

ICS 73.060  
CCS D 42

**YS**

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

**YS/T 1050.3-2015**

---

**Methods for chemical analysis of lead antimony concentrates.  
Part 3: Determination of arsenic content. The potassium  
bromate titration method**

铅锑精矿化学分析方法 第3部分：砷量的测定 溴酸钾滴定法  
(English Translation)

**Issued on: April 30, 2015**

**Implemented on: October 1, 2015**

---

**Issued by: Ministry of Industry and Information Technology**

## Table of Contents

|                                                    |
|----------------------------------------------------|
| Foreword                                           |
| 1 Scope                                            |
| 2 Method summary                                   |
| 3 Reagents                                         |
| 3.12 Potassium bromate standard titration solution |

### Foreword

YS/T 1050-2015 "Methods for chemical analysis of lead-antimony concentrate" is divided into the following nine sections.

- Part 1. Determination of lead content Na<sub>2</sub>EDTA titration;
- Part 2. Determination of antimony content cerium sulfate titration;
- Part 3. Determination of arsenic content potassium bromate titration;
- Part 4. Determination of zinc contents Na<sub>2</sub>EDTA titration;
- Part 5. Determination of sulfur content - Gravimetric method;
- Part 6. Determination of iron content cerium sulfate titration;
- Part 7. Determination of the amount of bismuth and copper - Flame atomic absorption spectrometry amount;
- Part 8. gold and silver content determination fire assay;
- Part 9. Determination of the amount of silver by flame atomic absorption spectrometry.

This is Part 3.

This section drafted in accordance with GB/T 1.1-2009 given rules.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is responsible for drafting unit. Guangxi Metallurgical Product Quality Supervision and Inspection Station.

Drafting this Part. Analysis and Testing Research Center of Guangxi Zhuang Autonomous Region.

Participated in the drafting of this section. Guangxi China Tin Group Co., Ltd., Guilin

University of Technology, Hunan Anhua Zhazixi Mining Limited.

## 1 Scope

This section YS/T 1050 specifies the method for determination of lead-antimony concentrate arsenic content.

This section applies to the determination of lead in antimony concentrate arsenic content measurement range (mass fraction) 0.30% - 4.50%.

## 2 Method summary

Sample with nitric acid, potassium chlorate and sulfuric acid decomposition in 6mol/L hydrochloric acid medium with potassium bromide as the catalyst for the reduction Hydrazine sulfate Agents, micro-boiling distillation, condensate in sulfuric acid medium, methyl orange - methylene blue as indicator, titration with cerium sulfate solution in a small amount of distillate Trivalent antimony, supplemented with methyl orange indicator, and then potassium bromate standard solution titration to the disappearance of the red end.

## 3 Reagents

Unless otherwise indicated, this part of the reagents were analytical reagent, the water for the two water.

### 3.1

potassium chlorate.

### 3.2

potassium bromide.

Hydrazine sulfate 3.3.

### 3.4

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

### 3.5

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

### 3.6

sulfate ( $\rho = 1.84\text{g/mL}$ ).

### 3.7

hydrochloride (11).

### 3.8

sulfate (11).

### 3.9

Sodium hydroxide solution (20g/L).

### 3.10

Arsenic standard solution. Accurately weigh 1.3205g sulfuric acid was dried in a dryer trioxide (mass fraction  $\geq 99.99\%$ ) set in 200mL beaker, sodium hydroxide solution was added 20mL (3.9), covered with a watch glass, low heat until dissolved completely, was added 20mL of water, 2 drops of phenolphthalein indicator (3.13), with hydrochloric acid (3.7) and to the red disappear and excess 2 drops cooled and transferred to 1000mL volumetric flask with water Dilute to volume, and mix. Arsenic per milliliter of solution 1mg.

### 3.11

cerium sulfate solution (10g/L). Weigh 12.17g cerium sulfate  $[\text{Ce}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}]$ , placed in 1000mL beaker, add 30mL Sulfuric acid (3.6), stir, gradually warming on a hot plate heated solvent into a paste, and take the white smoke of sulfuric acid for about 20min, remove the cooled, 280mL Sulfuric acid (3.8), and then slowly added 400mL of water, and stirred to dissolve clear, cooled and transferred to 1000mL volumetric flask, dilute to the mark with water, Mix well.

## 3.12 Potassium bromate standard titration solution

### 3.12.1

preparation. Weigh 0.88g of potassium bromate, potassium bromide 4.4g (3.2) was placed in 250mL beaker, adding a small amount of water, dissolved by heating, cooled to at room temperature and transferred to the vial, dilute with water to 2.5L, and mix.

### 3.12.2

Calibration. Pipette 10.00mL arsenic standard solution (3.10) 3 parts, were placed in pre-filled with 0.3g of potassium bromide (3.2), 0.3g of sulfuric acid