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

YS/T 1014.1-2014

**Methods for chemical analysis of bismuth trioxide. Part 1:
Determination of bismuth trioxide content. Na₂ EDTA titrimetric
method**

三氧化二铋化学分析方法 第1部分：三氧化二铋量的测定 Na₂EDTA滴定法
(English Translation)

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Foreword

YS/T 1014 "Methods for chemical analysis of bismuth trioxide" is divided into five sections.

- Part 1. bismuth trioxide contents - Na₂EDTA titration;
- Part 2. silver, copper, magnesium, nickel, cobalt, manganese, calcium, iron, cadmium, lead, zinc, antimony, aluminum, sodium, sulfur content - Inductively coupled plasma Atomic emission spectrometry;
- Part 3. Determination of chlorine content of silver chloride turbidimetry;
- Part 4. loss on ignition - Gravimetric method;
- Part 5. moisture content - Gravimetric method.

This section YS/T 1014 Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is responsible for drafting unit. Zhuzhou Smelter Group Co., Ltd. Guangdong pilot dilute material.

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1 Scope

YS/T 1014 This section specifies the method for determination of bismuth trioxide in the amount of bismuth trioxide.

This section applies to the determination of bismuth trioxide bismuth trioxide amount measurement range. $\geq 98.0\%$.

2 Method summary

Sample dissolved in nitric acid, sodium acetate to adjust the pH value between 1.5 to 1.7, with xylene orange as indicator, with standard Na₂EDTA Titration solution, measured the amount of bismuth trioxide.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

ascorbic acid.

3.2

nitric acid ($\rho = 1.42\text{g/mL}$).

3.3

nitric acid (595).

3.4

thiourea saturated solution.

3.5

tartaric acid solution (200g/L).

3.6

Anhydrous sodium acetate (200g/L).

3.7

Na₂EDTA Standard Solution (about 0.020mol/L).

3.7.1

preparation. Weigh 7.60g disodium edetate in 300mL beaker, add water, heat gently to dissolve, cooled to room temperature and transferred to 1000mL volumetric flask, dilute to the mark, mix, place three days after calibration.

3.7.2

Calibration. Weigh 0.197g bismuth ($w_{\text{Bi}} \geq 99.99\%$) (accurate to 0.0001g) 5 parts were placed in 500mL beaker triangle, The tartaric acid solution is added 5.0mL (3.5), was added 10mL of nitric acid (3.2), a low temperature around completely dissolved by heating, and evaporated to 5mL, taking Under rinsed with water and dish table Beibi, ascorbic acid was added 0.5g (3.1), 5.0mL saturated solution of thiourea (3.4), 100mL water and shake. With the same below 6.4.2. Along with the calibration blank test.

According to equation (1) to calculate the actual concentration Na₂EDTA standard titration solution.

$$1000 \times m_0$$

$$(V_1 - V_0) \times 208.98$$

Where.

The actual concentration c --- Na₂EDTA standard titration solution, expressed in moles per liter (mol/L);

m_0 --- saying that the quality of the calibration to take bismuth, in grams (g);

--- Bismuth molar mass of 208.98 units of grams per mole (g/mol);

When V_1 --- calibration volume Na₂EDTA standard titration solution consumed bismuth solution in milliliters (mL);

V_0 --- the calibration, volume Na₂EDTA standard titration solution consumed in the blank titration solution in milliliters (mL).