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

GB 6856-2008

pH primary reagent - Sodium tetraborate decahydrate

pH 基准试剂 四硼酸钠

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Foreword

The standard Chapter 4,

5.3 are mandatory, other provisions are recommended. This standard replaces GB 6856-1986 "pH reference reagents sodium tetraborate," compared with GB 6856-1986 The main changes are as follows:

--- PH (S) II value (0.01mol/kg, 25 °C) by the "pH (S) II = pH (S) I $\pm$ 0.005" to adjust "PH (S) II = pH (S) I $\pm$ 0.01" (1986 edition 1.1, chapter 4 of this edition);

--- Modify the method for the determination (1986 version 2.2, this version 5.4);

--- Adjust the sample amount of hydrochloric acid insoluble matter measured (1986 version 2.3.2, this version 5.6);

--- Chlorides, sulfates two common methods use chemical reagents Determination (1986 edition 2.3.3,2.3.4, edition 5.7, 5.8);

--- Modified phosphate, iron determination (2.3.5,2.3.9 1986 edition, this edition 5.9,5.13).

The standard proposed by China Petroleum and Chemical Industry Association. This standard by the National Standardization Technical Committee Chemistry Chemicals Branch (SAC/TC63/SC3) centralized. This standard is drafted by: Beijing Institute of Chemical Reagents, China Institute of Metrology. The main drafters of this standard. Han Baoying, repair Hongyu. This standard was first published in 1986. Molecular formula. $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ Molecular weight. 381.38 (according to 2007 international relative atomic mass)

1 Scope

GB 6856-2008 is the Chinese national standard on ph primary reagent - sodium tetraborate

decahydrate, in the field of chemical technology. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 31 December 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 June 2009. Classification: ICS 71.040.30, CCS G61. 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 standard specifies the pH reference reagents sodium tetraborate characteristics, specifications, testing, packaging and inspection rules and signs. This standard applies to pH reference reagents sodium tetraborate test.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard. Preparation of

GB/T 601 chemical reagent standard titration solution

GB/T 602 Determination of impurities in chemical reagents prepared standard solution (GB/T 602-2002,

ISO 6353-1. 1982, NEQ) with

GB/T 603 chemical reagent test method Preparations of articles (GB/T 603-2002,

ISO 6353-1 with. 1982, NEQ)

GB/T 610-2008 Chemical Reagent Determination of Arsenic in the general method (ISO 6353-1. 1982, NEQ)

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD)

GB 6851 pH value reference reagent General

GB/T 9723-2007 Chemicals flame atomic absorption spectrometry General

GB/T 9727 General method for the determination of phosphate chemical reagent (GB/T 9727-2007, ISO 6353-1. 1982, NEQ)

GB/T 9728 General method for determination of chemical reagents sulfate (GB/T

9728-2007, ISO 6353-1. 1982, NEQ)

GB/T 9729 General method for determination of chloride Chemicals (GB/T 9729-2007, ISO 6353-1. 1982, NEQ)

GB/T 9739 General method for determination of iron chemical reagents (GB/T 9739-2006, ISO 6353-1. 1982, NEQ)

3 Characters

This reagent is colorless transparent crystalline powder, soluble in water and glycerin, insoluble in alcohol.

4 Specification

Sodium tetraborate as shown in Table 1. Table

1 Name pH reference Sodium tetraborate pH of the solution (S) II value (0.01mol/kg, 25 °C)
 $\text{pH (S) II} = \text{pH (S) I} \pm$

0.01 Content ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$), /% $\geq$

99.5 Clarity test/number $\leq$

5 Test

5.1 Warning Reagents used in this test method are toxic or corrosive, some of the testing process can lead to dangerous situations, the operator should take Appropriate safety and health practices.

