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

GB/T 19106-2013

**[GB/T 19106-2013] Sodium hypochlorite
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Requirements...	6
4 Sampling...	6
5 Test method...	7
6 Inspection rules...	15
7 Marking, packaging, transportation, storage...	16

1 Scope

This standard specifies the requirements, sampling, test methods, inspection rules and signs, packaging, transportation, storage of sodium hypochlorite.

This standard applies to sodium hypochlorite, which is prepared by chlorination of sodium hydroxide.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB 190 Packing symbol of dangerous goods

GB/T 191 Pictorial marking for handling of goods (GB/T 191-2009, ISO

780.1997, MOD)

GB/T 601 Chemical reagent - Preparations of standard volumetric solutions

GB/T 602 Chemical reagent - Preparations of standard solutions for impurity determination (GB/T 602-2002, ISO 6353-1.1982, NEQ)

GB/T 603 Chemical reagent - Preparations of reagent solution for use in test (GB/T 603-2002, ISO 6353-1.1982, NEQ)

GB/T 6678 General principles for sampling 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 6682-2008, ISO 3696:1987, MOD)

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values date, sampling amount, sampling date, name of the sampler.

5 Test method

Safety Tips. Some reagents in this test method are toxic or corrosive, so it shall be careful when handling them! If splashed on the skin, rinse immediately with water, AND seek medical treatment immediately, in severe cases.

5.1 General provisions

The reagents and water, which are used in this standard, refer to analytical reagents and the grade-3 water, which are specified in GB/T 6682, unless otherwise specified. The standard titration solution, impurity standard solution, preparations, products, which are used in the test, are all prepared in accordance with GB/T 601, GB/T 602, GB/T 603, unless otherwise specified.

5.2 Appearance

Observe visually under natural light.

5.3.1 Method summary

In an acidic medium, hypochlorite reacts with potassium iodide, to precipitate iodine. Using starch as the indicator solution, use sodium thiosulfate standard titration solution to make titration, until the blue color disappears, which is regarded as the end point. The reaction formula is as follows.

5.3.2 Reagents

5.3.2.1

Potassium iodide solution. 100 g/L. Weigh 100 g of potassium iodide; dissolve it in water; dilute to 1000 mL; shake well.

5.3.2.2 Sulfuric acid solution. 3 + 100. Pipette 15 mL of sulfuric acid; slowly

inject 500 mL of water; cool it down; shake well.

5.3.2.3 Sodium thiosulfate standard titration solution. $c(\text{Na}_2\text{S}_2\text{O}_3) = 0.1 \text{ mol/L}$.

5.3.2.4 Starch indicator solution. 10 g/L.

5.5.4.1 Drawing of standard curve

5.5.4.1.1

Pipette 0.00 mL, 2.00 mL, 4.00 mL, 6.00 mL, 8.00 mL, 10.00 mL of iron standard solution (5.5.2.5), respectively, into six 100 mL volumetric flasks.

Add 5 mL of hydroxylamine hydrochloride solution, 10 mL of acetic acid-sodium acetate buffer solution, 5 mL of 1,10-phenanthroline indicator solution, to each volumetric flask. Use water to dilute it to the mark. Shake well. Let it stand for

10 min.

5.5.4.1.2

Using water as a reference, adjust the spectrophotometer to zero.

Select an appropriate cuvette, at a wavelength of 510 nm, to measure the absorbance.

5.5.4.1.3

The absorbance of the blank solution is subtracted from the absorbance of the standard colorimetric solution. Use the mass (mg) of iron, in the 100 mL standard colorimetric solution, as the abscissa; use the corresponding absorbance as the ordinate, to draw the standard curve or regression linear equation.

5.5.4.2 Blank test

Without adding sample solution, use exactly the same analytical procedures, reagents, dosage, as the test sample solution, to carry out blank test.

5.5.4.3 Determination

Pipette 50.00 mL of sample solution A. Place it in a 100 mL volumetric flask.

Add hydrogen peroxide solution dropwise, until it does not contain hypochlorite (not make the starch-potassium iodide test paper blue). Then add 5 mL of hydroxylamine hydrochloride solution, 10 mL of acetic acid-sodium acetate buffer solution, 5 mL of 1,10-phenanthroline indicator solution. Use water to dilute it to the mark. Shake well. Let it stand for 10 min. The following shall be carried out, in accordance with the provisions of 5.5.4.1.2.

5.5.5 Result calculation

The iron content is expressed in the mass fraction of iron (Fe), w_3 ; the value is expressed in % AND calculated according to formula (3).

Where.

m1 - The value of the mass of the specimen, in grams (g);

m2 - The value of the mass of iron, which is obtained from the standard curve

OR calculated by the unitary linear regression equation, corresponding to the absorbance of the sample solution, after subtracting the absorbance of the blank solution, in micrograms (mg).

5.5.6 Tolerance

Take the arithmetic mean of the parallel measurement results, as the measurement result. The absolute value of the difference, between the parallel determination results, is not more than 0.001%.

5.6.1 Method summary

Under the condition of weak acidity (pH 3 ~ 4), heavy metal ions and sulfide ions in the sample will form a brown-black precipitate. Compared with the lead standard solution, which is treated by the same method, a limit test is performed.

5.6.2 Reagents and materials

5.6.2.1

Hydrochloric acid.

5.6.2.2

Hydrogen peroxide solution. 1 + 5.

5.6.2.3

Acetic acid-sodium acetate buffer solution. pH value is about 3.

5.6.2.4 Saturated solution of hydrogen sulfide. Lead hydrogen sulfide gas into

water, which does not contain carbon dioxide, until it is saturated. Prepare this solution before use.

5.6.2.5 Sodium sulfide solution. Weigh 5 g of sodium sulfide. Dissolve it in a mixture of 10 mL of water and 30 mL of glycerol. Store it in a sealed container in the dark. It is valid for one month.

5.6.2.6 Lead standard solution. 0.1 mg/mL.

5.6.2.7 Lead standard solution. 0.01 mg/mL. Take an appropriate amount of

lead standard solution (5.6.2.6). Dilute it by 10 times. Prepare this solution before use.

5.6.2.8 Phenolphthalein indicator solution. 10 g/L.