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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 11199-2024

Replacing GB/T 11199-2006

High-purity sodium hydroxide

高纯氢氧化钠

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1 Scope

GB/T 11199-2024 is the Chinese national standard on high-purity sodium hydroxide, in the field of chemical technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 15 March 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2024. Classification: ICS 71.060.40, CCS G11. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the technical requirements for the appearance, physical and chemical properties of high-purity sodium hydroxide, and describes the corresponding sampling, test methods, inspection rules, marking, labeling, accompanying documents, packaging, transportation and storage. This document applies to the production, use and quality control of high-purity sodium hydroxide products produced by electrolysis of sodium chloride aqueous solution.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB 190 Packing Symbol of Dangerous Goods

GB/T 191 Packaging - Pictorial Markings for Handling of Goods

GB/T 209-2018 Sodium Hydroxide for Industrial Use

GB/T 4348.1 Sodium Hydroxide for Industrial Use - Determination of Sodium Hydroxide and Sodium Carbonate Content

GB/T 4348.3 Sodium Hydroxide for Industrial Use - Determination of Iron Content - 1,10-phenanthroline Photometric Method

GB/T 6678 General Principles for Sampling Chemical Products

GB/T 6679 General Rules for Sampling Solid Chemical Products

GB/T 6680 General Rules for Sampling Liquid Chemical Products

GB/T 6682 Water for Analytical Laboratory Use - Specification and Test Methods

GB/T 7698 Sodium Hydroxide for Industrial Use - Determination of Carbonates Content - Titrimetric Method

GB/T 8170 Rules of Rounding off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 11200.1 Sodium Hydroxide for Industrial Use - Determination of Sodium Chlorate Content - o-Tolidine Spectrometric Method

GB/T 11200.2 Test Methods of High-purity Sodium Hydroxide - Part

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 Symbols

The following symbols apply to this document. HL. high-purity liquid sodium hydroxide. HS. high-purity solid sodium hydroxide. bag shall prevail. The volume of each sample shall not be less than 500 g.

6.3 For high-purity liquid sodium hydroxide products, in accordance with the provisions of GB/T 6680, from the top, middle and bottom of the tank truck or storage tank, take equal amounts of representative samples, mix the samples, put them in two clean, dry, stoppered polyethylene bottles and seal them. Manufacturers may collect samples at the sampling port of the finished product tank or use an automatic sampling device or manually collect representative samples on the pipeline before entering the finished product tank. When a dispute arises between the supply-side and the demand-side regarding product quality, representative samples taken from the top, middle and bottom of the tank truck or storage tank after stirring and mixing shall prevail. The volume of each sample shall not be less than 500 mL.

6.4 The sample bottle shall be labeled and marked with. manufacturer name, product name, model, batch No. or production date, sampling date and sampler, etc.

7 Test Method

7.1 Appearance Under natural light, conduct visual observation.

7.2 Determination of Mass Fraction of Sodium Hydroxide In accordance with the provisions of GB/T 4348.1 or GB/T 11213.1, conduct the determination. Between them, GB/T 11213.1 is the arbitration law.

7.3 Determination of Mass Fraction of Sodium Carbonate In accordance with the provisions of GB/T 4348.1 or GB/T 7698, conduct the determination. Between them, GB/T 7698 is the arbitration law.

7.4 Determination of Mass Fraction of Sodium Chloride In accordance with the provisions of GB/T 11213.2 or Appendix A of GB/T 209-2018, conduct the determination. Between them, Appendix A of GB/T 209-2018 is the arbitration law.

7.5 Determination of Mass Fraction of Ferric Oxide In accordance with the provisions of GB/T 4348.3 or HG/T 3942, conduct the determination. Between them, HG/T 3942 is the arbitration law.

7.6 Determination of Mass Fraction of Silicon Dioxide In accordance with the provisions of GB/T 11213.4 or HG/T 3942, conduct the determination. Between them, HG/T 3942 is the arbitration law.

7.7 Determination of Mass Fraction of Sodium Sulfate In accordance with the provisions of GB/T 11213.5, conduct the determination.

7.8 Determination of Mass Fraction of Sodium Chlorate

7.8.1 Spectrophotometric method (arbitration method) Comply with the provisions of GB/T 11200.1.

7.8.2 Ion chromatography

7.8.2.1 Principle After the sample is prepared into a specimen solution, take an appropriate amount of the specimen solution and inject it into the ion chromatographic column through the injection system. Use an appropriate eluent to elute it. The active exchange groups on the ion exchange resin exchange ions with the ions in the specimen solution and the ions in the eluent. As the eluent flows, the anions in the specimen solution are continuously exchanged - eluted - re-exchanged - re-eluted. The anions under test are separated based on their different retention characteristics on the chromatographic column and finally brought to the detector by the eluent. The detection signal forms a Gaussian distribution chromatographic peak on the chromatogram. Under certain chromatographic conditions, the retention time of each component is fixed, which is used as the qualitative basis for the component ions; within a certain concentration range, the peak area or peak height of the component is proportional to the concentration of the component, and the peak area or peak height is used as the quantitative basis for the component ions.

7.8.2.2 Reagents or materials 7.8.2.2.1 Unless otherwise specified, only guaranteed reagents and Grade-1 water specified in GB/T 6682 or water of equivalent purity shall be used in the analysis. 7.8.2.2.2 Sodium carbonate solution.

3.6 mmol/L. Weigh-take

19.08 g of anhydrous sodium carbonate (accurate to

0.01

g) burned at 270 C ~ 300 C to a constant weight, dissolve it in water, cool to room temperature, transfer to a 500 mL volumetric flask, use water to dilute to the scale, and shake it well. Use a pipette to measure- take 5 mL into a 500 mL volumetric flask, use water to dilute to the scale, and shake it well. The solution shall be stored in polyethylene or polytetrafluoroethylene reagent bottles. 7.8.2.2.3 Sodium hydroxide solution. 13 mmol/L. Weigh-take

0.52 g of sodium hydroxide (accurate to

0.01 g), dissolve it in water, cool to room temperature, transfer it into a 1,000 mL volumetric flask, use water to dilute to the scale, and shake it well. The solution shall be stored in polyethylene or polytetrafluoroethylene reagent bottles. 7.8.2.2.4 Potassium hydroxide solution. 13 mmol/L.

7.10 Determination of Mass Fraction of Calcium Oxide In accordance with the provisions of GB/T 11200.3 or HG/T 3942, conduct the determination. Between them, HG/T 3942 is the arbitration law.

8.1 Inspection Classification and Inspection Items