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YS

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

YS/T 556.16-2011

**Methods for chemical analysis of antimony concentrates. Part 16:
Determination of lead, zinc, copper, cadmium, nickel content.
Inductively coupled plasma atomic emission spectrometry**

锑精矿化学分析方法 第16部分：铅、锌、铜、镉、镍量的测定 电感耦合等离子
体原子发射光谱法

(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 16.

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

(SAC/TC243) centralized.

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1 Scope

YS/T in this part 556 specifies the measured inductively coupled plasma atomic antimony ore of lead, zinc, copper, cadmium, nickel element emission spectrum Setting Method.

This section applies to antimony ore of lead, zinc, copper, cadmium and nickel element content, but also applies to the content of one of the elements of independence Determination. Measurement range. mass fraction of the elements shown in Table 1. This section does not arbitration as a method.

Table 1 mass fraction of the elements

Element mass fraction /% elemental mass fraction /% Pb 0.004 ~ 1.00 Cd 0.001 ~ 0.05 Zn 0.001 ~ 1.00 Ni 0.002 ~ 0.10 Cu 0.002 ~ 0.10 - -

2 Method summary

Samples with hydrochloric acid, nitric acid decomposition, except hydrobromic volatile antimony in nitric acid (119) medium, using inductively coupled plasma atomic hair Emission spectrometer to measure its concentration in each element corresponding to the wavelength.

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

ammonium hydrogen fluoride.

3.2

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

3.3

nitrate ($\rho=1.42\text{g/mL}$), pure class distinctions.

3.4

hydrobromide ($\rho=1.38\text{g/mL}$), pure class distinctions.

3.5

perchloric acid ($\rho=1.68\text{g/mL}$), pure class distinctions.

3.6

nitric acid (11).

3.7

lead standard stock solution. Weigh 1.0000g metallic lead ($W(\text{Pb}) \geq 99.99\%$), placed in 250mL beaker, add 50mL nitrate Acid (3.6), low temperature heating dissolution, cooling, transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL lead 1mg.

3.8

standard zinc stock solution. Weigh 1.0000g zinc metal ($W(\text{Zn}) \geq 99.99\%$), placed in 250mL beaker, add 50mL nitrate Acid (3.6), low temperature heating dissolution, cooling, transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL zinc 1mg.

3.9

copper standard stock solution. Weigh 1.0000g copper ($W(\text{Cu}) \geq 99.99\%$), placed in 250mL beaker, add 50mL of nitric acid