

THEORY

The theory of the present experiment is based on the fact that the rate of a chemical reaction is directly proportional to the concentration of the reactants. In this experiment, the reaction between potassium dichromate and potassium iodide is studied. The reaction is as follows:

$$K_2Cr_2O_7 + 6KI + 14HCl \rightarrow 2CrCl_3 + 6KCl + 6I_2 + 7H_2O$$

The rate of this reaction is measured by the time taken for a certain amount of iodine to be produced. The rate of reaction is found to be directly proportional to the concentration of potassium dichromate and inversely proportional to the concentration of potassium iodide.

| Concentration of $K_2Cr_2O_7$ (M) | Concentration of KI (M) | Time taken for appearance of blue color (sec) |
|-----------------------------------|---------------------------|---|
| 0.01 | 0.01 | 100 |
| 0.02 | 0.01 | 50 |
| 0.04 | 0.01 | 25 |
| 0.01 | 0.02 | 200 |
| 0.01 | 0.04 | 400 |

DISCUSSION

The results of the experiment show that the rate of reaction is directly proportional to the concentration of potassium dichromate and inversely proportional to the concentration of potassium iodide. This is in agreement with the theory of the present experiment. The rate of reaction is found to be directly proportional to the concentration of potassium dichromate and inversely proportional to the concentration of potassium iodide.