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YS

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

YS/T 276.3-2011

Replacing YS/T 276.3-1994

**Methods for chemical analysis of indium. Part 3: Determination
of thallium content. Methyl green photometric method**

铟化学分析方法 第3部分铊量的测定 甲基绿分光光度法

(English Translation)

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Foreword

YS/T 276 "indium chemical analysis methods," including a total of 11 parts.

--- Part 1. Determination of arsenic content by hydride generation - atomic fluorescence spectrometry;

--- Part 2. Determination of tin content Phenylfluorone - bromo cetyl trimethylamine spectrophotometry;

--- Part 3. Determination of the amount of thallium methyl green spectrophotometry;

--- Part 4. Determination of the amount of chrome aluminum Azure S Spectrophotometry;

--- Part 5. Determination of iron content of 1. electrothermal atomic absorption spectrometry Method 2. Flame atomic absorption spectrometry;

--- Part 6. copper, cadmium, zinc content - Flame atomic absorption spectrometry;

--- Part 7. Determination of lead content by flame atomic absorption spectrometry;

--- Part 8. Determination of bismuth content 1. Hydride Generation - Atomic Fluorescence Spectrometry Method 2. Flame atomic absorption spectrometry;

--- Part 9. Determination of the amount of indium Na₂EDTA titration;

--- Part 10. bismuth, aluminum, lead, iron, copper, cadmium, tin, thallium content - Inductively coupled plasma atomic emission spectrometry;

--- Part 11. arsenic, aluminum, lead, iron, copper, cadmium, tin, thallium, zinc, bismuth content - Inductively Coupled Plasma Mass Spectrometry.

This section drafted in accordance with the rules of GB/T 1.1 is given.

This section YS/T Part 3 276.

The partial replacement of YS/T 276.3-1994 "indium chemical analysis of methyl green

spectrophotometric determination of the amount of thallium Law", and YS/T 276.3-Compared to 1994, this section has the following changes.

- Measuring range extended from 0.0005% ~ .0120 to .00030% to 0.100%;
- Complements the precision, quality assurance and control provisions;
- Complements the "test report" requirement.

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

1 Scope

This section YS/T 276 specifies the method for determination of indium thallium content.

This section applies to the determination of indium thallium content. Determination of the range of 0.00030% to 0.100%.

2 Principle of the method

Sample decomposition with hydrochloric acid, in 0.008mol/L ~ 0.24mol/L solution of hydrogen bromide, thallium and methyl green violet complex generated by Isoamyl acetate extraction, the absorbance is measured in a spectrophotometer at a wavelength of 610nm.

3 Reagents

Unless otherwise indicated, used in the analysis confirmed only for the gifted class pure reagents and distilled or deionized water or equivalent purity.

3.1

isoamyl acetate.

3.2

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

3.3

hydrochloric acid solution (11).

3.4

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

3.5

hydrobromic acid solution (1mol/L). Pipette 75mL hydrobromic acid (3.4), 10mL of saturated bromine water to brown 500mL volumetric flask, washed with water Dilute to volume, and mix.

3.6

sulfosalicylic acid solution (100g/L).

3.7

methyl green solution (5g/L).

3.8

thallium standard stock solution. Weigh 0.2607g thallium nitrate reference reagent, a 50mL beaker, dissolved in water and transferred to 1000mL Volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 200 μ g thallium.

3.9

Thallium standard solution. Pipette 10.00mL thallium standard stock solution (3.8) in 1000mL volumetric flask, dilute to the mark with water, mix uniform. This solution 1mL containing 2 μ g thallium.

4 Instrument

Spectrophotometer.

5 Sample

The sample was processed into a side grow up to 3mm in the form of chips.