**Chemistry I Experiment #1: Separation of a Mixture**

***Objective:* Separate a mixture that is composed of table salt (NaCl) and sand.**

***Materials:* beaker, flask, funnel, filter paper, evaporating dish, watch glass, graduated cylinder, distilled water, laboratory balance, stirrer, hot plate, stir rod with rubber policeman**

***Procedure:***

1. **Place clean beaker on balance pan.**
2. **Tare the balance by hitting the O/T button. This sets the mass to 0.000 g.**
3. **Add about 10 g of mixture to beaker.**
4. **Record mass of mixture (with 3 decimal places): \_\_\_\_\_\_\_\_\_\_ g**
5. **Remove beaker with mixture and take it to your work station.**
6. **Use the graduated cylinder to add 10 mL of distilled water to the beaker. Stir with the stir rod for 2 minutes.**
7. **Place plastic funnel in an Erlenmeyer flask.**
8. **Write your name on a filter paper and measure the mass of the filter paper. (tare balance, add filter paper, and record mass below ↓)**
9. **Record mass of filter paper (with 3 decimal places): \_\_\_\_\_\_\_\_\_\_ g**
10. **Fold the filter paper in quarters and place it inside the funnel so that the mixture may be poured through the filter paper.**
11. **Pour mixture through funnel.**
12. **Add 5 mL of distilled water to beaker, swirl, and pour through funnel. Repeat once if necessary. *This should remove any remaining mixture in the beaker. Any excess sand that remains can be scraped with the rubber policeman that is attached to the stir rod.***
13. **After filtering is complete, remove the filter paper and place it in the drying oven overnight.**
14. **Record the mass of an evaporating dish with a watch glass on top of it. (tare balance, add evaporating dish with watch glass, record mass below ↓)**
15. **Record mass of evaporating dish with watch glass (with 3 decimal places): \_\_\_\_\_\_\_\_\_\_ g**
16. **Remove watch glass and pour the filtered solution in the Erlenmeyer flask into the evaporating dish.**
17. **Cover the evaporating dish with the watch glass.**
18. **Place the covered evaporating dish on a hot plate with tongs.**
19. **Allow ALL of the water to evaporate from the covered evaporating dish.**
20. **When ALL water has evaporated, use tongs to remove the covered evaporating dish from**

**the hot plate. Allow the evaporating dish to cool for about 10 minutes.**

1. **Measure the mass of the covered evaporating dish. (tare balance, add covered evaporating dish, record mass below ↓)**
2. **Record mass of covered evaporating dish (with 3 decimal places): \_\_\_\_\_\_\_\_\_\_ g**
3. **Rinse all materials at the sink at the front of the lab and place them on the paper towel to dry.**
4. **The following day, measure the mass of the dried filter paper and sand. (*use same balance as first day*, tare balance, add filter paper, record mass below ↓)**
5. **Record mass of filter paper (with 3 decimal places): \_\_\_\_\_\_\_\_\_\_ g**
6. **Dispose of the dried filter paper and sand in the trash can.**

**During-Lab Questions**

1. What type of change is being used to separate the components of the mixture?
2. In the mixture you will be given, you cannot distinguish the salt from the sand because they are uniformly mixed. How is this mixture classified?
3. Why is water helpful in separating sand from salt?
4. (a) What is the change of state called in which liquid water becomes water vapor? (b) Is energy absorbed or released by the water molecules during this change of state?
5. Why is it important to measure the mass of the filter paper before it is used in the experiment?
6. Why does the evaporating dish need to be covered by the watch glass during heating?
7. Why should the filter paper and sand be allowed to dry overnight before a final mass is taken?
8. List two pieces of personal protective equipment, or PPE, that you must wear during this lab?

**Calculations**

Determine the mass of each component in the mixture and the percent composition of the mixture.