Name _____

Date _____ Pd ____

Chemistry Unit 8 Lab 2 – $AgNO_3$ / NaCl Reaction
Keeping Track of Matter During Chemical Change

Introduction

In this experiment, you will take the $AgNO_3$ you made at the end of the previous lab, form an aqueous solution of it, then allow this to react with an aqueous solution of sodium chloride, NaCl.

1. After the products have been washed and dried, the mass of the products (silver chloride and a residue) can be compared to the mass of the reactants (silver nitrate and sodium chloride).
2. You will also use mole relationships to keep track of the silver through the series of chemical changes.

Be sure that you have your data table from the previous lab ($Cu/AgNO_3$ lab).

Procedure

1. After you added the 6M HNO_3 to your beaker, your instructor allowed the reaction to proceed under the fume hood, and evaporated the water. Your beaker should now contain $AgNO_3$, a white solid, recovered from the last experiment. However, if you failed to wash your silver adequately, the crystals will have a color. Record your observations.
2. Find the mass of the beaker + recovered $AgNO_3$ to the nearest 0.02g. (How does this mass compare to the mass of $AgNO_3$ you started with in the previous experiment?)
3. Add about 15 mL of distilled water to the beaker, and stir to dissolve the $AgNO_3$ crystals. **Remember the precautions about handling silver nitrate!** Be sure to rinse your stir rod into the beaker before you set it on the lab table top.
4. Find the mass of a 125 mL Erlenmeyer flask and label it.(be sure that your group and hour are on the beaker). Then slowly add NaCl from the vial at your table until you have added just over 1 gram to the beaker. Record the total mass of the flask and NaCl.
5. Dissolve the salt in about 15 mL of distilled water; stir until the crystals are dissolved.
6. While stirring the $AgNO_3$ solution, slowly pour the NaCl solution into the beaker. Note the solid AgCl that forms; a solid that forms upon the combination of two solutions is called a precipitate.
7. Rinse the empty flask with about 5 mL of distilled water and add this rinse to the beaker. Repeat this step. Save the flask for the filtering operation in step 9.
8. Place the beaker on a hot plate to heat the contents. Such heating causes the remainder of the solid suspended in solution (that is why the solution appears cloudy) to clump together. When the solution appears fairly clear, remove the beaker from the heat. Note: even if clarification isn't complete, remove the beaker if the solution begins to boil.
9. While the solution cools, obtain a piece of filter paper, fold it in quarters, and measure its mass. Then place the paper in the filter funnel in the manner demonstrated to you by your instructor.

See next page for diagram on folding filter paper

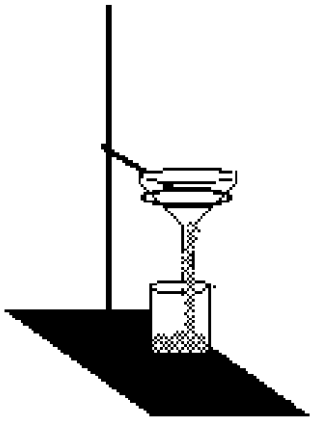
Wet the paper with some distilled water and press the seams flat against the side of the funnel; otherwise, air bubbles will enter the filtrate and slow the filtering operation. Place the funnel in a small ring supported by a ring stand so that the bottom of the funnel is against the inside wall of the flask.

Folding Filter Paper for Step 9:

fold in half,
crease seam

then fold in
half again

10. Decant the clear liquid from the beaker into the filter funnel. The object is to keep the solid AgCl in the beaker - the filter set-up is insurance against the loss of solid while you decant the solution. Wash the solid AgCl in the beaker with about 15 mL of distilled water (be sure to stir the solid to help rinse away dissolved chemicals). Decant the rinse water into the funnel. Repeat the washing and decanting procedure with another 15 mL of distilled water.



11. After the washing is complete, carefully remove the filter paper from the funnel and place it in the beaker. Make sure that both beakers are clearly labeled, then place the beaker in the drying oven, and flask on the cart next to the hot plates. Your instructor will evaporate the water from this beaker, leaving a solid residue.

The next day

12. Find the mass of each of your beakers.
13. Clean Up!!!
    - Dissolve the residue from the flask and pour it into the aqueous waste disposal. Wash the flask and set it aside to dry.
    - Scrape the AgCl from the beaker into the solid waste disposal (a separate can). Then wash the beaker.
    - Place the glassware in the area designated by your instructor once they are clean.
14. Begin your work on the calculations. Post results of your calculations as directed by the instructor.

Data Collection

Your data table should include the following:

mass of beaker (from the last experiment, Cu/$AgNO_3$ lab)
mass of $AgNO_3$ used at start of the last experiment (Cu/$AgNO_3$ lab)
mass of Ag formed at end of the last experiment (Cu/$AgNO_3$ lab)

---

mass of beaker and $AgNO_3$ recovered for this experiment
mass of one piece of filter paper
mass of beaker, filter paper and AgCl
mass of flask
mass of flask and NaCl
mass of flask and solid residue

Qualitative Observations and Notes