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YS

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

YS/T 556.5-2009

Replacing YS/T 556.5-2006

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

锑精矿化学分析方法 第5部分：锌量的测定火焰原子吸收光谱法
(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 5.

"Antimony concentrates - Determination of zinc content" in this section instead of YS/T 556.5-2006 (formerly GB/T 15080.5-1994).

Compared with YS/T 556.5-2006, this part of the following changes.

--- 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

YS/T 556 This part provides for antimony concentrate Determination of zinc content.

This section applies to the determination of antimony concentrate zinc content measurement range. 0.0010% to 1.00%.

2 Method summary

Sample dissolution with hydrochloric acid and nitric acid and evaporated to dryness, repeat adding hydrofluoric acid in addition to the volatile silicone, plus repeated except hydrobromide volatile antimony. In dilute hydrochloric acid medium with air - acetylene flame atomic absorption spectrometer at a wavelength of 213.8nm, zinc measured absorbance to the standard curve obtained zinc-containing the amount of impurities in a sample not interfere with the determination.

3 Reagents

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

3.1

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

3.2

HCl (1 + 1).

3.3

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

3.4

nitric acid (1 + 1).

3.5

perchloric acid ($\rho=1.67\text{g/mL}$).

3.6

hydrofluoric acid ($\rho=1.13\text{g/mL}$, pure class distinctions).

3.7

hydrobromide ($\rho=1.48\text{g/mL}$, pure class distinctions).

3.8 Standard zinc stock solution

After Weigh 1.0000g zinc metal ($\text{Zn}\geq 99.99\%$) in 250mL beaker, add 20mL of hydrochloric acid (3.2) to be violent reaction, plus Heat to dissolve completely, remove the cooled and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL zinc 1mg.

3.9 Zinc standard solution

Pipette 10.00mL standard zinc stock solution (3.8) was placed in 1000mL volumetric flask, was added 20mL of hydrochloric acid (3.2), diluted with water to the mark, and mix. This solution 1mL zinc 10 μg .

4 Instrument

Atomic absorption spectroscopy (AAS), attached to the zinc-air cell cathode lamps.

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

--- Characteristic concentration. with determination of sample solution matrix consistent solution, characterized in zinc concentration should not exceed 0.01 $\mu\text{g/mL}$.

--- Precision. measuring the highest concentration of the standard solution absorbance 10 times the standard deviation should not exceed 1.5% of the average absorbance;

Measure the lowest concentration of the standard solution (not "zero" concentration of the standard) absorbance of 10 times the standard deviation should not exceed the maximum 0.5% concentration of the standard average absorbance.

--- Linear curve. The curve is divided into five sections according to concentration, absorbance difference between the absorbance difference between the highest and the lowest segment of the segment Ratio of not less than 0.7.

Atomic absorption spectrometer reference operating conditions.