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YS

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

YS/T 276.6-2011

Replacing YS/T 276.5-1994

**Methods for chemical analysis of indium. Part 6: Determination
of copper, cadmium and zinc content. Flame atomic absorption
spectrometry**

铟化学分析方法 第6部分：铜、镉、锌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 is in accordance with the rules of GB/T 1.1 gives drafted.

This section YS/T Part 6 276.

The partial replacement of YS/T 276.5-1994 "Methods for chemical analysis of indium atomic absorption spectrophotometry of copper, iron, zinc, cadmium content" in the

Determination of copper, zinc portion, the amount of cadmium, compared with YS/T 276.5-1994, have the following main changes.

--- The determination of iron in a single listed, an increase of electrothermal atomic absorption spectrometry;

--- Copper measuring range extended from 0.0003% ~ 0.0015-0.0030% ~ 0.200%;

Cadmium measurement range extended from 0.0010% ~ 0.025 to 0.00030% - 0.200%;

Zinc measurement range extended from less than 0.0010% from 0.0025 to 0.00030 percent 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 provides for copper indium, cadmium and zinc content.

This section applies to copper, cadmium, zinc contents in indium. Measurement range Cu0.00030% ~ 0.200%, Cd0.00030% ~ 0.200%, Zn0.00030% ~ 0.100%.

2 Principle of the method

Sample decomposition with hydrochloric acid. In hydrochloric acid medium, atomic absorption spectrometer wavelength 324.7nm, 228.8nm, 213.9nm place, respectively Measurement of copper, cadmium, zinc 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

hydrochloride (ρ 1.19g/mL).

Nitrate 3.2 (ρ 1.42g/mL).

3.3

hydrochloric acid solution (119).

3.4

nitric acid solution (11).

3.5

nitric acid solution (119).

3.6 Standard solution

3.6.1

copper standard stock solution. Weigh 1.0000g copper ($w \geq 99.99\%$), placed in 250mL beaker, add 15mL of nitric acid (3.2), low dissolved by heating, boiling rid of nitrogen oxides, remove cooling. Moved into 1000mL volumetric flask, nitric acid (3.5) diluted to Volume, and mix. 1mL solution containing 1mg of copper.

3.6.2

cadmium standard stock solution. Weigh 1.0000g metal cadmium ($w \geq 99.99\%$) in 250mL beaker, add 15mL of nitric acid solution Solution (3.4), low dissolved by heating, boiling rid of nitrogen oxides, remove cooling. Moved into 1000mL volumetric flask, nitric acid (3.5) diluted to the mark, and mix. This solution 1mL 1mg containing cadmium.

3.6.3

standard zinc stock solution. Weigh 1.0000g zinc metal ($w \geq 99.99\%$) in 250mL beaker, add 15mL of nitric acid solution Solution (3.4), low dissolved by heating, boiling rid of nitrogen oxides, remove cooling. Moved into 1000mL volumetric flask, nitric acid (3.5) diluted to the mark, and mix. 1mL solution containing 1mg zinc.

3.6.4

copper, cadmium, zinc mixed standard solution. Pipette respectively 5.00mL copper standard stock solution (3.6.1), 5.00mL cadmium standard storage solution Solution (3.6.2), 5.00mL standard zinc stock solution (3.6.3) in 1000mL volumetric flask, hydrochloric acid solution (3.3) diluted to the mark, mix uniform. This solution 1mL copper, cadmium and zinc are 5 μ g.

3.6.5

copper, cadmium, zinc mixed standard solution. Pipette respectively 5.00mL copper standard stock solution (3.6.1), 5.00mL cadmium standard storage solution