

ICS 77.040.30
CCS H 17

YS

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

YS/T 981.4-2014

**Method for chemical analysis of high pure indium. Determination of tin
content. Benzfluorenone-cetyltrimethylammonium bromide
spectrophotometric method**

高纯铟化学分析方法锡量的测定苯芴酮-溴代十六烷基三甲胺吸光光度法
(English Translation)

Issued on: October 14, 2014

Implemented on: April 1, 2015

Issued by: Ministry of Industry and Information Technology

Table of Contents

- Foreword
- 1 Scope
- 2 Method summary
- 3 Reagents

Foreword

YS/T 981 "Methods for chemical analysis of high purity indium" is divided into five sections.

--- Part 1. magnesium, aluminum, silicon, sulfur, iron, nickel, copper, zinc, arsenic, silver, cadmium, tin, thallium, lead quality measurement resolution glow discharge mass Spectroscopy;

--- Part 2. Inductively magnesium, aluminum, iron, nickel, copper, zinc, silver, cadmium, tin, lead coupled plasma mass spectrometry;

--- Part 3. Determination of the amount of silicon molybdenum blue spectrophotometric method;

--- Part 4. Determination of tin content Phenylfluorone - bromo cetyl trimethylamine absorptiometry;

--- Part 5. Determination of thallium content Rhodamine B photometric method.

This section YS/T Part 4 981.

This section drafted in accordance with GB/T 1.1-2009 given rules.

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

This section is responsible for drafting units. non-ferrous metals and electronic materials analysis and testing center.

This section participated in the drafting unit. China Nonferrous Metals Industry Institute of Standards Metrology and Quality, Emei Semiconductor Material Research Institute, Lanzhou Jinchuan New Material Technology Co., Ltd. Guang Xi Debang.

1 Scope

This section YS/T 981 specifies the method for determination of high-purity indium tin content.

This section applies to the determination of 99.9999% purity Indium tin content.
Determination range $5 \times 10^{-5}\%$ ~ $2 \times 10^{-4}\%$.

2 Method summary

Sample with sulfuric and nitric acid dissolution, heated to remove excess nitrate in 1.2mol/L sulfuric acid solution, tin (IV) and Phenylfluorone - bromo ten Cetyl trimethylamine colored complex produced, measured at the wavelength of 510nm absorbance. Antimony, iron ion interference, by the addition of tartaric acid, Ascorbic acid and potassium permanganate to eliminate.

Chromogenic solution containing 1g if indium, 2 μ g copper, cadmium, zinc, aluminum, magnesium, silicon, selenium, tellurium, calcium, lead, antimony, 1 μ g and 10 μ g iron arsenic, thallium is not it will interfere with the determination of tin.

3 Reagents

3.1

Part of the water is deionized water, resistivity greater than 18Mohm · cm.

3.2

sulfuric acid ($\rho = 1.84\text{g/mL}$), extra-virgin.

3.3

sulfuric acid (13), sulfuric acid (3.2) preparation, extra-virgin.

3.4

nitric acid (1.8mol/L), extra-virgin.

3.5

tartaric acid solution (50g/L).

3.6

potassium permanganate solution (10g/L).

3.7

ascorbic acid solution (20g/L). Every 100mL ascorbic acid solution was added 5 drops of sulfuric acid (3.3) and shake. Store in a brown bottle equipment (Which can stabilize two weeks).

3.8

Phenylfluorone solution (4g/L). Weigh 0.08g Phenylfuoron dissolved in 195mL ethanol and 5mL sulfuric acid (3.3) and shake. Store in a brown Color bottle aside.

3.9

brominated cetyl trimethylamine solution (30g/L). Weigh 6g bromo cetyl trimethylamine, add 200mL of ethanol at 50 °C ~ 60 °C A water bath heated to dissolve, shake. Store in a brown bottle aside.

3.10

Phenylfluorone - bromo cetyl trimethylamine mixed solution. 0.04% Phenylfuoron solution with 3% bromo cetyl trimethylamine solution Volume mixing like.

3.11

tin standard solution (A). Weigh 0.1000g metal tin (99.99%), placed in 150mL beaker, add 10mL sulfuric acid, cover the table Dish surface temperature dissolution, cold take decentralized and transferred to 30mL of water containing 1000mL volumetric flask, after cooling, with sulfuric acid (3.3) and wash the dish surface Beaker and dilute to the mark. This solution is a tin-containing 0.1g/L.

3.12

tin standard solution (B). lessons 5.00mL tin standard solution (A) (3.11), placed in 250mL volumetric flask, sulfuric acid (3.3) dilute Release to the mark. This solution is a tin-containing 2μg/mL.