

0	1
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Sodium thiosulphate solution reacts with hydrochloric acid to produce insoluble sulfur.

The equation for the reaction is:

0	1
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1

sodium + hydrochloric → sodium + water + sulphur + sulfur
thiosulfate acid chloride dioxide

The rate of reaction was measured by measuring the time taken for the reaction to turn cloudy.

The reaction was carried out, 25cm³ of each reactant was used, with a concentration of 0.5 mol/dm³, and the reaction took 30 seconds to complete.

WARNING:
Pressure and surface area are not relevant here because both of the reactants are solutions.

State three ways in which the rate of reaction could be increased.

[3 marks]

1. Increase the concentration of the sodium thiosulfate / hydrochloric acid [1]...
2. Increase the temperature / heat [1]...
3. Add a catalyst [1]...

The reaction was repeated with the same volumes of reactants, but this time the concentration of hydrochloric acid used was 1 mol/dm³.

0	1
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2

Predict how long you would expect the reaction to take.

[1 mark]

Time taken 15 seconds seconds

0	1
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3

Explain your reasoning.

[1 mark]

Concentration was doubled, therefore the rate would double / reaction would happen twice as fast / in half the time

(Total 5 marks)

End