as possible, pour the solution down the sink (in the fume cupboard if possible) and wash away.

Safety

Wear eye protection. Take care not to inhale fumes. Work in a well-ventilated laboratory. Asthmatics use a fume cupboard if at all possible

Questions

1. For each set of results, calculate the value of $1/\text{time}$. (This value can be taken as a measure of the rate of reaction for this experiment).
2. Plot a graph of $1/\text{time}$ on the vertical (y) axis and average temperature on the horizontal (x) axis.

Credits

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