WJEC Chemistry GCSE

Specified Practical 9B

Measuring Rate of Reaction Between Sodium Thiosulfate and Hydrochloric Acid

[Methods are adapted from the Royal Society of Chemistry and the AQA GCSE Chemistry required practical handbook]

England Specification

‘Disappearing Cross’ Method

Aim

Investigating how we measure the rate of reaction according to colour change or turbidity.

Equipment list

- 40 g/cm^3 sodium thiosulfate solution
- 1.0 mol dm^{-3} dilute hydrochloric acid
- A conical flask (100 cm^3)
- A printed black paper cross
- A stopwatch

Method

1. Measure 10 cm^3 sodium thiosulfate solution into the conical flask.
2. Dilute the solution by adding 40 cm^3 water into the conical flask making the concentration 8 g/cm^3.
3. Put the conical flask on the black cross.
4. Measure 10 cm^3 of dilute hydrochloric acid.
5. Add the acid to the flask. Then quickly at the same time, gently swirl the flask whilst starting the stopwatch.
6. Look down through the mouth of the flask. Stop the clock when you can’t see the cross any more and record the time taken (in seconds).
7. Repeat steps 1−6 , using different volumes of sodium thiosulfate and water - 20 cm^3 sodium thiosulphate solution + 30 cm^3 water, 30 cm^3 sodium thiosulphate solution + 20 cm^3 water, 40 cm^3 sodium thiosulphate + 10 cm^3 water).

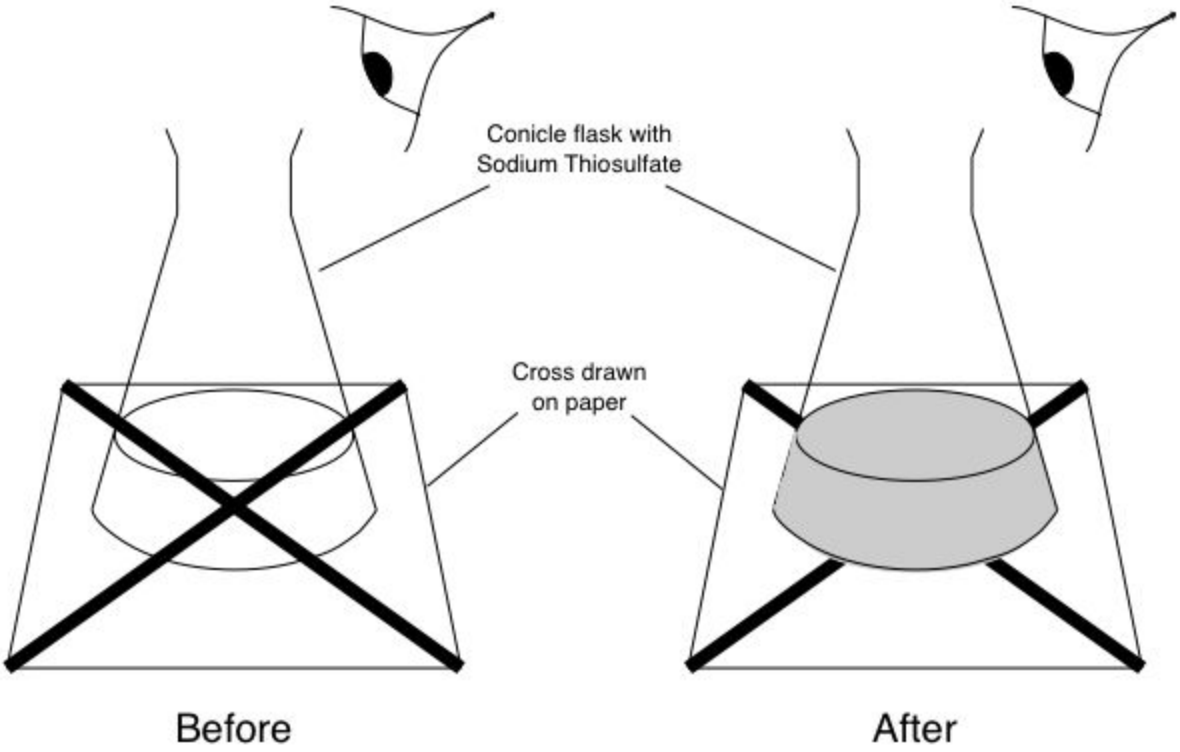
This will change the concentration of sodium thiosulfate.

8. Repeat steps 1-7 twice more.
9. Calculate the mean time for each of the sodium thiosulfate concentrations.

Safety Precautions

- Wear safety glasses.
- Take care when using glassware.
- Avoid breathing in sulfur dioxide fumes.

Diagram


Conicle flask with
Sodium Thiosulfate
Cross drawn
on paper
Before
After