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PEOPLE'S REPUBLIC OF CHINA**

GB/T 1617-2002

**Barium chloride for industrial use
(English Translation)**

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1 Scope

This document specifies the classification, requirements, test methods, inspection rules, marking, labels and accompanying documents, as well as packaging, transportation and storage of barium chloride for industrial use.

This document applies to barium chloride for industrial use.

Note: This product is mainly used in industries such as metal heat treatment, barium salt manufacturing, pesticides, dehydrating agents, electronics, instruments, metallurgy, papermaking, pigments, rubber, plastics, ceramics, oil refining, petrochemicals, etc., as well as for removing sulfate ions and other substances from desalinated water in the chlor-alkali industry.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 190, Packing symbol of dangerous goods

GB/T 191-2008, Packaging - Pictorial marking for handling of goods

GB/T 3049-2006, Chemical products for industrial use - General method for determination of iron content - 1,10-Phenanthroline spectrophotometric method

GB/T 6678, General principles for sampling chemical products

GB/T 6682-2008, Water for analytical laboratory use - Specification and test methods

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

GB 15258, General rules for preparation of precautionary label for chemicals

HG/T 3696.1, Inorganic chemicals for industrial use - Preparations of standard and reagent solutions for chemical analysis - Part 1.Preparations of standard volumetric solutions

HG/T 3696.2, Inorganic chemicals for industrial use - Preparations of standard and reagent solutions for chemical analysis - Part 2.Preparations of standard solutions for impurity

HG/T 3696.3, Inorganic chemicals for industrial use - Preparations of standard and reagent solutions for chemical analysis - Part 3.Preparations of reagent solutions

3 Terms and definitions

No terms and definitions need to be defined in this document.

4 Molecular formula and relative molecular mass

Molecular formula. $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$.

Relative molecular mass. 244.26 (according to the international relative atomic mass in 2022);

5 Classification

Barium chloride for industrial use is classified into two types according to its use.

-- Type I is high-purity barium chloride;

-- Type II is ordinary barium chloride.

6 Requirements

6.1

Appearance. White flaky or powdery crystals.

6.2 The chemical composition content and grades of barium chloride for industrial use

shall comply with the provisions of Table 1.

Table 1

7.1 General provisions

The reagents and water used in this document, unless otherwise specified with other requirements, refer to analytical reagents and Grade 3 water specified in Table 1 of

GB/T 6682-2008. The standard titration solutions, impurity standard solutions, preparations and products for tests, unless otherwise specified with other requirements, shall be prepared according to the provisions of HG/T 3696.1, HG/T 3696.2 and HG/T

3696.3.

7.2 Appearance inspection

The appearance shall be inspected by visual method under natural light on a watch glass with a white background or a white porcelain plate.

7.3.1.1 Principle

Use ammonium acetate to adjust the pH of the solution. In ammonium acetate solution and ammonia solution, potassium dichromate and barium chloride uniformly generate barium chromate precipitate. Calculate the content of barium chloride according to the mass of barium chromate precipitate.

7.3.1.2 Reagents or materials

7.3.1.2.1

Hydrochloric acid solution. 1+11.

7.3.1.2.2

Potassium dichromate solution. 50 g/L.

7.3.1.2.3

Ammonium acetate solution. 75 g/L.

7.3.1.2.4

Ammonia solution. 1+27.

7.3.1.2.5

Silver nitrate solution. 17 g/L.

7.3.1.3 Instruments and apparatuses

7.3.1.3.1

Glass sand crucible. Filter plate pore size 5 μm ~ 15 μm .

7.3.1.3.2

Electrically heated constant-temperature drying oven. Temperature controlled at $133\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$.

7.3.1.4 Test procedure

Weigh approximately 7 g of the sample, accurate to 0.000 2 g; place it in a beaker; add water to dissolve; transfer into a 500 mL volumetric flask; use water to dilute to the mark; shake well; dry filter; discard the first 25 mL of filtrate. Pipette 50 mL of the filtrate into a 400 mL beaker. Add 5 mL of hydrochloric acid solution; add 100 mL of water and 15 mL of potassium dichromate solution; heat to boiling. Under the condition of slight boiling, while stirring, slowly add 10 mL of ammonium acetate solution dropwise (complete the addition within 3 min ~ 4 min); keep warm for 5 min; continue to add 15 mL of ammonia solution dropwise while stirring under slight boiling condition (complete the addition within 2 min ~ 3 min). Allow to stand for 30 min in a water bath at about $80\text{ }^{\circ}\text{C}$, then take out and rapidly cool to room temperature. Use a glass sand crucible that has been dried at $133\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$ to constant mass for suction filtration; use distilled water containing a small amount of ammonia solution (pH 7 ~ 8) to wash the precipitate until no chloride ion reaction occurs (checked with silver nitrate solution); dry the glass sand crucible and precipitate at $133\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$ to constant mass.

7.3.1.5 Test data processing

The content of barium chloride is expressed as the mass fraction w_1 of barium chloride ($\text{BaCl}_2\cdot 2\text{H}_2\text{O}$), and is calculated according to Formula (1).

Where.

m_1 - the mass value of barium chromate and glass sand crucible after drying, in grams (g);

m_2 - the mass value of the glass sand crucible, in grams (g);

m - the mass value of the test sample, in grams (g);

0.964 2 - the conversion factor of barium chromate (BaCrO_4) to barium chloride ($\text{BaCl}_2\cdot 2\text{H}_2\text{O}$).

Take the arithmetic mean of two parallel determination results as the determination result. The absolute difference between the two parallel determination results shall not be greater than 0.2%.

7.3.2.1 Principle

Under acidic conditions, the test sample solution reacts with sulfuric acid, causing Ba^{2+} to be completely converted into barium sulfate. Calculate the content of barium chloride according to the mass of barium sulfate.