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YS

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

YS/T 556.7-2009

Replacing YS/T 556.7-2006

**Methods for chemical analysis of antimony concentrates. Part
7: Determination of mercury content. Atomic fluorescence
spectrometry**

锑精矿化学分析方法 第7部分：汞量的测定原子荧光光谱法
(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 7.

"Antimony concentrates - Determination of mercury content" in this section instead of YS/T 556.7-2006 (formerly GB/T 15080.7-1994).

Compared with YS/T 556.7-2006, this part of the following changes.

--- Instead of the original cold vapor atomic absorption spectrometry using atomic fluorescence spectrometry.

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 the amount of mercury in antimony concentrate.

This section applies to the determination of the amount of mercury antimony concentrate. Measurement range. 0.0001% to 0.010%.

2 Method summary

Sample was dissolved in aqua regia, nitric acid in the medium to potassium borohydride as a reducing agent, with argon as the carrier gas, and the resulting mercury vapor atomic import stone British furnace atomizer, the fluorescence intensity was measured on a mercury atomic fluorescence spectrometer.

3 Reagents and materials

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

3.1

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

3.2

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

3.3

nitric acid (1 + 4).

3.4

aqua regia (1 + 1). three volumes of hydrochloric acid (3.1), one volume of nitric acid (3.2), and four volumes of water mixed preparation.

3.5

potassium borohydride solution. Weigh 0.25g potassium borohydride, dissolved in 500mL 5g/L potassium hydroxide solution, and the time is now equipped with.

3.6

potassium dichromate solution (50g/L).

3.7

Storage mercury standard solution. Weigh 0.1354g previously dried 24h of mercury dichloride was dissolved in a small amount of water, nitric acid was added 50mL (3.2), 10mL potassium dichromate solution (3.6) and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution containing 1mL 100μg mercury.

Mercury 3.8 Standard Solution A. Pipette 10.00mL mercury standard stock solution (3.7) in 100mL volumetric flask, was added 5mL of nitric acid (3.2), 1mL potassium dichromate solution (3.6), diluted with water to volume, and mix. This solution 1mL containing 10μg mercury.

3.9

Mercury standard solution B. Pipette 2.00mL mercury standard solution A (3.8) in 200mL volumetric flask, was added 10mL of nitric acid (3.2), 2mL potassium dichromate solution (3.6), diluted with water to volume, and mix. This solution 1mL containing 0.1μg of mercury, the time is now equipped with.

3.10

argon (purity $\geq 99.99\%$).

4 Instrument

Atomic fluorescence spectrometer, with a special mercury hollow cathode lamp.

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

--- Detection limit. not more than 1×10^{-10} g/mL.

--- Precision. The fluorescence intensity was measured with a standard solution of mercury 8ng/mL 10 times, and the standard deviation should not exceed the mean fluorescence

intensity 5.0%.

--- Linear curve. The curve is divided into five sections according to concentration, the fluorescence intensity of the fluorescence intensity difference between the highest and the lowest segment of poor section Value ratio shall not be less than 0.8.

Atomic fluorescence spectrometer with reference to working conditions.

--- Lamp current. 20mA;

--- Negative high voltage. 260V;