

name: _____

Antacids and Neutralization

Your stomach contains hydrochloric acid to prepare protein in your food for digestion and to kill bacteria entering the stomach. The digestive juices normally have a pH of 2-3, but they can become more acidic. Excess acid exists when the pH value of the stomach contents falls below this level, causing symptoms such as heartburn and indigestion. Acid may also go up into the esophagus where it does not belong, causing burning of the tender tissue that is not protected by mucous as it is in the stomach. An antacid is a weak base that "neutralizes" excess stomach acid. It is not healthy to take a lot of antacid tablets, particularly strong ones, because if you neutralize too much acid, your body will supply more acid to the stomach. Therefore, too much antacid can cause a vicious cycle and produce ulcers.

Lab #1 SIMPLE NEUTRALIZATION

Purpose: to observe a simple neutralization reaction.

Materials: safety glasses Erlenmeyer flask small graduated cylinder
 sodium hydroxide solution hydrochloric acid solution phenolphthalein indicator
 eyedropper hot plate

Method:

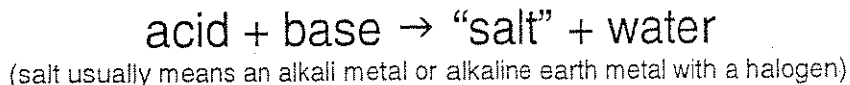
1. Measure 5 mL of the base solution (sodium hydroxide) with a graduated cylinder and pour it into a clean Erlenmeyer flask.
2. Add 5 drops of phenolphthalein indicator.
3. Swirl. Record the colour.
4. Using an eyedropper, add acid solution (hydrochloric acid), one drop at a time, until the solution in the flask JUST TURNS COLOURLESS (and stays colourless). Swirl after every drop. It is easy to go too far, and have to start again, so be careful. Do this on top of a piece of white paper. **KEEP TRACK OF YOUR NUMBER OF DROPS** and record. This solution is now NEUTRAL.
5. Heat the flask until the liquid is gone. Describe the remaining solid.

Results:

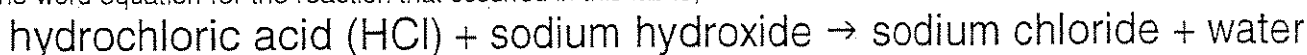
Colour of base with indicator.		# of drops of acid for your group.	
Colour when last drop of acid is added.		Average # of drops of acid from the class.	
Description of solid left in flask after heating.			

Information:

All neutralization reactions can be stated as follows;



The word equation for the reaction that occurred in this lab is;



Questions:

1. Is the final solution acidic, basic or neutral? _____
2. What is the pH of the final solution? _____
3. How did the number of drops you added compare with the other groups? Does this make sense? Why?

4. What was the solid product? _____
5. Where was the water after heating? _____
6. Write a balanced chemical equation (with states) for this reaction?

7. What type of reaction is this? _____
8. Write balanced chemical equations for the following reactions;
 - a) potassium hydroxide + hydrochloric acid

 - b) calcium hydroxide + hydrochloric acid