

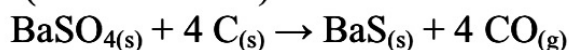
Experiment No. (8)

Preparation of Barium Chloride Di-Hydrate $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$

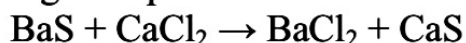
Barium chloride is an inorganic compound whose formula is BaCl_2 . It is one of the most common water-soluble salts of barium. Like other barium salts, it is toxic and imparts a yellow-green coloration to a flame. It is also hygroscopic.

Preparation:

Barium chloride can be prepared from barium hydroxide or barium carbonate, with barium carbonate being found naturally as the mineral witherite. These basic salts react with hydrochloric acid to give hydrated barium chloride. On the industrial scale, it is prepared via two-step process from barite (barium sulfate):



The first step requires high temperatures.



The second step requires fusion of the reactants. BaCl_2 can then be leached out from the mixture with water. From water solutions of barium chloride, the dihydrate can be crystallized as white crystals: $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$.

Uses:

As an inexpensive, soluble salt of barium, barium chloride finds wide application in the laboratory. It is commonly used as a test for sulfate ion. In industry, barium chloride is mainly used in the purification of brine solution in caustic chlorine plants and also in the manufacture of heat treatment salts, case hardening of steel, in the manufacture of pigments, and in the manufacture of other barium salts. BaCl_2 is also used in fireworks to give a bright green color. However, its toxicity limits its applicability.

