

## Iodine Clock Lab

Names:

Chemical reactions occur as a result of collisions between molecules. In this lab we will modify a reaction and observe how the speed of it changes as it alternates between equilibrium states.

### Hypothesis

The reaction will be the fastest when potassium iodate has a concentration of \_\_\_\_\_.

### Materials

- Potassium iodate solutions of various concentrations (0.2 M, 0.1 M, and 0.05 M)
- Sodium metabisulfite/starch solution
- Distilled Water
- Graduated cylinders
- Plastic cups
- Stirring rod
- Timer

### Methods

1. Measure 100 mL of 0.2 M potassium iodate solution in a clean graduated cylinder.
2. Measure 40 mL of the sodium metabisulfite/starch solution in the clean graduated cylinder then place the solution into a plastic cup.
3. Next, add 60 mL of distilled water to the plastic cup.
4. Pour the contents of the other cylinder (from step #1) into the beaker and immediately start timing, recording your data when the reaction happens. Once complete, place the solution into the waste bin.
5. Repeat the reaction for the 0.1 M and 0.05 M solutions.

### Results

Initial KIO <sub>3</sub> Concentration	KIO <sub>3</sub> Concentration After Mixing	Reaction Time (in seconds)
0.2 M	0.10 M	
0.1 M	0.05 M	
0.05 M	0.025 M	

### Discussion/Conclusion

Use the back of this sheet to answer the following questions.

1. As the concentration of potassium iodate (KIO<sub>3</sub>) increased, what happened to the reaction time? Why do you think this is the case?
2. Graph your data, then predict what the reaction time will be if you were to use 0.075 M potassium iodate by extrapolating the line you make from graphing this data.
3. How does this lab relate to le chatelier's principle and equilibrium?
4. What sources of error were there for this lab?
5. Was your hypothesis correct? If not, rewrite it with what happened.