Hcl + mg lab report

Business

Lab Report Background Information: Magnesium is an alkaline earth metal that has the symbol Mg. Magnesium is a fairly strong, silvery-white, light-weight metal (one third lighter than aluminum). In a powder, it heats and ignites when exposed to moisture and burns with a white flame that is harmful to the eyes.

It is difficult to ignite in bulk, but once ignited, it is difficult to extinguish. Magnesium Ribbon is a long strip of magnesium metal about 3 millimeters wide and 10 meters long with a thickness of about 0. 03mm, and weight of about 25 grams. Hydrochloric acid is a solution of hydrogen chloride in water, that is a highly corrosive, strong mineral acid with many industrial uses. It is found naturally in gastric acid.

Hydrochloric acid is used in the chemical industry, and in the production of chlorides, fertilizers, and dyes, and in the photographic, textile, and rubber industries. It has smaller-scale applications, including household cleaning, production of gelatin and other food additives, descaling, and leather processing. Hydrochloric acid is corrosive to the eyes, skin, and mucous membranes. Focus Question: How does the molarity of the Hydrochloric Acid effect the reaction time of the Magnesium? Hypothesis: If the molarity of the Hydrochloric acid increases, then the reaction time of the Magnesium will decrease. Variables: Manipulated – Concentration of HCl Responding – Reaction time of HCl and Mg Controlled – Size of Mg piece, amount of HCl in test tube, room temperature, method of agitation. Materials List: 1.

Test tube rack 2. Graduated Cylinder (10mL) 3. 3 Test Tubes 4. 50 mL beaker 5. 250 mL flask (for the HCl) 6. Dropper 7.

Stopwatch 8. 17cm strip of Magnesium Ribbon 9. HCl (. 5 molarity) 10. HCl (1 molarity) 11.

HCl (2 molarity) 12. Goggles 13. Scissors/Knife (for cutting Mg) Procedure: 1. Cut the strip of magnesium into 10 mm pieces with the scissors/knife and then hold them in the beaker. 2.

Measure out 5 mL of HCl (. 5 molarity) with the dropper into the graduated cylinder. 3. Pour HCl (. 5) from the graduated cylinder into the test tube.

4. Put a piece of magnesium into the test tube filled with HCl. 5. Start stopwatch when the magnesium is placed into the test tube filled with HCl (. 5) and stop it when the magnesium has dissolved (flick the bottom of the test tube periodically to make sure that the magnesium mixes properly with the HCl).

. Record your data and then dump out the HCl and wash your materials. 7. Repeat steps 2-6 with . 5 molarity until you have completed 5 trials with it. 8.

Get a new test tube. 9. Repeat steps 2-6 with 1 molarity. 10. Repeat steps 2-6 with 1 molarity until you completed 5 trials with it. 11.

Get a new test tube. 12. Repeat steps 2-6 with 2 molarity. 13. Repeat steps 2-6 with 2 molarity until you have completed 5 trials with it. Conclusion: If the molarity of the HCl increases, then the reaction time of the Magnesium will decrease.

This hypothesis was proved to be supported. The average rate of reaction for the HCl . molarity was 269. 402 seconds, for the HCl 1 molarity was 50. 052 seconds, and for the HCl 2 molarity was 15. 218 seconds.

This is because according to the collision theory, in order to react particles must touch each other. With the increase of the concentration of the HCl (the introduction of more HCl particles) there is more opportunity for the HCl particles to collide with the magnesium's molecules. Therefore, the rate of reaction increases. Evaluation: I am very confident in the overall conclusion that we reached with this lab (that an increase in molarity results in a decrease of reaction time). However, I believe that we could hone down our results to be even more accurate.

One thing that might have minutely effected the results was the rate/method of agitation of the test tubes. Each person in the group had a slightly different method and a slightly different speed at which they worked. To fix this each group would set one method before hand (whether it be tapping it against a nail, flicking it, or tapping it against the table edge) and keep a fixed time in between each tap (whether it be 1 second or 0 seconds). Another difficulty that may have minutely effected that data was that size of the magnesium pieces. It was hard to cut each strip into exact 10 mm increments. One way to fix this could be to buy pre-cut strips so that you don't have to go through the hassle of cutting the magnesium yourself.

Another way would be to just conduct your experiments on a larger scale so that you wouldn't have to have smaller pieces of the magnesium at all.