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

YS/T 461.5-2013

Replacing YS/T 461.5-2003

**Methods for chemical analysis of lead and zinc bulk
concentrates. Part 5: The determination of silicon dioxide
content. Molybdenum blue spectrophotometric method**

混合铅锌精矿化学分析方法 第5部分：二氧化硅量的测定钼蓝分光光度法
(English Translation)

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Foreword

YS/T 461 "Lead and Zinc concentrates - Methods" is divided into 11 parts.

- Part 1. Determination of the amount of lead and zinc content Na₂EDTA precipitation titration;
- Part 2. Determination of iron content Na₂EDTA titration;
- Part 3. Determination of sulfur content of combustion - neutralization titration method;
- Part 4. Determination of arsenic content of iodine titration;
- Part 5. Determination of silicon dioxide content - Molybdenum blue spectrophotometric method;
- Part 6. Determination of the amount of mercury atomic fluorescence spectrometry;
- Part 7. Determination of cadmium content by flame atomic absorption spectrometry;
- Part 8. Determination of copper content - Flame atomic absorption spectrometry;
- Part 9. Determination of the amount of silver by flame atomic absorption spectrometry;
- Part 10. the amount of gold and silver contents - fire assay;
- Part 11. arsenic, bismuth, cadmium, cobalt, copper, nickel, antimony content - Inductively Coupled Plasma - Atomic Emission Spectrometry.

This section YS/T Part 5 461.

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

The partial replacement of YS/T 461.5-2003 "Determination of Lead and Zinc concentrates - Methods for chemical analysis of silicon dioxide content - Molybdenum blue spectrophotometric law". Compared with YS/T 461.5-2003, the main changes are as follows.

--- Text format has been modified;

--- Added "reproducibility" clause, delete the words "to allow poor" clause;

--- Added "the test report" requirement.

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

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1 Scope

This section YS/T 461 specifies the method for determination of mixing silica content of lead and zinc concentrate.

This section applies to the determination of lead and zinc concentrate mixing silica content. Measuring range. 1.00% to 10.00%.

2 Method summary

Sample with sodium hydroxide melting, hot water leaching. In sulfuric acid, ammonium molybdate generation silicon and silicon molybdenum heteropoly acid, oxalic acid masking phosphorus, with anti Ascorbic acid reducing silicon molybdenum heteropoly acid into silicon molybdenum blue. Measured in a spectrophotometer at a wavelength of 650nm absorbance, according to the standard curve method to calculate two the content of silicon oxide.

Interfere with the determination when arsenic is greater than 2%.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

sodium hydroxide, pure class distinctions.

Aqueous ammonia 3.2 ($\rho = 0.90\text{g/mL}$).

3.3

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

3.4

sulfate (11).

3.5

sulfate (19).

3.6

Aqueous ammonia (11).

3.7

ammonium molybdate solution (80g/L), filtered to use.

3.8

oxalic acid solution (50g/L).

3.9

ascorbic acid solution (20g/L), the time is now equipped with.

3.10

silica standard stock solution. Weigh 0.5000g silica (pure class distinctions, previously calcined at 950 °C 30min, placed in dry it is cooled to room temperature) in the mixed flux containing 5g (duplicate copy of anhydrous sodium carbonate and potassium carbonate mix) platinum crucible, mix, cover 2g mixed flux and placed 900 °C ~ 950 °C high temperature furnace melting 1h. Remove coolish external crucible washed with water, placed in a pre added 150mL 300mL Teflon beaker of hot water extraction, wash the crucible, cooled to room temperature, transferred to 500mL volumetric flask, dilute with water Diluted to the mark, mix, stored in a plastic bottle. 1mL solution containing 1mg silica.

3.11

Silica Standard Solution. Pipette silica 50.00mL standard stock solution (3.10) in 500mL volumetric flask, dilute with water to the mark, mix and store in a plastic bottle. This solution 1mL containing 100 μg silica.

3.12

pairs nitrophenol indicator (1g/L).

4 Instrument

Spectrophotometer.