

ICS 77.120.40
CCS H 13

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

YS/T 1116.5-2016

**Method for chemical analysis of tin anode slime--Part 5:
Determination of indium content--Flame atomic absorption
spectrometric method**

锡阳极泥化学分析方法 第5部分：铟量的测定 火焰原子吸收光谱法
(English Translation)

Issued on: July 11, 2016

Implemented on: January 1, 2017

Issued by: Ministry of Industry and Information Technology

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Foreword

- Part 1. Determination of tin content Potassium iodate titration;
- Part 2. Determination of bismuth content Na₂EDTA titration;
- Part 3. Determination of copper content, lead content and bismuth - Flame atomic absorption spectrometric method;
- Part 4. Determination of arsenic iodine titration;
- Part 5. Determination of indium - Flame atomic absorption spectrometric method;
- Part 6. Determination of gold and silver;
- Part 7. Determination of antimony content - Cerium sulfate titration method.

This part is part 5 of YS/T 1116-2016.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part of the National Nonferrous Metals Standardization Technical Committee (SAC/TC243) proposed and centralized.

This part of the main drafting unit. Beijing Mining and Metallurgy Research Institute, Yunnan Tin Industry Co., Ltd., Guangzhou Nonferrous Metals Research Institute.

This part participated in the drafting unit. Hunan Nonferrous Metals Research Institute, Guangxi Huaxi Group Co., Ltd., Guangxi Metallurgical Research Institute, China Inspection Verification Group Guangxi Co., Ltd.

1 Scope

This part of YS/T 1116 specifies the determination of indium in tin anode mud.

This part is applicable to the determination of indium in tin anode mud. The measurement range is 0.0500% ~ 0.600%.

2 Method summary

The sample was dissolved with hydrochloric acid and nitric acid. In dilute nitric acid medium, the use of air - acetylene flame, atomic absorption spectrometer wavelength 303.9nm and the absorbance of indium was measured.

3 Reagent

Unless otherwise stated, only the reagents and secondary water confirmed to be analytical were used in the analysis.

3.1

Hydrochloric acid (rho1.19g/mL).

3.2

nitric acid (rho1.42g/mL).

3.3

hydrobromic acid (rho 1.48 g/mL).

3.4

hydrochloric acid - hydrobromic acid mixed acid (1 1).

3.5

hydrochloric acid - nitric acid mixed acid (3 1).

3.6

sulfuric acid (1 1).

3.7

indium standard storage solution. Weigh 0.2000g metal indium (wln $\geq$ 99.99%) in a 300mL beaker, add 15mL hydrochloric acid - nitric acid Mixed with acid (3.5), dissolved at low temperature, evaporated to near dry, add 4mL nitric acid (3.2), blowing a small amount of water along the cup wall, boiling dissolved salt, Under the cooling, into the.200mL volumetric flask, diluted with water to the mark, mix. This solution 1mL containing 1mg indium.

3.8

indium standard solution. remove 10.00mL indium standard storage solution (3.7) in a 100mL volumetric flask, add 10mL nitric acid (3.2), Water dilute to the mark, mix. This solution 1mL containing 100 μ g indium.

4 Instruments

Atomic Absorption Spectrometer with Indium Hollow Cathode Lamp.

In the best working conditions of the instrument, who can achieve the following indicators can be used.

--- Characteristic concentration. In the solution consistent with the substrate of the measurement solution, the characteristic concentration of indium should not be more than 0.220 μ g/mL;

Precision. the maximum concentration of the standard solution measured 10 times the absorbance, the standard deviation should not exceed 1.0% of the average absorbance;

The standard deviation should not exceed the maximum of 10 absorbance measured with the lowest concentration of the standard solution (not the "zero" concentration standard solution) Concentration standard solution average absorbance of 0.50%;

--- work curve linear. the working curve by concentration equal to 5, the highest section of the difference between the absorbance difference and the lowest of the difference in absorbance Than should be less than 0.7.