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

YS/T 536.7-2009

Replacing YS/T 536.7-2006

**Methods for chemical analysis of bismuth. Determination of
arsenic content. Atomic fluorescence spectrometric method**

铋化学分析方法砷量的测定原子荧光光谱法

(English Translation)

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Foreword

YS/T 536-2009 "Method for chemical analysis of bismuth" is divided into 13 parts.

--- YS /536.1 Methods for chemical analysis of bismuth - Determination of copper content - Bis - acetaldehyde T oxalyl Spectrophotometric Method;

--- YS/T 536.2 Methods for chemical analysis of bismuth - Determination of iron content by electrothermal atomic absorption spectrometry;

--- YS/T 536.3 Methods for chemical analysis of bismuth - Determination of antimony content - Malachite green spectrophotometry;

--- YS/T 536.4 Methods for chemical analysis of bismuth - Determination of silver content - Flame atomic absorption spectrometry and electrothermal atomic absorption spectrometry;

--- YS/T 536.5 Methods for chemical analysis of bismuth - Determination of solid-liquid extraction of zinc content - Flame atomic absorption spectrometry;

--- YS/T 536.6 Methods for chemical analysis of bismuth - Determination of lead content by electrothermal atomic absorption spectrometry;

--- YS/T 536.7 Methods for chemical analysis of bismuth arsenic content - Atomic fluorescence spectrometry;

--- YS/T 536.8 Methods for chemical analysis of bismuth chlorine measured amount of mercury thiocyanate spectrophotometry;

--- YS/T 536.9 Methods for chemical analysis of bismuth - Determination of tellurium content of arsenic co-precipitation - oscillopolarographic method;

--- YS/T 536.10 Methods for chemical analysis of bismuth - Determination of tin content of

beryllium coprecipitation - spectrophotometry;

--- YS/T 536.11 Methods for chemical analysis of bismuth mercury content - Atomic fluorescence spectrometry;

--- Determination of YS/T 536.12 Methods for chemical analysis of nickel content of bismuth electrothermal atomic absorption spectrometry;

--- YS/T 536.13 Methods for chemical analysis of bismuth - Determination of cadmium content by electrothermal atomic absorption spectrometry.

This is Part 7.

The partial replacement of YS/T 536.7-2006 (formerly GB/T 8220.7-1998) "Methods for chemical analysis of bismuth ion exchange separation - hydride Generation - flame atomic absorption spectrometry determination of arsenic content. " Compared with YS/T 536.7-2006, this section has the following changes.

--- Replacement by atomic fluorescence spectrometry hydride generation - flame atomic absorption spectrometry;

--- Complements the precision and quality assurance and control provisions.

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

This section is Zhuzhou Smelter Group Co., Ltd. is responsible for drafting.

1 Scope

This section provides the determination of bismuth in the amount of arsenic.

This section applies to the determination of bismuth in the amount of arsenic. Measurement range (mass fraction). 0.00003% ~ 0.0012%.

2 Method summary

Sample was dissolved in nitric acid. In dilute nitric acid medium by cation exchange column separation of arsenic and the substrate, pre-reduction with ascorbic acid, in hydride generator, arsenic is reduced to potassium borohydride hydride with argon gas into the quartz furnace atomizer, and the atomic fluorescence spectrometer Measuring the fluorescence intensity of arsenic.

3.1 Commercially available reagents

3.1.1

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

3.1.2

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

3.2 Solution

3.2.1

nitric acid (1 + 1).

3.2.2

nitric acid (1 + 40).

3.2.3

hydrochloric acid (1 + 1).

3.2.4

ascorbic acid solution (50g/L, the time is now equipped with).

3.2.5

Potassium iodide solution (500g/L, the time is now equipped with).

3.2.6

solution of potassium borohydride (15g/L). Weigh 15g of potassium borohydride solid was dissolved in 1000mL of potassium hydroxide (1g/L) solution with when existing service.

3.3 Standard solution

3.3.1

arsenic standard stock solution. Weigh 0.1321g trioxide (arsenic trioxide mass fraction $\geq 99.9\%$, previously dry sulfuric acid 24h desiccator dried), was dissolved in 2mL solution of sodium hydroxide (50g/L), and with nitric acid (3.2.2) was transferred to 1000mL volumetric flask and dilute Explanation to the mark. Mix well. This solution 1mL containing 0.1mg arsenic.

3.3.2

arsenic standard solution. Pipette 5.00mL arsenic standard stock solution (3.3.1), placed in 1000mL volumetric flask, with nitric acid (3.2.2) Dilute to the mark. Mix well. This solution 1mL containing 0.5 μg arsenic.

4 Instruments and devices

4.1

cation exchange column. acid in 25mL buret with water previously charged by water immersion 24h, hydrochloric acid (5 + 95) soaking 4h, washed with water PH3 ~ pH4 to

strong acid cation exchange resin 732 15mL (equivalent to 6g dry resin).

4.2

atomic fluorescence spectrometer, with a high-intensity arsenic 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^{-9} g/mL.

Precision. with 0.1μg/mL solution of arsenic standard fluorescence intensity was measured 10 times, and the standard deviation should not exceed the average fluorescence intensity 5.0%.