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

YS/T 461.1-2013

Replacing YS/T 461.1-2003

**Methods for chemical analysis of lead and zinc bulk concentrates. Part
1: The determination of lead and zinc contents. Na₂EDTA titrimetric
method after precipitation separation**

混合铅锌精矿化学分析方法 第1部分；铅量与锌量的测定沉淀分离Na₂EDTA滴定
法

(English Translation)

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Foreword

YS/T 461-2013 "mixing chemical analysis of lead and zinc concentrates" 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 1461-2013 Part of.

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

The partial replacement of YS/T 461.1-2003 "Lead and Zinc concentrates - Methods for chemical analysis of lead content and determination of the amount of precipitation Na₂EDTA titration ", compared with the YS/T 461.1-2003, the main changes are as follows.

- Measured by the scope of "Pb 10.00% ~ 30.00%, Zn 20.00% ~ 50.00%" to "10.00% - 40.00% Pb, Zn 10.00% ~ 45.00% ";

--- Analysis step after lead sulfate precipitation, an increase of filtrate add ammonia and precipitation steps to eliminate the interference of iron and other impurities;

--- 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.

YS/T 461 is responsible for drafting. Shenzhen Lingnan Nonferrous Metals Co., Baiyin Nonferrous Metals Group Co., Ltd., Beijing General Research Institute of Mining and Metallurgy.

This section is responsible for drafting. Shenzhen Lingnan Nonferrous Metals Co., Ltd. Shaoguan smelter.

Participated in the drafting of this section. Baiyin Nonferrous Metals Group Co., Ltd., Shenzhen Lingnan Nonferrous Metals Co. Fankou lead Zinc, Zhuzhou Smelter Group Co., Ltd., Western Mining Corporation and Inspection Center, Bayannaoer Western Copper Co., Ltd., Hunan Nonferrous Metal Research Institute, Beijing General Research Institute of Mining and Metallurgy.

1 Scope

This section YS/T 461 specifies the determination of the amount of lead and zinc content of Lead and Zinc Concentrate.

This section applies to the determination of the amount of mixing zinc concentrates of lead and zinc content. Measurement range. 10.00% - 40.00% Pb, Zn ~ 10.00% 45.00%.

This section does not apply to the barium content greater than 1% of mixed lead and zinc concentrates.

2 Method summary

Samples with hydrochloric acid, nitric acid, sulfuric acid dissolved in sulfuric acid medium lead forming lead sulfate precipitation, filtration, separation and coexistence elements. To lead sulfate Acetic acid - sodium acetate buffer solution dissolved with xylenol orange as indicator in pH5.0 ~ 6.0, the solution was titrated with a standard titration Na₂EDTA Change from purple to bright yellow solution for the end. Lead content is calculated according to consumption Na₂EDTA standard titration solution volume.

Filtrate with ammonia precipitation of iron, manganese and other elements coexist. Was added a small amount of interference masking agent masking element in the resulting filtrate. In pH5.0 ~ 6.0, with Na₂EDTA standard titration solution titration until the solution changed from purple to bright yellow end. According to standard titration consumption

Na₂EDTA Calculate the volume of solution of zinc and cadmium. Deduct the amount of cadmium, zinc is the amount.

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

ammonium chloride.

3.2

ascorbic acid.

3.3

anhydrous sodium acetate.

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

hydrobromide ($\rho = 1.38\text{g/mL}$).

Aqueous ammonia 3.8 ($\rho = 0.90\text{g/mL}$).

3.9

acetic acid ($\rho = 1.049\text{g/mL}$).

3.10

nitric acid (13).

Sulfuric acid 3.11 (298).

Sulfuric acid 3.12 (19).

3.13

hydrochloric acid (11).

3.14

ammonia (11).

3.15

washing liquid. 2g ammonium chloride (3.1) was dissolved in 100mL of water, add 3-4 drops of ammonia (3.8).

3.16

ammonium persulfate solution (200g/L), the time is now equipped with.