06a Empirical Formula of a Hydrate Lab (5159641)

Question | 1 | 2 | 3 | 4 | 5 | 6

Instructions

Introduction: Hydrates contain water which can be removed from the compound with heating. The compound you are using is hydrated copper(II) sulfate. A color change will occur when the reaction takes place, but it is not possible to tell that the compound is completely dry by observing the color.

Objective: To determine the empirical formula of a hydrate experimentally.

Materials and Apparatus: crucible, hot plate, balance, a hydrated salt, tongs, safety goggles, scoopula

Determine your procedure and verify it with the instructor.
Determine the number of water molecules using ratios and the atomic masses on the periodic table.

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1. Question Details Lab Partners [1837468]

Enter the name(s) of your lab partner(s). (If you worked by yourself, enter "none").

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2. Question Details Water in a Hydrate Lab #2 (procedure) [2811750]

List the experimental procedure (stepwise) that should be followed in this lab (not the calculations).

3. Question Details Water in a Hydrate Lab Data [2811742]

a. Enter the experimental mass(from the balance) of the empty crucible: [4.0] ☑ _____ g

b. Enter the mass of the crucible plus the hydrated compound: [4.0] ☑ _____ g

c. Calculate the mass of the hydrated compound: [4.0] ☑ _____ g

d. Enter the mass of the crucible and compound after heating: [4.0] ☑ _____ g

e. Calculate the mass of the anhydrous compound: [4.0] ☑ _____ g

f. Calculate the mass of the water lost to the atmosphere: [4.0] ☑ _____ g

g. Calculate the number of water molecules in the hydrated compound formula to three sig figs: [4.0] ☑ _____

4. Question Details Water in a Hydrate Lab #1 [2811746]

Show your calculations for how to determine the number of water molecules.

5. Question Details Water in a Hydrate Lab #3 [2811744]

Which of the following are valid reasons why you should allow the dish and sample to cool before finding their mass using the balance?

- ☐ The balance will not work on hot objects.
- ☐ The apparent mass will be slightly different due to convection currents.
- ☐ You might burn your fingers.
- ☐ You could damage the balance.
- ☐ Mass changes with temperature.

6. Question Details Water in a Hydrate Lab #4 [2811747]

Which of the following are errors which could cause your final answer(number of water molecules) to be higher than the accepted value?

- [ ] misreading the balance
- [ ] some of the sample splattering out of the dish during heating
- [ ] not heating the sample long enough
- [ ] rehydration of the sample during cooling
- [ ] heating the sample too long and decomposing the anhydrous salt
- [ ] some of the salt sticking to the spatula during the crushing process
- [ ] convection currents (causing lift) from hot crucible when weighing

Assignment Details

Name (AID): **06a Empirical Formula of a Hydrate Lab (5159641)**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Ryan, Matt (** mryan@allsaintsschool.org **)**
Last Saved: **Dec 1, 2017 09:16 AM CST**
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