

Practical 3 – Chapter 6

Investigating the effect of concentration on reaction rate

Assessed practical – DCP and CE

In this experiment you will study the rate of reaction between sodium thiosulfate solution and hydrochloric acid:



The reaction produces a precipitate of sulfur. You will time how long it takes to obscure a cross drawn on a piece of paper placed under the reaction flask. In other words, you will measure the time it takes to produce a fixed amount of sulfur.

Safety

- 2 mol dm⁻³ HCl is an irritant.
- The reaction produces SO₂, which is toxic and is an irritant to the eyes and respiratory system.
- Wear eye protection.

What to do

- Mark a cross in black pen on a piece of paper.
- Place the conical flask on the cross.
- Put 50 cm³ of 0.15 mol dm⁻³ sodium thiosulfate into the flask.
- Measure out 5 cm³ of 2.0 mol dm⁻³ hydrochloric acid using a measuring cylinder (**Care!**).
- Add the hydrochloric acid to the conical flask, start the stopwatch and swirl to mix the chemicals.
- Time how long it takes for the sulfur produced to obscure the cross.
- Wash the contents of the flask down the sink with lots of water.

Vary the concentration by making up the following mixtures:

Expt No.	Volume of Na ₂ S ₂ O ₃ / cm ³	Volume of H ₂ O / cm ³	Volume of HCl / cm ³
1	50	0	5
2	40	10	5
3	30	20	5
4	20	30	5
5	10	40	5