

Extension-Reaction Rate Lab

Chemical reactions occur at a number of different speeds. They may be very fast or they may be very slow. The reaction rate can often be sped up or slowed down. In this lab, you will investigate a few factors which affect the rate of a reaction.

Pre-Lab:

Using the laminated reference sheet at your table, complete the following table about rate of reaction factors.

What happens to the reaction when there is a(n).....

Reaction Rate Factor	Increase in the Factor	Decrease in the Factor
1.		
2.		
3.		
4.		
5.		
6.		

Materials:

Timer (clock, watch or cell phone), Film Canister with Lid, 3 ½ Alka-Seltzer tablets, Graduated cylinder.

Procedures:

In this lab you will test the reaction rate of an Alka-Seltzer tablet in 6 different situations. For each test, you must keep accurate time on how long it takes for the reaction to cause the lid of the film canister to pop off.

Tests:

- Place ½ of a tablet into the film canister containing 20 mL **COLD** water. Quickly close the lid and time how long it takes for the lid to pop off.
What factor impacted this rate of reaction? Time: _____
- Place ½ of a tablet into the film canister containing 20 mL **HOT** water. Quickly close the lid and time how long it takes for the lid to pop off.
What factor impacted this rate of reaction? Time: _____
- Place ½ of a tablet into the film canister containing 20 mL **room temperature** water. Quickly close the lid and time how long it takes for the lid to pop off.
What factor impacted this rate of reaction? Time: _____
- Place ½ of a **CRUSHED** tablet into the film canister containing 20mL room temperature water. Quickly close the lid and time how long it takes for the lid to pop off.
What factor impacted this rate of reaction? Time: _____

5. Place $\frac{1}{2}$ of a tablet into the film canister containing 20 mL room temperature water. Quickly close the lid and **SWIRL TO AGITATE**, time how long it takes for the lid to pop off.
 What factor impacted this rate of reaction? Time: _____

6. Place **1 WHOLE** tablet into the film canister containing 20 mL room temperature water. Quickly close the lid and time how long it takes for the lid to pop off.
 What factor impacted this rate of reaction? Time: _____

Data:

Test	Independent Variable	Dependent Variable	Controlled Variable(s)
1			
2			
3			
4			
5			
6			

Lab Questions:

1. What was the time difference between hot and cold water reactions? Why was there a difference?
2. What was the time difference between crushed and control tablets? Why was there a difference?
3. What was the time difference between the swirled and control tablets? Why was there a difference?
4. What was the time difference between the WHOLE and control tablets? Why was there a difference?
5. Which of the 6 reaction rate factors you tested today caused the reaction to occur the fastest?
6. Why do you think it made it occur faster than the other 5?