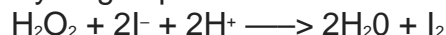


To Study the Reaction Rate Of Reaction Of Iodide Ions with Hydrogen Peroxide at Different Concentrations Of Iodide Ions

Theory

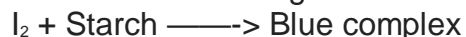
Hydrogen peroxide oxidizes iodide ions to iodine in acidic medium



The reaction is monitored by adding a known volume of sodium thiosulphate solution and starch solution to the reaction mixture. Iodine liberated at once reacts with sodium thiosulphate solution and is reduced to iodide ions



When thiosulphate ions are completely consumed, the liberated iodine reacts with starch solution and gives blue colour



The time elapsed before the appearance of blue colour, gives an idea about the rate of the reaction.

Apparatus and Chemicals

4 Conical flasks (250 ml), measuring cylinder, burette, pipette (25 ml), stop-watch, 0.1 M KI solution, 2.5 M H_2SO_4 , starch solution. '3%' H_2O_2 solution, 0.05 M sodium thiosulphate solution.

Procedure

1. Take four 250 ml conical flasks and label them as A, B, C and D.
2. Add 10 ml, 20 ml, 40 ml and 60 ml of 0.1 M KI solution to the flasks A, B, C and D respectively.
3. Add 10 ml of to each flask.
4. Add water to make the volume of solution 100 ml in each flask.
5. Add 5 ml starch solution to each flask.
6. Add 10 ml of 0.05 M sodium thiosulphate solution to each flask.
7. Add 5 ml of 3% hydrogen peroxide solution to flask A with the help of a pipette and start the stop watch immediately. Stir the mixture and watch for the blue colour to appear. Note the time when the blue colour just appears.
8. Repeat the step 7 with the solutions in flasks B, C and D.

Observations

Flask	0.1 M KI solution (ml)	2.5 M H_2SO_4 (ml)	Water (ml)	Starch solution (ml)	0.5 M sodium thiosulphate solution (ml)	3% hydrogen peroxide solution (ml)
A	10	10	80	5	10	5
B	20	10	70	5	10	5
C	40	10	50	5	10	5
D	60	10	30	5	10	5

Time required for the blue colour to first appear in:

Flask A —s

Flask B —s

Flask C —s

Flask D —s

Conclusion

The rate of the reaction increases with increase in concentration of iodide ions.

Precautions

1. Always use a freshly prepared solution of sodium thiosulphate.
2. Concentration of KI solution should be higher than the concentration of sodium thiosulphate solution.
3. Use freshly prepared starch solution.