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

YS/T 276.7-2011

Replacing YS/T 276.6-1994

**Methods for chemical analysis of indium. Part 7: Determination
of lead content. Flame atomic absorption spectrometry**

铟化学分析方法 第7部分：铅量的测定火焰原子吸收光谱法

(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 Section 7276 of.

The partial replacement of YS/T 276.6-1994 "Methods for chemical analysis of indium atomic absorption spectrophotometry lead content", and YS/T 276.6-1994 Compared to the

main changes are as follows.

- Changed the extracting agent, with butyl acetate instead of methyl isobutyl ketone;
- Measuring range extended from 0.0010% - from 0.025 to 0.00030% - 0.200%;
- 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 provides the determination of indium in lead content.

This section applies to the determination of indium in lead content. Determination of the range of 0.00030% to 0.200%.

2 Principle of the method

Sample decomposition with hydrobromic acid, butyl acetate, indium extraction and separation, the aqueous phase atomic absorption spectrometer at a wavelength of 283.3nm, Determination of lead Absorbance.

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

butyl acetate.

3.2

hydrochloride (ρ 1.19g/mL).

3.3

hydrobromide (ρ 1.42g/mL).

Nitrate 3.4 (ρ 1.42g/mL).

3.5

hydrobromic acid solution (5.5mol/L). Pipette 404mL hydrobromide (3.3) in 500mL volumetric flask, dilute with water to volume, and mix.

3.6

nitric acid solution (14).

3.7

lead standard stock solution. Weigh 1.0000g cleaned surface of metallic lead ($w \geq 99.99\%$) placed in 250mL beaker, add 10mL of nitric acid (3.6), at low temperature to dissolve completely get rid of nitrogen oxides boiling, cooling is removed and transferred to 1000mL volumetric flask, washed with water Dilute to volume, and mix. 1mL solution containing 1mg lead.

3.8

Lead standard solution. Pipette 20.00mL lead standard stock solution (3.7) placed in 200mL flask, add 10mL of nitric acid (3.6), dilute to the mark and mix. This solution 1mL containing 100 μ g lead.

4 Instrument

Atomic absorption spectrometer, with a lead hollow cathode lamp.

Under instrument conditions, who can achieve the following indicators atomic absorption spectrometer can be used.

--- Characteristic concentration. In line with the measurement of the sample solution matrix solution, characterized in lead concentration should not exceed 0.25 μ g/mL.

--- Precision. measuring the absorbance of 11 with the highest concentration of the standard solution, the relative standard deviation should not exceed 1.0%; the lowest concentration Degree standard solution (not "zero" concentration of the standard) measuring the absorbance of 10 times, the relative standard deviation should not exceed 0.5%.

--- Linear curve. The curve is divided into five sections according to concentration, absorbance difference between the absorbance difference between the highest and the lowest segment of the segment