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

YS/T 1050.7-2015

**Methods for chemical analysis of lead antimony concentrates -
Part 7: Determination of bismuth and copper contents - Flame
atomic absorption spectrometric method**

铅锑精矿化学分析方法 第7部分：铋量和铜量的测定 火焰原子吸收光谱法
(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instruments and equipment

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 Na₂EDTA 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 Na₂EDTA 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 7.

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.

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special advanced material Material Limited.

1 Scope

This section YS/T 1050 specifies the method for measuring the amount of bismuth in lead-antimony concentrate and copper content.

This section applies to the determination of the amount of bismuth in the lead-antimony concentrate and copper content of the measurement range (mass fraction) of 0.015% to 1.00% bismuth, copper from 0.15% to 1.00%.

2 Method summary

Sample with nitric acid, potassium chlorate and sulfuric acid decomposition in hydrochloric acid medium, with air - acetylene flame atomic absorption spectrometer wavelength 223.1nm and 324.8nm at bismuth and copper were measured absorbance to the standard curve method to calculate the amount of bismuth and copper content.

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

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

3.3

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

3.4

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

Hydrochloride 3.5 (6100).

3.6

nitric acid (11).

3.7

tartaric acid solution (100g/L).

3.8

copper standard stock solution. Weigh 0.2500g copper (mass fraction $\geq 99.99\%$) placed in

250mL beaker, add 20mL nitrate Acid (3.6), cover the surface of the pan, over low heat until completely dissolved, remove, cool. The solution is transferred to 250mL volumetric flask, constant volume of water, mixed uniform. This copper-containing solution 1mL 1mg.

3.9

bismuth standard stock solution. Weigh 0.2500g bismuth (mass fraction $\geq 99.99\%$) placed in 250mL beaker, add 20mL nitrate Acid (3.6), cover the surface of the pan, over low heat until completely dissolved, remove, cool. The solution is transferred to 250mL volumetric flask, add 25mL nitrate Acid (3.3) with water to volume, and mix. This solution 1mL bismuth-containing 1mg.

3.10

copper and bismuth mixed standard solution. Pipette 5.00mL copper standard stock solution (3.8) and bismuth 25.00mL standard stock solution (3.9) to 250mL flask, add 25mL of nitric acid (3.3) with water to volume, and mix. Per milliliter of solution containing copper 20 μ g, bismuth 100 μ g.

4 Instruments and equipment

Atomic absorption spectrometer, with bismuth, copper hollow cathode lamp.

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

--- Sensitivity. consistent with measurements in a solution matrix solution, wherein the concentration of bismuth is no greater than 0.20 μ g/mL, wherein the concentration of Cu