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

GB 25574-2010

**National food safety standards of food additives sodium
hypochlorite
(English Translation)**

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Foreword

Appendix A of this standard is a normative appendix.

National Food Safety Standard Food additive sodium hypochlorite

1 Scope

This standard applies to food additives, sodium hydroxide and chlorine reaction of food additive sodium hypochlorite.

2 Normative references

The standard file referenced in the application of this standard is essential. For dated references, only the edition date of the note Apply to this standard. For undated references, the latest edition (including any amendments) applies to this standard.

3 Formula and relative molecular mass

Formula 3.1

NaClO

3.2 Relative molecular mass

74.442 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Color colorless or pale yellow proper amount of sample placed in 50mL plastic beaker, Natural light to observe the color and texture. Liquid state organization

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Available chlorine (based on Cl), w /% ≥ 5.0 Appendix A A.4 the free base (NaOH in dollars), w /% 0.2 ~ 1.0 in Appendix A A.5 Iron (Fe)/(mg/kg) ≤ 50 Appendix A A.6 Heavy metals (Pb)/(mg/kg) ≤ 10 Appendix A A.7 Arsenic (As)/(mg/kg) ≤ 1 Appendix A A.8 Appendix A (Normative) Testing method A.1 Warning the standard test methods Reagents toxic or corrosive, the operation should be careful! As should be immediately washed with water splashed on the skin Wash, severe cases should be treated immediately.

A.2 General Provisions the standard test methods used in the reagents and water, did not indicate when the other requirements, refer to analytically pure reagents and GB/T 6682-2008 Three water regulations. Test with the standard titration solution, impurity standard solution, preparations and products, did not indicate when the other requirements, according GB/T 601, GB/T 602, GB/T 603 provisions of the preparation.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 phosphate buffer solution. pH~8.0.

Solution I. Weigh 23.8g of anhydrous disodium hydrogen phosphate, dissolved in water and diluted to 1000mL;

Solution II. Weigh 9.07g potassium phosphate crystals, soluble in water, dilute to 1000mL;

The solution I II mixed solution of 50 parts and 7 parts, respectively, or a solution I II solution was adjusted to pH of the mixture was about 8.0.

A.3.1.2 litmus paper.

A.3.2 Identification method A.3.2.1 The samples with sodium hypochlorite reaction and response.

A.3.2.2 amount of 1mL sample was diluted with water to 25mL. 4mL amount of the above test solution was added 100mL of phosphate buffer solution, the Solution has maximum absorption at a wavelength of 291nm ~ 294nm place.

A.3.2.3 The samples were immersed in red litmus paper turns blue when litmus paper, then fade.

A.4 Determination of available chlorine A.4.1 Method summary in acidic medium, hypochlorite and potassium iodide, iodine deposited in starch indicator solution, and the

solution with sodium thiosulfate standard titration drops Set to disappear as the blue end. Reaction is as follows.

$2\text{HClO} + 2\text{I}^- = \text{I}_2 + 2\text{Cl}^- + \text{H}_2\text{O}$
 $\text{I}_2 + 2\text{S}_2\text{O}_3^{2-} = \text{S}_4\text{O}_6^{2-} + 2\text{I}^-$
 A.4.2 Reagents and materials A.4.2.1 potassium iodide solution. 100g/L.

A.4.2.2 sulfuric acid solution. 3 + 100.

A.4.2.3 sodium thiosulfate standard titration solution. $c(\text{Na}_2\text{S}_2\text{O}_3) = 0.1\text{mol/L}$.

A.4.2.4 starch indicator solution. 10g/L.

A.4.3 Analysis step

A.4.3.1 Preparation of sample solution Weighed approximately 20mL sample, placed in a built about 20mL of water and has weighed (accurate to 0.01g) in 100mL beaker, weighed (accurate to 0.01g), then all moved into 500mL volumetric flask, dilute to the mark, shake. This solution as the test solution A, containing active chlorine for Amount, determination of free alkali content, iron content, heavy metals, arsenic content.

