

**Objective:** To determine the affect of concentration on the rate of a chemical reaction.

Starch turns dark blue in the presence of  $I_2$  molecules. We will use this color change to time reactions at various concentrations to find the affect concentration on a reaction. The reaction that is being carried out is more complex than those that we have covered in class, but that is not important. By varying the concentrations of the reactants of the reaction, we will be able to determine the general affect that it has on reaction rate.

**Materials and equipment:**

Beakers 50 mL	10 mL graduated cylinder	
Distilled water	25 mL graduated cylinder	Clock with second hand
Solution A( $Na_2S_2O_4$ and starch) in spray bottle		Solution B( $KIO_3$ ) in spray bottle

**Safety:** The solutions in this lab are poisonous. There are to be no games played in the laboratory, do not squirt the bottles! You **MUST** wear your goggles and aprons at all times. Wash your hands before leaving.

**Procedure :**

For this experiment we will **ALWAYS** use 10 mL of solution A, measured in the 25 mL Graduated cylinder.

In the 10 mL graduated cylinder will **ALWAYS** have 10 mL os solution and water before we mix them.

1. Measure out 10 mL of Solution A in the 25 mL graduated cylinder.
2. Put 10 mL of solution B in the 10 mL graduated cylinder
3. Pour the two solutions together, and time how long it takes for the color to appear. Record in the data table.
4. Clean the beaker.
5. Repeat steps 1 through 4, using 9 mL of solution B, and 1 mL of water in the 10mL graduated cylinder.
6. For the rest of the experiment, repeat steps 1-4, using one mL less of solution B each time, and one mL of distilled water

**Data Table:**

Number of mL of solution B	Number of mL of water	Time in seconds
10	0	
9	1	
8	2	
7	3	
6	4	
5	5	
4	6	
3	7	

**Part B**

**The effect of temperature:**

1. There are warmed solutions of A and B in the front of the room. Get 10 mL samples of each. Return to your desk and time how long it takes for them to react. Do not let them cool too much before you time them.

2. There are solutions of A and B on ice in the front of the room. Get 10 mL samples of each. Return to your desk and time how long it takes for them to react. Do not let them warm too much before you time them.

**Conclusion:**

## Questions:

1. What happens to the reaction rate as the amount of solution B is decreased?
2. Why does changing the amount of solution B change the rate of the reaction?
3. What would happen if you decreased the amount of solution A?
4. What effect did changing the temperature have on the rate of reaction?
5. Why does changing the temperature effect the rate of reaction?