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

YS/T 556.12-2011

**Methods for chemical analysis of antimony concentrates. Part
12: Determination of bismuth content. Flame atomic absorption
spectrometric method**

锑精矿化学分析方法 第12部分：铋量的测定 火焰原子吸收光谱法
(English Translation)

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Foreword

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

YS/T 556 "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 16. lead, zinc, copper, cadmium, nickel content - Inductively coupled plasma atomic emission spectrometry.

This is Part 12.

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

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1 Scope

This section YS/T 556 specifies the method for determination of the amount of bismuth antimony concentrate.

This section applies to the determination of the amount of bismuth antimony concentrate. Determination range of 0.0010% to 0.050%.

2 Method summary

Sample was dissolved in aqua regia, in a sulfuric acid medium, proper temperature control, addition of hydrochloric acid - volatile hydrobromide except antimony in hydrochloric acid medium, in atom Absorption Spectrometer measured at a wavelength of 223.1nm bismuth absorbance.

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

hydrochloric acid ($\rho = 1.19\text{g/mL}$).

3.2

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

3.3

sulfate ($\rho = 1.84\text{g/mL}$).

3.4

hydrobromide ($\rho = 1.48\text{g/mL}$).

3.5

hydrochloride (11).

3.6

nitric acid (11).

3.7

nitric acid (19).

3.8

sulfate (11).

3.9

hydrochloric acid - hydrogen bromide. an equal volume of hydrochloric acid (3.1) and hydrobromic acid (3.4) mixed preparation.

3.10.1 Bismuth standard stock solution

Weigh 1.0000g bismuth ($w_{Bi} \geq 99.99\%$) in 250mL beaker, add 20mL of nitric acid (3.6), cover the surface of the dish, micro Thermal dissolution clear, with nitric acid (3.7) and Beibi dish washing surface cooling. Moved into 1000mL volumetric flask, dilute to the mark with nitric acid (3.7) Degree, and mix. This solution 1mL bismuth-containing 1mg.

3.10.2 Bismuth standard solution

Pipette standards 50.00mL bismuth stock solution (3.10.1) in 500mL volumetric flask, was added 50mL of hydrochloric acid (3.1), diluted with water to the mark, and mix. This solution 1mL bismuth-containing 100 μ g.

4 Instrument

Atomic absorption spectrometer, with a bismuth hollow cathode lamp.

Under optimum working conditions for those who can reach the following indicators can be used.