AP Chemistry Lab
Gravimetric Analysis

Prelab Questions

1) Write the complete molecular equation for the reaction between Na_2CO_3 and $CaCl_2$.

2) Write the net ionic equation for the reaction between Na_2CO_3 and $CaCl_2$.

3) What is the purpose of rinsing out the beaker several times with distilled water?

4) What is the purpose of rinsing the solid with distilled water while it is in the filter paper.

5) Why is it important that the solid be dry before the final mass is measured?

Procedure

1) Follow all appropriate lab safety procedures.

2) Rinse a clean 250 mL beaker with distilled water and dump the water.

3) Rinse a clean 100 mL graduated cylinder with distilled water and dump the water.

4) Pour approximately 75 mL of 0.60 M Na_2CO_3 and record the volume to the nearest 0.5 mL.

5) Pour the Na_2CO_3 into the 250 mL beaker.

6) Rinse the graduated cylinder several times with distilled water.

7) Pour approximately 50 mL of 0.40 M $CaCl_2$ and record the volume to the nearest 0.5 mL.

8) Pour the $CaCl_2$ into the beaker with the Na_2CO_3. Describe the physical appearance of the reaction in your lab book.

9) While waiting for the reaction to settle, label a watch glass with your name (using labeling tape) and fold a piece of filter paper in fourths and place it on the watch glass. Find the mass of both the filter paper and watch glass to the nearest 0.001g.

10) Place the filter paper in a funnel in a metal ring on a ring stand and put a beaker below it to catch the draining liquid. Wet the filter paper with distilled water to help it adhere to the funnel.

11) Slowly drain and filter the reaction through the filter paper as demonstrated by your teacher. Use a glass rod and rubber policeman to get all the solid into the filter paper. Wash the solid several times with distilled water.

12) Place the filter paper on the watch glass and place it into the drying oven over night.

13) Weigh the solid the next day.

Data Table

Volume of Na_2CO_3	
Volume of $CaCl_2$	
Mass of filter paper and watch glass before reaction	
Mass of filter paper and watch glass after reaction	

Post Lab Questions

1) Calculate the number of moles of sodium carbonate used.

2) Calculate the number of moles of calcium chloride used.

3) Calculate the theoretical yield (mass) of calcium carbonate.

4) Calculate the mass of calcium carbonate actually produced in this experiment.

5) Calculate the percent yield of the reaction.

6) What would happen to the percent yield (greater than, less than, or no change) if the solid was not completely dry?

7) What would happen to the percent yield (greater than, less than, or no change) if some precipitate remained in the reaction vessel?

8) What happens to the sodium ions and chloride ions?

9) What would happen if the reaction vessel was washed with tap water and not distilled?

10) What are some of the potential sources of error in this experiment?