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YS

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

YS/T 556.1-2009

Replacing YS/T 556.1-2006

**Methods for chemical analysis of antimony concentrates. Part
1: Determination of arsenic content. Cerium sulfate titration
method**

锑精矿化学分析方法.第1部分：锑量的测定.硫酸铈滴定法
(English Translation)

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Foreword

YS/T 556-2009 "Methods for chemical analysis of antimony concentrate," a total of 16 parts.

- Part 1. Determination of antimony content cerium sulfate titration;
- Part 2. Determination of arsenic content potassium bromate titration;
- Part 3. Determination of lead content by flame atomic absorption spectrometry;
- Part 4. Wet water storage Gravimetric method;
- Part 5. Determination of zinc content - Flame atomic absorption spectrometry;
- Part 6. Determination of the amount of selenium by hydride generation - atomic fluorescence spectrometry;
- Part 7. Determination of the amount of mercury atomic fluorescence spectrometry;
- Part 8. Determination of sulfur content - Combustion neutralization method;
- Part 9. Determination of the amount of gold fire assay;
- Part 10. Determination of copper content - Flame atomic absorption spectrometry;
- Part 11. Determination of cadmium content by flame atomic absorption spectrometry;
- Part 12. Determination of bismuth content by flame atomic absorption spectrometry;
- Part 13. Determination of nickel content by flame atomic absorption spectrometry;
- Part 14. Determination of the amount of silver by flame atomic absorption spectrometry;
- Part 15. antimony, tin measured by hydride generation - atomic fluorescence spectrometry;
- Part 16. Determination of antimony metal content by inductively coupled plasma emission spectrometry.

This section YS/T 556 - Part 1.

"Antimony concentrates - Determination of antimony content" in this section instead of YS/T 556.1-2006 (formerly GB/T 15080.1-1994).

Compared with YS/T 556.1-2006, this part of the following changes.

- Measuring cap extending from 65% to 70%;
- Text format has been modified;
- Complements the precision and quality assurance and control provisions.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

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1 Scope

This section YS/T 556 specifies the method for determination of antimony content in antimony concentrate.

This section applies to the determination of antimony content in antimony concentrate. Measurement range. from 5.00% to 70.00%.

2 Method summary

Samples with sulfuric acid - potassium decomposition filter paper made after carbonation reducing agent and co-solvent, in hydrochloric acid medium, add ferric phosphate masking off Son, methyl orange as indicator, at 80 °C ~ 90 °C titration with cerium sulfate standard solution to the red end disappears.

3 Reagents

Unless otherwise indicated, the reagents used in this section refer to water and analytical grade and third grade water.

3.1

potassium sulfate.

3.2

sulfate (rho1.84g/mL).

3.3

hydrochloride (ρ 1.19g/mL).

3.4

Hydrogen peroxide (30%).

3.5

phosphoric acid (ρ 1.70g/mL).

3.6

HCl (1 + 1).

3.7

methyl orange indicator (1g/L).

3.8

cerium sulfate standard titration solution [$\text{Ba Ce (SO}_4)_2$ about 0.1mol/L].

3.8.1

preparation. Weigh 40.50g cerium sulfate [$\text{Ce (SO}_4)_2 \cdot 4\text{H}_2\text{O}$], placed in 1000mL beaker, add 30mL sulfuric acid (3.2), stir, gradually warming on a hot plate heated solvent into a paste, and take the white smoke of sulfuric acid for about 20min, remove the cooled, sulfur 140mL Acid (3.2), and then slowly added 400mL of water, and stirred to dissolve clear, cooled and transferred to 1000mL volumetric flask, dilute to the mark with water, Mix well.

3.8.2

Calibration. Weigh 0.2500g three pure antimony ($\text{Sb} \geq 99.99\%$), were placed in 300mL Erlenmeyer flask with a small amount of water wet, add Into 12mL sulfuric acid (3.2), heated and dissolved to clear, remove the cooling. The following operations carried out by 5.4.2, 5.4.3.

Along with the calibration blank test.

According to equation (1) calculate the cerium sulfate standard titration solution (3.8) of the actual concentration.

$\rho =$

$V_p - V_p () \times 121.76 (1)$ where.

ρ --- cerium sulfate standard titration solution (3.8) of the actual concentration in units of moles per liter (mol/L);

V_p --- cerium sulfate titration antimony consumption standard titration solution (3.8) the volume in milliliters (mL);

V_0 --- calibration blank solution volume consumed cerium sulfate standard titration solution

(3.8) in milliliters (mL);

121.76 --- antimony molar mass in grams per mole (g/mol).

Average the three calibration results as cerium sulfate standard titration solution (3.8) of the actual concentration. Cerium sulfate standard parallel calibration consumed Titration solution (3.8) very poor value does not exceed the volume of 0.10mL.