

Experiment No.1

Determination the ratio of water of hydration in crystalied $\text{BaCl}_2 \cdot \text{XH}_2\text{O}$

Introduction :

The water crystallization can be determined using sample weight change as a result of its water content ejection by heating it.

This method can be only used in the following cases:

- 1- When water is the primary part to be volatilized only.
- 2- When the precipitation weight does not change as a result of Oxidation or hydrolysis.

The Barium chloride salt loses all crystallized water at a temperature range from (100-120) centigrade, high temperatures can be used for this purpose considering that the salt does not break at high temperatures up to (800-900) centigrade.



Barium dichloride crystals shows a little tendency to absorb water in the spaces of the molecules of the substance, which means that any change in weight represents a great precision water of crystallization.

Crystallization water can be determinte for each of the following salts:



Materials and tools used

- 1- Crucible with cover.
- 2- Clay Triangle.

- 3- Tripod and Bunsen burner.
- 4- Barium Chloride crystals

Procedure

- 1- Heat the crucible and cover on a bunsen burner and then leave for a quarter of an hour, cool in a desiccator for (20-30) minutes and then weigh after cooling.
- 2- Put in the crucible (1-1.5) gm of the sample and weigh it again (barium chloride).
- 3- Put the covered crucible on the flame of a bunsen burner and in a distance from the flame, gradually heated it until the bottom of the crucible reaches redness. (Alternative procedure is to put the crucible inside the burning furnace for half an hour).
- 4- Let the crucible and its contents to be cooled in a desiccator and then weight it. Repeat the process several times until you get a constant weight.
- 5- From weight loss after burning process, calculate the percentage of water in aqueous Barium Chloride.

Discussion Questions

- 1- What are the conditions required in a materials that water crystallization can be determined? Give an example.
- 2- Why empty Crucibles need to be heated?
- 3- Is it correct to heat the crucible with its contents on the flame when it is empty? What is the reason to be weighed when the lid is left?
- 4- Define crystallized materials? Can some of them be used in chemical analyzes?
- 5- What is the purpose of the crucible cooling after heating in a desiccator?