A.4.3.2 Determination Pipette 10.00mL sample solution A, placed in a built 50mL water 250mL iodometric flask, 10mL and 10mL sulfuric acid solution of potassium iodide Solution quickly after the stopper seal tightly, allowed to stand in the dark for 5min. Standard titration with sodium thiosulfate solution titration to pale yellow, add 2mL starch Indicator solution and continue titration to the disappearance of the blue is the end.

A.4.4 Calculation Results Chlorine content of chlorine (Cl) mass fraction w_1 and its value is expressed in%, according to formula (A.1) Calculated.

$c = 0.050010$

c_{MVW} (A.1)

Where.

Accurate c - sodium thiosulfate standard titration solution concentration value in units of moles per liter (mol/L);

Numerical sodium thiosulfate standard titration V - titration solution consumed volume in milliliters (mL);

Quality m_1 - sample value in units of grams (g);

M_1 - value chlorine (Cl) molar mass of the units of grams per mole (g/mol) ($M_1 = 35.453$).

Take the arithmetic mean of the parallel determination results of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.2%.

A.5 Determination of the free base A.5.1 Method summary Hypochlorite decomposition of hydrogen peroxide, as phenolphthalein indicator solution, titration with hydrochloric acid

standard solution titration to pale red to end. The reaction scheme under.

$\text{ClO}^- + \text{H}_2\text{O}_2 = \text{Cl}^- + \text{O}_2 + \text{H}_2\text{O}$
 $\text{OH}^- + \text{H}^+ = \text{H}_2\text{O}$
 A.5.2 Reagents and materials A.5.2.1 hydrogen peroxide solution. 1 + 5.

A.5.2.2 hydrochloric acid standard titration solution. $c(\text{HCl}) = 0.1\text{mol/L}$.

A.5.2.3 phenolphthalein indicator solution. 10g/L.

A.5.2.4 starch - iodide test paper.

A.5.3 Analysis step

Pipette 50.00mL sample solution A, placed in 250mL Erlenmeyer flask, was added dropwise a solution of hydrogen peroxide to hypochlorous acid until the free (not to precipitate Powder - iodide test paper turns blue), add 2 drops to 3 drops of phenolphthalein indicator solution, titration with hydrochloric acid standard solution titration to pale red to end.

A.5.4 Calculation Results the free base with sodium hydroxide (NaOH) mass fraction w_2 and its value is expressed in%, according to formula (A.2), said.

$(\text{O} - 0.50 - 0.50)$

c_{MVW} (A.2)

Where.

Accurate c - hydrochloric acid standard titration solution concentration value in units of moles per liter (mol/L);

Numerical hydrochloric acid standard titration solution consumed V - titration volume in milliliters (mL);

Quality m_2 - sample value in units of grams (g);

Numerical M_2 - sodium hydroxide (NaOH) molar mass in grams per mole (g/mol) ($M_2 = 40.00$).

Take the arithmetic mean of the parallel determination results of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.04%.

A.6 Determination of iron A.6.1 Method summary in a medium free of hypochlorite, hydroxylamine hydrochloride to Fe^{3+} reduced to Fe^{2+} , in pH4 ~ 4.5 buffer solution system, Fe^{2+} with 1,10 Phen generated orange-red complex, the absorbance was measured with a spectrophotometer. Reaction is as follows.

$4\text{Fe}^{3+} + \text{NH}_2\text{OH} = 4\text{Fe}^{2+} + \text{N}_2\text{O} + \text{H}_2\text{O} + 4\text{H}^+$
 $\text{Fe}^{2+} + 3\text{C}_{12}\text{H}_8\text{N}_2 = [\text{Fe}(\text{C}_{12}\text{H}_8\text{N}_2)_3]^{2+}$ A.6.2

Reagents and materials A.6.2.1 hydrogen peroxide solution. 1 + 5.

A.6.2.2 acetic acid - sodium acetate buffer solution. pH~4.5.