Teammates: Shakira Ali, Brianna De La O, Wesley Thorson Renomeron, Mansour Mbow

Rate of disappearance of Calcium carbonate

50 ml of acid in flask

Time Lapse

Variables: Concentration and Surface Area

1. Variable being measured
    - Independent variable (Concentration)
    - Dependent variable (Mass)
2. Why is it being measured?
    - To measure the rate of the reaction based on changes in mass
3. What factors are being held constant?
    - 50.0 mL of hydrochloric acid (HCl)
    - Temperature
4. What is the ultimate goal of the data collection?
    - The ultimate goal is to determine how the concentration of acid affects the rate of the reaction.

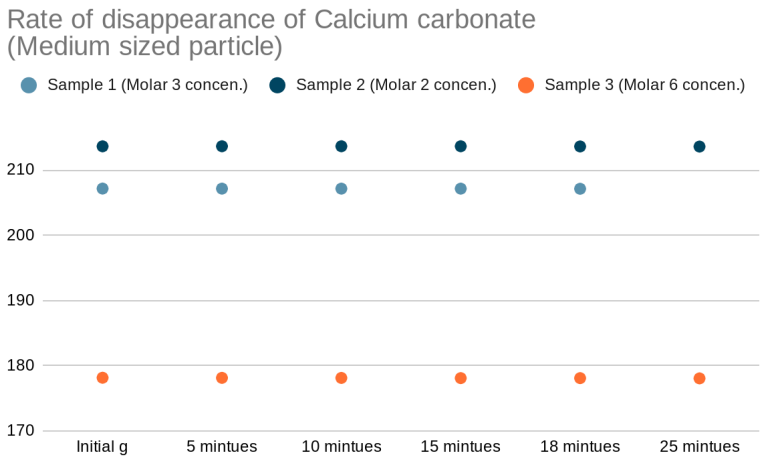
Testable question: If the concentration is increase, how will it affet the rate of the reaction?

Hypothesis: If the concentration is increased, then the reaction will occur at a faster rate.

Data Collection Chart:

Tests	Sample 1	Sample 2	Sample 3
Description	Molar 3 concen. Medium particle pebble	Molar 2 concen. Medium particle pebble	Molar 6 concen. Medium particle pebble
Initial g	207.17 g (0:00.00)(1.07g sample)	213.65 g (1.6g sample) (0:00.00)	178.16 g (1.06g sample)
5 min	207.16 g (5:09.69) (decreased by -0.01g)	213.66 g (5:36.42) (increased by +0.01g)	178.14(5:16) (shaken)
10 min	207.16 g (no change)	213.66 g (no change)	178.13(10:05) (shaken)
15 min	207.16 g (no change)	213.66g (no change)	178.1(15:00) (shaken)
18 min	207.14 g (18:13:94) (decreased by -0.02 g)	213.63g (-0.03g) (shaken)	178.1(20:19) (shaken)
25 min	n/a	213.61 (-0.02g) (shaken)	178.06(25:18) (shaken)

Graph:



Y-axis: grams

X-axis: time in mintues

Generalizing your findings of your experiment to determine how long it would take marble statues to disintegrate under specific conditions.

According to our experiment to determine how long it would take marble statues to disintegrate under specific conditions, will take many year. However, if the statue is under extreme climate, the fluctuation of the temperature and erosion will cause the statue to gradually decay and change shape over time. The estimated time of frequent acid rain will be around 6-7 months as the surface area of the statue is much larger than the experimented marble particle.

Conclusion:

According to our evidence, in conclusion our hypothesis was correct, because if we look at our data and past evidence through doing this we've found out each time we've completed a new sample it would go up if the molarity would be 6 it would go up by 0.03 grams. This concentration is deemed to be the fastest change reaction. Moreover, as the particle had a low surface area, it allowed the higher concentration of 6 Molar to dissolve the particle at a must faster rate.

Pre - Lab Questions:

1. List the factors that you think may affect the speed at which calcium carbonate will react with acid. (The hydrochloric acid will be available to you in varying concentrations and the calcium carbonate will be available in "chunks" of varying size. You will have access to a heat source.)

The factors that we think may affect the speed at which the calcium carbonate will react with the acid is the concentration of the acids. In addition the particle size of the marble could also be a factor that conflicts with the rate of the acid disintegrating it.

2. If a chemical reaction produces gas suggest a way of monitoring the production of that gas at the reaction proceeds.

If a chemical reaction produces gas, a way of monitoring the volume the production of the gas at the reaction proceeds is by using time intervals of gas collection or monitoring the loss of mass of reactants using a balance.

3. Discuss how increasing the surface area of a solid might influence the rate of chemical reaction.

By increasing the surface area of a solid it might influence the rate of a chemical reaction by decreasing the amount of time it takes for the chemical to react. In view of the fact that the chemical won't be compressed very tight which would allow the molecules to have more space for a greater and faster reaction.