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YS

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

YS/T 536.3-2009

Replacing YS/T 536.3-2006

**Methods for chemical analysis of bismuth. Determination of
antimony content. Melachite green photometric method**

铋化学分析方法锑量的测定孔雀绿分光光度法

(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 3.

The partial replacement of YS/T 536.3-2006 (formerly GB/T 8220.3-1998) "Methods for chemical analysis of bismuth spectrophotometric determination of malachite green Antimony content. " Compared with YS/T 536.3-2006, this section has the following changes.

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

--- Text format has been modified.

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 antimony content.

This section applies to the determination of bismuth in the antimony content. Measurement range (mass fraction). 0.0002% to 0.0025%.

2 Method summary

The sample is dissolved in nitric acid, hydrochloric acid medium, pentavalent antimony anions [SbCl₆] - insoluble compound generation and malachite green, with toluene 640nm wavelength spectrophotometer after extraction measured absorbance.

3.1 Commercially available reagents

3.1.1

toluene.

3.1.2

nitrate (ρ 1.42g/mL).

3.1.3

sulfate (ρ 1.84g/mL).

3.2 Solution

3.2.1

hydrochloric acid (1 + 2).

3.2.2

stannous chloride solution (100g/L). Weigh 10g of stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) in 250mL beaker, add 50mL salt Acid (3.2.1) was stirred to dissolve and diluted with hydrochloric acid (3.2.1) to 100mL, and mix.

3.2.3

sodium nitrite solution (100g/L).

3.2.4

urea saturated solution.

3.2.5

malachite green solution (2g/L), one week after the configuration to use.

3.3 Standard solution

3.3.1

Antimony standard stock solution. Weigh 0.1000g metal antimony (Sb mass fraction $\geq 99.9\%$) in 250mL beaker, 20mL sulfuric acid (3.1.3) dissolved by heating, remove cooling. Added 5mL hydrochloric acid (3.2.1) micro heat to dissolve the salts, cooled to room temperature, hydrochloric acid (3.2.1) moved into 1000mL volumetric flask and dilute to volume, and mix. This solution 1mL containing 0.1mg antimony.

3.3.2

Antimony standard solution. Pipette 10.00mL antimony standard stock solution (3.3.1) in 500mL flask with hydrochloric acid (3.2.1) diluted to the mark, and mix. This solution 1mL containing 2 μg antimony.

4 Instrument

Spectrophotometer.

5.1 Sample

Table 1 sample was weighed, accurate to 0.0001g.