

## Virtual Experiment 6

### Laboratory Report

Name \_\_\_\_\_

#### A. Dehydration

1. Dehydrated salts can be used as a desiccant. What is a desiccant and what is it used for?
2. What does the epsom salts look like before heating?
3. After the salts have heated for 2 hours, what does the dehydrated salt look like?

#### B. Determination of Percent mass of water in an unknown hydrate

Using the provided [class data](#), complete the following calculations for one of the given trials.

- |    |  |       |
|----|--|-------|
| 1. | Identity of Unknown                            | _____ |
| 2. | Mass of hydrated salt in evaporating dish      | _____ |
| 3. | Mass of evaporating dish                       | _____ |
| 4. | Mass of unknown hydrate                        | _____ |
| 5. | Mass of heated dish and salt (final heating)   | _____ |
| 6. | Mass of dehydrated salt                        | _____ |
| 7. | Mass of water lost                             | _____ |
| 8. | Mass percent of water in hydrated unknown salt | _____ |

9. To determine the identity of the hydrated unknown salt compare the mass percent water calculated above to each of the following hydrated compounds.
- % H<sub>2</sub>O in Na<sub>2</sub>SO<sub>4</sub> · 10H<sub>2</sub>O \_\_\_\_\_
  - % H<sub>2</sub>O in SrCl<sub>2</sub> · 6H<sub>2</sub>O \_\_\_\_\_
  - % H<sub>2</sub>O in MnSO<sub>4</sub> · H<sub>2</sub>O \_\_\_\_\_
  - % H<sub>2</sub>O in ZnSO<sub>4</sub> · 7H<sub>2</sub>O \_\_\_\_\_
10. Identity of hydrated salt \_\_\_\_\_
11. From the mass of the dehydrated ionic compound and the mass of water, determine the moles of each. (Show your work to determine the moles)
12. Using the calculated moles above, what is the mole ratio of water to dehydrated ionic compound which gives the moles of water in the hydrated unknown salt. (Show your work)
13. Does the mole ratio determined in question 12 verify your choice of unknown chosen in question 10? Explain your answer.

### C. Determination of Percent by mass of Copper:

Using the provided [class data](#), complete the following calculations.

- Unknown Identification \_\_\_\_\_
- Mass of Unknown used \_\_\_\_\_
- Mass of product (CuO) & filter paper
 

first heating	_____
(continue to weigh the sample to complete dryness and a constant mass to ± 0.01 g )	_____
second heating	_____
third heating	_____
final heating	_____

4. Mass of filter paper \_\_\_\_\_
5. Mass of CuO collected \_\_\_\_\_
6. Moles of CuO collected \_\_\_\_\_
7. Moles Copper in unknown = moles of CuO collected \_\_\_\_\_
8. Mass of Cu in Unknown \_\_\_\_\_
9. Percent by mass of Cu in Unknown \_\_\_\_\_
10. To determine the identity of the unknown copper salt, compare the percent composition of copper calculated to each of the following ionic compounds.
- a. % Cu in  $\text{CuBr}_2$  \_\_\_\_\_
- b. % Cu in  $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$  \_\_\_\_\_
- c. % Cu in  $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$  \_\_\_\_\_
- d. % Cu in  $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$  \_\_\_\_\_
11. Based upon your calculation in question 11, identity of Unknown copper (II) compound  
\_\_\_\_\_
12. Explain how the determination of the mass percent can be used to determine the identity of a compound.