Ancheta
2011

Name: _____ Period: _____ Date: _____ Seat #: ___

Reaction Rates

Introduction: The rate of a chemical reaction depends on many factors, the nature of the reactants, concentration of the reactants, external factors to the reaction such as heat.

When you add water to baking power, it produces carbon dioxide (CO_2). How can we increase the rate of the chemical reaction? What will happen if we increase the amount of reactants (baking powder) or cool the reaction down by adding cold water? In this investigation we will determine what factors increase or decrease the reaction rate.

Purpose: The purpose of this exercise is to: _____

Materials:
Alka Seltzer tablets, water, reaction chamber, graduated cylinder

Safety: _____

Procedure:
1. **Caution: Wipe any water spills (do not use paper towels).**

General Test
2. Place one tablet into a reaction chamber.
3. Take the temperature of 20mL of water and add to the reaction chamber. Describe/draw the reaction in the data section.

Baseline Test
4. Follow procedure 2 and 3but cap chamber as quickly as possible. Time the reaction rate from the initial pouring of the water until the reaction is complete. (Reaction is complete when the cap comes off. If the reaction does not go to completion in 3 minutes it is reported as > 3 minutes). Record your results.

Concentration
5. Place about ½ of the "alka seltzer" in the chamber. Repeat steps 3 & 4.
6. Place about 1½ tablets into the chamber. Repeat above procedure.

Temperature
7. Obtain cold water from the front. Measure and record temperature. Repeat procedure 3 & 4 with the cold water.
8. Obtain hot water from the front. Measure and record temperature. Repeat procedure 3 & 4 with the hot water.

Surface Area
9. Obtain mortar and pestle from the front. Grind down one Alka Seltzer tablet. Repeat procedure 3 & 4 with the cold water.

Data
1. Drawing of your observation

General Test Baseline Test

2. Table

Sample	Water Temperature	Alka seltzer (# of tablet)	Time (second)
General Test'			
Base line Test			
Concentration (1/2 tablet)			
Concentration (1&1/2 tablet)			
Cold Water			
Hot Water			
Surface area			

Questions:

1. What factors influence the rate of reaction? List them then explain how it influences the rate of reaction.
   a. _____
   b. _____
   c. _____

2. What is collision theory and how is it related to reaction rate?

3. Why is there a shelf-life on alka-seltzer? (in other words, why is an old alka seltzer ineffective?)

Conclusion:

Reference: Adapted from: Chemistry: Experiments and Principles; DC Heath and Company.