Stoichiometry of a precipitation reaction assignment

Stoichiometry of a Precipitation Reaction Purpose: The purpose of this lab is to calculate the theoretical, actual, and percent yield of the product from a precipitation reaction. Also, to learn concepts of solubility and the formation of a precipitate. Procedure: Weigh out your 1. 0g of CaCl2-2H20 and put it into the 100mL beaker, Add your 25mL of distilled water and stir to form the calcium chloride solution. Next, use stoichiometry to determine how much Na2CO3 and put it into a small paper cup.

Then add the 25mL of distilled water to make the sodium carbonate solution. Mix the two solutions in the beaker and a precipitate of calcium carbonate will form instantly. Next set up your filtration assembly. After the filtration assembly is ready, swirl the contents of the beaker to dislodge any precipitate from the sides. Then, pour the content of the beaker into the filter paper-lined funnel carefully. After that you will need to measure out 2 to 5mL of distilled water into a graduated cylinder.

Pour it down the sides of the beaker, swirl, and pour into the filter paper-lined funnel. Once all the liquid has drained from the funnel, lay the filter paper containing the precipitate on folded layers of paper towels and set it somewhere to air-dry. Once the filter paper and the precipitated calcium carbonate are completely dry, weigh them, subtract the original weight of the empty filter paper, and record the net weight of the calcium carbonate. That is your actual yield of calcium carbonate.

After that you can calculate the percent yield, using your theoretical yield and actual yield. Be sure to clean up properly, rinse any remaining chemicals down the sink and throw paper cups and towels in the garbage. Clean and

dry all equipment you used. Observations: Theoretical yieldActual yieldPercent yield 0. 82g0. 74g0. 74g/0. 82g x 100= 90. 2% Questions: A. From your balanced equation what is the theoretical yield of your product? 1g CaCl2 2H2O x 1 mol CaCl2 2H2O/129g CaCl2 2H2O = 0. 00775 moles CaCl2 2H2O 0. 0775 moles CaCl2 2H2O x 105. 99g Na2CO3/1 mole Na2CO3 = 0. 82g Na2CO3 B. According to your data table, what is the actual yield of the product? 0. 74g C. What is the percent yield? 0. 74g/0. 82g x 100= 90. 2% D. A perfect percent yield would be 100%. Based on your results, comment on your degree of accuracy and suggest possible sources of error. There is a 9. 8% error. The error could have come from possible left over solid residue. Also possible missed measurements could have caused error. E. How could these errors be reduced in the future?

These errors could be reduced by more precious measurements and doing the lab a bit more carefully to avoid the possible left over solid residue. Conclusion: From this lab I learned how to calculate the theoretical, actual, and percent yield of the product from a precipitation reaction. I also learned the concepts of solubility and the formation of a precipitate. I had a my percent yield was 90. 2% which means that some where in the lab my measurements were off or there was an access of the solid left in the solution making the theoretical yield 0. 08g heavier.