

Measuring the Rate of Reaction Between Hydrochloric Acid and Magnesium

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Course: ICT for Scientists

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Purpose

To investigate how the concentration of hydrochloric acid affects the rate of its reaction with magnesium ribbon.

Apparatus

- Conical flask
- Measuring cylinder
- Stopwatch
- Ruler

- Magnesium ribbon
- Hydrochloric acid solutions (0.5 M, 1.0 M, 1.5 M, 2.0 M)

Method

1. Measure 25 mL of hydrochloric acid into the conical flask.
2. Add a pre-cut 5 cm length of magnesium ribbon.
3. Start the stopwatch immediately.
4. Record the time taken for the magnesium to completely dissolve.
5. Repeat for each concentration of acid.

Results Table

Concentration (M)	Time (s)	Rate (1/time)
0.5	68	0.015
1.0	45	0.022
1.5	28	0.036
2.0	20	0.050

Equation



Discussion

As the concentration of hydrochloric acid increases, the reaction time decreases. This is because higher concentration means more frequent collisions between acid particles and magnesium atoms.

Conclusion

The rate of reaction increases with acid concentration.