

ICS 77.120.40
CCS H 13

YS

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

YS/T 1116.4-2016

**Methods for chemical analysis of tin anode slime--Part 4:
Determination of arsenic content--Iodine titration method**

锡阳极泥化学分析方法 第4部分：砷量的测定 碘滴定法

(English Translation)

Issued on: July 11, 2016

Implemented on: January 1, 2017

Issued by: Ministry of Industry and Information Technology

Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagent
3.13 Iodine standard titration solution

Foreword

YS/T 1116-2016 "tin anode mud chemical analysis method" is divided into seven parts.

- 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 section is part 4 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., China Nonferrous Guilin Institute of Mineral Resources Co., Ltd., Beijing Nonferrous Metals Research Institute.

This part participates in the drafting unit. Guangzhou Nonferrous Metals Research Institute, Guangxi Metallurgical Research Institute Co., Ltd.

This part of the main drafters. Xiong Chuanxin, Zhou Qian, Qiao Xiaofang, Lu Qiyu, Li Manzhi, Chen Yingchun, Chen Xiongfei, Li Hongping, Shi Ruxiang, Chen Diangeng, Kuai Lijun, Xie Hui, Zhang Ting, Chen Man, Tan Qihong, Li Yuhong.

Method for chemical analysis of tin anode Part 4. determination of arsenic content Iodine

titration

1 Scope

This part of YS/T 1116 specifies the determination of arsenic in tin anodic mud.

This part applies to the determination of arsenic in tin anodic mud. The measurement range is 0.10% ~ 8.00%.

2 Method summary

The sample was dissolved in nitric acid, potassium chlorate and sulfuric acid. In hydrochloric acid medium, arsenic is reduced to elemental arsenic with sodium hypophosphite, filtered, and coexisting Elemental separation. With excess iodine standard titration solution to dissolve elemental arsenic, sodium bicarbonate medium, adding an excess of sodium arsenite standard solution and the remaining More than iodine standard titration solution reaction to starch as an indicator, titration with iodine standard titration of excess sodium arsenite, according to the consumption of iodine the amount of arsenic was determined by the volume of the titration solution and the sodium arsenite standard solution.

3 Reagent

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

3.1

Potassium chlorate.

3.2

copper sulfate.

3.3

times sodium phosphite.

3.4

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

3.5

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

3.6

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

3.7

Sulfuric acid (1 1).

3.8

times sodium nitrite solution (20g/L). Weigh 10g sodium hypophosphite, dissolved in 500mL hydrochloric acid (13), and mix.

3.9

Ammonium chloride solution (50 g/L).

3.10

Sodium bicarbonate solution (30 g/L). To a solution of 100 mL of sodium bicarbonate solution (30 g/L) was added 5 mL of starch solution (3.14) Standard titration solution A (3.13.1.1) until the solution was light blue.

3.11

sodium arsenite standard solution A [$c(1/2Na_3AsO_3) = 0.01000mol/L$]. Weigh 0.4946g arsenic trioxide ($wAs_2O_3 \geq 99.99\%$), placed in a.200mL beaker, add 10mL sodium hydroxide solution (200g/L), slightly heat dissolved. Cooling, into 1000mL Volume bottle, diluted with water to about 250mL, add 2 drops to 3 drops of phenolphthalein ethanol solution (3g/L), with sulfuric acid (13) neutralized to red just disappear. Add 5g sodium bicarbonate, dissolved and then cooled to room temperature, diluted with water to the mark, mix.

3.12

sodium arsenite standard solution B [$c(1/2Na_3AsO_3) = 0.05000mol/L$]. Weigh 2.4728g arsenic trioxide ($wAs_2O_3 \geq 99.99\%$), placed in a.200mL beaker, add 20mL sodium hydroxide solution (200g/L), slightly heat dissolved. Cooling, into 1000mL Volume bottle, diluted with water to about 250mL, add 2 drops to 3 drops of phenolphthalein ethanol solution (3g/L), with sulfuric acid (13) neutralized to red just disappear. Add 5g sodium bicarbonate, dissolved and then cooled to room temperature, diluted with water to the mark, mix.