

ICS 77.120.99
CCS H 13

YS

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

YS/T 276.1-2011

Replacing YS/T 276.1-1994

**Methods for chemical analysis of indium. Part 1: Determination
of arsenic content. Hydride generation-atomic fluorescence
spectrometry**

铟化学分析方法 第1部分砷量的测定 氢化物发生-原子荧光光谱法
(English Translation)

Issued on: December 20, 2011

Implemented on: July 1, 2012

Issued by: Ministry of Industry and Information Technology

Table of Contents

Foreword
1 Scope
2 Principle of the method
3 Reagents
4 Instrument

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 1 276.

The partial replacement of YS/T 276.1-1994 "indium chemical analysis of the water phase molybdenum blue spectrophotometric determination of arsenic content", and YS/T

276.1-Compared to 1994, this section has the following changes.

- Changed the measurement method using hydride generation - atomic fluorescence spectrometry;
- Measuring range extended from 0.0003% ~ 0.0010-.00020% ~ 0.0020%;
- 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 arsenic content.

This section applies to the determination of indium with arsenic content. Determination of the range of 0.00020% to 0.0020%.

2 Principle of the method

Sample was dissolved in nitric acid, thiourea - Ascorbic Acid prereduced arsenic, while masking copper, iron and other impurity elements, and hydride generator, arsenic it is reduced to potassium borohydride as hydride with argon gas into the quartz furnace atomizer, the fluorescence intensity measured on the atomic fluorescence spectrometer.

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

Potassium hydroxide solution (5g/L).

3.2

Sodium hydroxide solution (100g/L).

3.3

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

3.4

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

3.5

hydrochloric acid solution (11).

3.6

hydrochloric acid solution (119).

3.7

nitric acid solution (11).

3.8

thiourea - ascorbic acid solution. Weigh thiourea, each 25g ascorbic acid dissolved in 500mL of water. The time is now equipped with.

3.9

potassium borohydride solution. Weigh 10g potassium borohydride, dissolved in 500mL of potassium hydroxide solution (3.1), filtered backup, the time is now equipped with.

3.10

arsenic standard stock solution. Weigh accurately 0.1320g advance in sulfuric acid desiccator arsenic trioxide (reference reagent) to 300mL beaker, add 20mL of sodium hydroxide solution (3.2), heated to dissolve completely neutralized with hydrochloric acid to slightly cooled and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 0.1mg arsenic.

3.11

arsenic standard solution. Pipette 2.00mL arsenic standard stock solution (3.10) in 500mL volumetric flask, was added 75mL of hydrochloric acid (3.3), diluted with water to volume, and mix. This solution 1mL containing 0.4μg arsenic.

4 Instrument

Atomic fluorescence spectrometer, with a high-intensity arsenic hollow cathode lamp.

Under optimum working conditions, where the index can be used to achieve the following.

--- Detection limit. not more than 2×10^{-9} g/mL.