

ICS 77.120.70
CCS H 13

YS

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

YS/T 536.8-2009

Replacing YS/T 536.8-2006

**Methods for chemical analysis of bismuth. Determination of
chlorine content. Mercuric thiocyanate photometric method**

铋化学分析方法氯量的测定硫氰酸汞分光光度法

(English Translation)

Issued on: December 4, 2009

Implemented on: June 1, 2010

Issued by: Ministry of Industry and Information Technology

Table of Contents

- Foreword
- 1 Scope
- 2 Method summary
- 3 Reagent
 - 3.1 Commercially available reagents
 - 3.2 Solution
 - 3.3 Standard solution
- 4 Instruments and devices

Foreword

YS/T 536-2009 "Bismuth chemical analysis method" is divided into 13 parts.

- Methods for chemical analysis of bismuth - Determination of copper content - Diacetaldehyde oxalyl dihydrazone spectrophotometric method;
- Methods for chemical analysis of bismuth - Determination of iron content - Electrothermal atomic absorption spectrometric method;
- Methods for chemical analysis of bismuth - Determination of antimony content - Malachite green spectrophotometric method;
- YS/T 536.4 Methods for chemical analysis of bismuth - Determination of silver content - Flame atomic absorption spectrometric method and electrothermal atomic absorption spectrometry;
- Methods for chemical analysis of bismuth - Determination of zinc content - Solid - liquid extraction - Flame atomic absorption spectrometry;
- Methods for chemical analysis of bismuth - Determination of lead content - Electrothermal atomic absorption spectrometric method;
- YS/T 536.7 Methods for chemical analysis of bismuth - Determination of arsenic content - Atomic fluorescence spectrometry;
- Methods for chemical analysis of bismuth - Determination of chlorine content - Mercury thiocyanate spectrophotometric method;
- Methods for chemical analysis of bismuth - Determination of tellurium - Arsenic coprecipitation - oscillopolarographic method;

- Methods for chemical analysis of bismuth - Determination of tin content - Beryllium coprecipitation - spectrophotometric method;

- Methods for chemical analysis of bismuth - Determination of mercury content - Atomic fluorescence spectrometry;

Methods for chemical analysis of bismuth - Determination of nickel content - Electrothermal atomic absorption spectrometric method;

Methods for chemical analysis of bismuth - Determination of cadmium content - Electrothermal atomic absorption spectrometric method YS/T 536.13.

This section is part 8.

This part replaces YS/T 536.8-2006 (formerly GB/T 8220.8-1998) "Bismuth chemical analysis method Mercury thiocyanate spectrophotometric Method to determine the amount of chlorine. " Compared with YS/T 536.8-2006, this section mainly has the following changes.

--- the text format has been modified;

- complements the precision, quality assurance and control terms.

This part of the National Nonferrous Metals Standardization Technical Committee proposed and centralized.

1 Scope

This section specifies the determination of the amount of chlorine in bismuth.

This part is applicable to the determination of chlorine in bismuth. Determination range (mass fraction). 0.001% to 0.006%.

2 Method summary

The sample was dissolved in nitric acid and distilled in a nitric acid medium at a temperature of $250^{\circ}\text{C} \pm 20^{\circ}\text{C}$. The escape was absorbed in a sodium hydroxide solution in. Adding mercuric thiocyanate and ferric chloride, the formation of chloride and mercuric thiocyanate reaction, free thiocyanate and iron (III) color. In the points the photometer absorbs the absorbance at a wavelength of 460 nm.

3 Reagent

Reagents preparation and determination of the process are added with a small amount of sodium hydroxide distillation of a water.

3.1 Commercially available reagents

3.1.1

Reduction of iron powder.

3.1.2

nitric acid ($\rho=1.42\text{g/mL}$), ultra-pure.

3.1.3

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

3.1.4

nitrogen, high purity.

3.2 Solution

3.2.1

Mercury thiocyanate - methanol solution (5g/L). Weigh 0.5g of mercuric thiocyanate in a 250mL beaker, add 100mL of methanol, dissolved After the whole, move into a brown bottle and save it.

3.2.2

ferric chloride solution. Weigh 7g of reduced iron powder in 400mL beaker, add.200mL nitric acid (2 +1, ultra-pure), heating solution. Add 60mL perchloric acid (3.1.3), heat until the perchloric acid smoke and continue heating to the solution reddish brown and cool. Diluted with water 500mL, mix well.

3.2.3

sodium hydroxide solution (0.2mol/L), excellent grade pure.

3.3 Standard solution

3.3.1

Chlorine standard storage solution. Weigh at 500 °C for 30min, and placed in a dryer to room temperature 0.2102g potassium chloride (Excellent grade pure), placed in 250mL beaker, dissolved in water, into the 1000mL volumetric flask, diluted with water to the mark, mix. This solution Liquid 1mL containing 0.1mg chlorine.

3.3.2

Chlorine standard solution. Remove 50.00mL chlorine standard storage solution (3.3.1) in 500mL volumetric flask, diluted with water to the scale, mixed uniform. 1 mL of this solution contains 10 g of chlorine.

4 Instruments and devices

4.1

spectrophotometer.

4.2

chlorine distillation device (see Figure 1).

4.3

temperature control furnace.