

Hydrates are ionic compounds that are solids at room temperature. They are special because they have water molecules bonded to their crystal. Different hydrates have different number of water molecules bonded to them, but the number is constant within molecules of a specific compound. The water molecules can be separated from the crystal if enough energy is added to it. Specifically, this must be enough to elevate the crystal's temperature above the boiling point of water. When the water has been removed from a hydrate, the remaining material is said to be "anhydrous."

Your goal is to determine the percent (by mass) of an unknown hydrate that is water. You will need to devise a method to remove the water molecules to do this. The quantity of unknown that you receive is all that you will get – plan accordingly. It is recommended that you perform your procedure more than once so you can obtain an average of multiple trials. You will be graded partially on accuracy, so performing multiple trials will not only refine your skill, it should reduce human error.

Equipment:

- scoopula
- Bunsen burner
- test tube
- beaker
- ring stand
- ring clamp
- wire gauze
- porcelain dish
- test tube clamp
- tongs

You will submit:

Data – All necessary measurements should be recorded – (5 points)

Calculations:

- Determining the percentage of water in the crystal – (3 points)
- Determining the average of all trials – (3 points)

Discussion:

- How did you alter your procedure from one trial to the next? Why? – (8 points)
- Describe any sources of error (besides "human error") that were evident as you performed this experiment – (8 points)

Accuracy – 10 points