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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

GB 31604.32-2016

**National food safety standard -
Food contact materials and products -
Determination of sulfur dioxide in wood materials**

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Table of Contents

Foreword.....	3
1 Scope.....	4
2 Principles	4
3 Reagents and materials	4
4 Instrument and equipment	5
5 Analytical procedures.....	5
6 Analysis results expression.....	6
7 Precision	7
8. Others	7
9 Principles	7
10 Reagents and materials	7
11 Instrument and equipment	9
12 Analytical procedures.....	9
13 Analysis results expression.....	10
14 Precision	11
15 Others	11
Appendix A Preparation of sulfur dioxide standard solution	12

Foreword

This standard replaces the determination of sulfur dioxide in SN/T 2827-2011 "Food contact materials for export - Wood materials - Determination of sulfur dioxide".

Compared with SN/T 2827-2011, the main changes of this standard are as follows:

- The standard name has been changed to "National food safety standard - Food contact materials and products - Determination of sulfur dioxide in wood materials";
- Modify "method summary" in Method I into "principles";
- Modify "results calculation and expression" in Method I into "analysis results expression";
- Modify the formula in Method I;
- Modify "method summary" in Method II into "principles" and revise the text;
- Modify "results calculation and expression" in Method II into "analysis results expression" and revise the text.

National food safety standard -
Food contact materials and products -
Determination of sulfur dioxide in wood materials

1 Scope

This standard specifies the determination methods for titration and colorimetry of sulfur dioxide in food contact wood (bamboo) materials.

This standard applies to the determination of sulfur dioxide in wood (bamboo) chopsticks, wood (bamboo) bowls, wood (bamboo) spoons and wood (bamboo) shovels.

Method I Titration

2 Principles

Acidify the sample in a closed vessel; heat and distill it to release sulfur dioxide therein. Use lead acetate solution to absorb the released substance. After absorption, use concentrated hydrochloric acid to acidify and then titrate with iodine standard solution. According to the consumed amount of iodine standard solution, calculate the content of sulfur dioxide in the sample.

3 Reagents and materials

Unless otherwise indicated, the reagents used in this method are analytical grade, the water is the grade-3 water specified in GB/T 6682.

3.1 Reagents

3.1.1 Hydrochloric acid (HCl).

3.1.2 Lead acetate $[\text{Pb}(\text{CH}_3\text{COO})_2 \cdot 3\text{H}_2\text{O}]$.

3.1.3 Iodine (I_2).

3.1.4 Soluble starch $[(\text{C}_6\text{H}_{10}\text{O}_5)_n]$.

V_2 - The volume of iodine standard titration solution used for titration reagent blank, in milliliters (mL);

c - The concentration of iodine standard titration solution, in mole per liter (mol/L);

0.032 - 1mL iodine standard solution [$(\frac{1}{2} I_2 = 1.0\text{mol/L})$] equivalent to the mass of sulfur dioxide, in grams per mole (g/mol);

1000 - Conversion factor;

m - The mass of the sample, in grams (g).

The calculation result is retained with three significant figures.

7 Precision

The absolute difference between two independent determinations obtained under repeatability conditions shall not exceed 10% of the arithmetic mean.

8. Others

The method detection limit is 10mg/kg.

Method II Colorimetry

9 Principles

Acidify the sample in a closed vessel; heat and distill it to release sulfur dioxide therein. Sulfur dioxide is absorbed by potassium mercuric tetrachloride to form stable complex, which is then reacted with formaldehyde and pararosaniline hydrochloride to form rose-purple compound for colorimetric determination.

10 Reagents and materials

Unless otherwise indicated, the reagents used in this method are analytical grade, the water is the grade-3 water specified in GB/T 6682. The potassium mercuric tetrachloride solution is highly toxic. Wear rubber gloves when handling. If it splashes on the skin, rinse immediately with water.

solution into 250mL volumetric flask; USE water to dilute it to the mark. This solution can be stored in dark place for 6 months. .

10.3 Standard solution preparation

10.3.1 Sulfur dioxide standard solution: See Appendix A for preparation.

10.3.2 Sulfur dioxide standard working solution: According to the calculation result of standardization, use potassium mercuric tetrachloride absorber solution (10.2.1) to dilute sulfur dioxide standard solution (10.3.1) to 1mL which is equivalent to 5 μ g of sulfur dioxide; STORE it at 0°C~4°C for 1 month.

11 Instrument and equipment

11.1 UV-visible spectrophotometer.

11.2 Analytical balance: Sensitivity is 0.1mg.

11.3 All-glass distiller.

11.4 Iodine volumetric flask.

11.5 Electric planer or chainsaw.

11.6 Crusher.

11.7 Water bath kettle.

12 Analytical procedures

12.1 Sample preparation

USE electric planer or chainsaw to take 3mm thick out of the surface of the sample; CRUSH; PLACE it in a clean container. SEAL it as the sample and INDICATE the mark. During the operation of sample preparation, the sample shall be protected from sulfur dioxide contamination.

12.2 Distillation

WEIGH 5g of sample (accurate to 0.01g) (the amount of sample depends on the level of sulfur dioxide content of the product); PLACE it in 500mL round-bottomed flask. ADD 250mL of water into the round-bottomed flask. In order to prevent the sample solution from boiling, ADD a few glass beads. INSTALL condensing device and INSERT the lower end of the condenser into the 25mL of potassium mercuric tetrachloride absorber solution (10.2.1) in

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