5.2 General Provisions Unless specified otherwise in this chapter, the use of standard titration solution, standard solution, preparations and products, according to GB/T 601, GB/T 602, Regulations preparation, test water should be consistent with GB/T 6682 specifications in three water samples according to precise weighing 0.01g, the use of GB/T 603's Solution "%" are represented by the mass fraction. According to the provisions of GB 6851 was measured using a platinum electrode dihydrotestosterone. pH of sodium tetraborate (S) I (0.01mol/kg, 25 °C) by the The reference material certificates Richard.

5.4 Content Weigh 2.8g sample, accurate to 0.0001g, dissolved in 100mL of water, plus 20.00mL hydrochloric acid standard titration solution [$\text{Ba (HCl)} = 1\text{mol/L}$], add 1 drop of methyl red indicator solution (1g/L), titrated with standard sodium hydroxide solution [$\text{Ba (NaOH)} = 1\text{mol/L}$] titrated to yellow Color, when sodium hydroxide standard titration solution in an amount not count. Add 11g of mannitol, dissolved, 2 drops of phenolphthalein indicator solution (10g/L), hydrogen Sodium hydroxide standard titration solution [$\text{Ba (NaOH)} = 1\text{mol/L}$] titrated to a solution pink. The mass fraction of sodium tetraborate and its value is "%" means, according to equation (1). 100 (1) Where. Value Vp

--- sodium hydroxide standard titration solution volume in milliliters (mL); Accurate Ba

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

--- The M sodium tetraborate numerical molar mass in grams per mole (g/mol) [M ($14 \text{ Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) = 95.34];

5.5 Clarity test 7g weighed sample was dissolved in 7mL hydrochloric acid solution (20%) and 100mL hot water turbidity is not greater than HG/T 3484 stipulated No. 2 standard clarity.

5.6 hydrochloric acid insoluble matter Weigh 50g sample was dissolved in 500mL water and 50mL hydrochloric acid solution (20%), on the water bath for 1h, has been used in $105^\circ\text{C} \pm 2^\circ\text{C}$ constant No. 4 glass filter crucible was filtered, the filter residue washed with hot water until no chlorine ions react lotion, dried in an electric oven at $105^\circ\text{C} \pm 2^\circ\text{C}$ in Dry to constant weight. Residue mass not greater than 1.0mg.

5.7 Chloride Weigh 1g sample was dissolved in an appropriate amount of hot water, cooling, 1mL solution of nitric acid (25%), diluted to 20mL, press GB/T 9729 Determination of the provisions. The turbidity of the solution was not greater than the standard turbidity solution. Standard preparation turbid solution is to take the ratio of 0.005mg containing chloride (Cl) standard solution was diluted to 20mL, at the same time with the same volume of test solution The same treatment.

5.8 sulfate Weigh 0.5g sample was dissolved in 20mL water, cooled, washed with hydrochloric acid solution (20%), add 0.5mL hydrochloric acid solution, and (20%) acid After the technology, according to the provisions of GB/T 9728 Determination. The turbidity of the solution was not greater than the standard turbidity solution. Turbidity standard solution was prepared containing 0.025mg ratio is taken sulfate (SO_4) standard solution was diluted to 20mL, and during and after the test solution While the same treatment.

5.9 Phosphate Weigh 0.5g sample was dissolved in an appropriate amount of hot water, add 2 drops of saturated 2,4-dinitrophenol indicator solution, a solution of nitric acid solution (13%) to yellow Just disappeared, after diluted to 10mL, according to the provisions of GB/T 9727 Determination. The organic layer was blue can not be deeper than the standard colorimetric solution. Preparation of the standard developing solution containing 0.005mg is to take the ratio of phosphate (PO_4) standard solution, the same treatment simultaneously with the sample.

5.10 Carbonate 2g sample was weighed, dissolved in 40mL of water was added slowly 5mL hydrochloric acid solution (20%), no bubbles.

5.11 magnesium and calcium 10g samples were weighed, dissolved in 100mL hot water, cooling, 2mL solution of sodium sulfide (20g/L), 1mL ethylenediaminetetraacetic acid