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

SN/T 1038-2020

Replacing SN/T 1038-2002

Import and export sodium metal inspection method

进出口金属钠检验方法

(English Translation)

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Foreword

This standard was drafted in accordance with the regulations given in GB/T 1.1-2009.

This standard replaces SN/T 1038-2002 "Import and Export Metal Sodium Inspection Methods".

Compared with SN/T 1038-2002, the main technical changes of this standard are as follows except for editorial changes.

--Added sampling;

-Added the determination of calcium content and potassium content determination by atomic absorption spectrophotometry.

This standard was proposed and managed by the General Administration of Customs of the People's Republic of China.

Drafting organizations of this standard. Yinchuan Customs of the People's Republic of China and Shanghai Customs of the People's Republic of China.

1 Scope

This standard specifies the inspection method of sodium metal for import and export.

This standard applies to the determination of sodium metal for import and export.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 601 Preparation of Standard Titration Solution for Chemical Reagents GB/T 602 Preparation of standard solutions for impurity determination of chemical reagents GB/T 6678 General Rules for Sampling of Chemical Products GB/T 6682 Analytical laboratory water specifications and test methods GB/T 22379 -2017 Industrial Metal Sodium GB 12268 -2012 List of Dangerous Goods

3.1 Sampling method

Determine the number of sampling units according to GB/T 6678. When sampling, randomly select a piece of metallic sodium from each barrel and quickly cut it out with a knife (The amount of each piece should not be less than 50 g). The total amount of sampling is not less than 300 g. Divide into two clean and dry bottles pre-filled with white oil, seal. Make a record in time when sampling, one bottle is used for inspection, and one bottle is kept for future reference.

3.2 General provisions

Unless otherwise specified, the reagents used are of analytical grade, and the water is the secondary water specified in GB/T 6682. The test papers are all precision test papers. The standard titration solution, impurity standard solution, reagents and products required in the test, unless other requirements are specified, shall be in accordance with GB/T 601, Prepared according to GB/T 602.

4.1.1 Method summary

The test solution in which sodium metal of known mass is dissolved, uses bromocresol green-methyl red as an indicator, and has a pH change of 5.1. With salt for acid standard solution titration, the sodium content is calculated based on the consumption and concentration of the hydrochloric acid standard solution titration.

4.1.2 Materials and reagents

4.1.2.1

Hydrochloric acid ($\rho=1.18$ g/mL).

4.1.2.2

Hydrochloric acid standard titration solution. 0.1 mol/L.

4.1.2.3 95% ethanol.

4.1.2.4

Bromocresol green-methyl red indicator. 0.1% bromocresol green ethanol solution 0.2% methyl red ethanol solution (3 1).

4.1.2.5

Stainless steel tweezers. 25 cm.

4.1.2.6

Sample knife. stainless steel.

4.1.2.7

Pipette. 20 mL.

4.1.2.8

Filter paper. Qualitative filter paper ($\Phi=9$ cm).

4.1.2.9

Electronic balance. Sensitivity 0.1 mg.

4.1.2.10

Volumetric flask. 1 000 mL.

4.1.2.11

Triangular beaker. 300 mL.

4.1.2.12

Erlenmeyer flask. 250 mL.

4.1.3 Analysis steps

After removing the metal sodium block from the sample vial with tweezers, quickly wipe off the oil on the surface of the sample with filter paper, and use the sample knife to remove the oil from the middle part Cut off about 5 g of sodium lumps, quickly put them into the weighed weighing bottle, and weigh to the nearest 0.0002 g. Place the sodium block containing 100 mL of ethyl acetate in the triangular beaker of alcohol, cover with a watch glass. After the sodium is completely dissolved, rinse the watch glass with 20 mL~30 mL of water to clean the sample.

Then transfer it to a 1000 mL volumetric flask, dilute it to the mark with CO₂-free distilled water and shake it up (this solution can be used for calcium determination).

Use a pipette to draw 20 mL of the test solution, place it in a 250 mL Erlenmeyer flask, add 2 drops of bromocresol green-methyl red indicator, and mark with hydrochloric acid.

Titrate the quasi-titrated solution until the solution turns from green to dark red, boil for 2 minutes, and continue to titrate after cooling until the solution turns dark red again. Do at the same time Blank test.

4.1.4 Calculation

The sodium content X_1 (calculated as Na) expressed in mass fraction is calculated according to formula (1).

Note: Take the arithmetic mean of the parallel determination results as the determination result, and the absolute difference between the two parallel determination results shall not exceed 0.2%.

4.1.5 Precision

The precision is shown in Table 1.

4.2.1.1 Method summary

Add a masking agent to the test solution to adjust the pH to above 12, and titrate calcium with EGTA complexation.

4.2.1.2 Materials and reagents

4.2.1.2.1

Potassium hydroxide solution. 25% aqueous solution is stored in a polyethylene bottle.

4.2.1.2.2

Triethanolamine solution. 14.

4.2.1.2.3

Calcein-thymolphthalein mixed indicator. Weigh 0.20 g of calcein and 0.16 g of thymolphthalein, and put them at 110 °C in advance.

The dried 10 g potassium chloride (analytical grade) is ground evenly, put into a ground bottle, and stored in a desiccator.

4.2.1.2.4

EGTA standard solution. 0.005 mol/L. Weigh 1.90 g ethylene glycol diethyl ether diamine tetraacetic acid, add 50 mL water, and add 1 mol/L dropwise After the sodium hydroxide solution completely dissolves the reagents, dilute with water to 1,000 mL and shake well for calibration. If it is prepared with reference reagents, no calibration is required.