

ICS 77.120.60
CCS H 13

YS

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

YS/T 36.1-2011

Replacing YS/T 36.1-1992

**Methods for chemical analysis of high-purity Tin. Part 1:
Determination of arsenic content. Arsenic stain method**

高纯锡化学分析方法 第1部分：砷量的测定砷斑法

(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 Instrumentation

Foreword

YS/T 36 "high-purity chemical analysis of tin," including a total of three parts.

- Part 1. Determination of arsenic content Gutzeit method;
- Part 2. Determination of antimony content - Malachite green spectrophotometry;
- Part 3. magnesium, aluminum, calcium, iron, cobalt, nickel, copper, zinc, silver, indium, gold, lead, bismuth content - Inductively Coupled Plasma Mass Spectrometry.

This section YS/T Part 1 36.

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

The partial replacement of YS/T 36.1-1992 "high purity chemical analysis of tin DDTC-Ag spectrophotometric determination of arsenic content", and YS/T 36.1-1992 compared to the main changes are as follows.

- Measured by the spectrophotometric method to Gutzeit method;
- Measured by the scope of ~ 0.00030% 0.00005% 0.00001% amend 0.00010%;
- 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) and focal points.

This section is responsible for drafting unit. Zhuzhou Smelter Group Co., Ltd.

Participated in the drafting of this section. Guangxi China Tin Group Co., Ltd., Beijing General Research Institute of Mining and Metallurgy.

Drafters of this section. Jin Zhihong, Zong Pu, Zhu Xiaofeng, Huang Mei, Lin Zhao letter, Huang Xu, Jiang Tao demand.

This part of the standard replaces the previous editions are.

--- YS/T 36.1-1992.

Methods for chemical analysis of high purity tin Part 1. Determination of arsenic content
Gutzeit method Warning --- personnel should use this standard regular laboratory work experience. This standard does not point out all possible security asked question. Users have the responsibility to take appropriate safety and health practices and to ensure compliance with the conditions relevant national regulations.

1 Scope

YS/T of the provisions of section 36 of the method for the determination of tin in high purity arsenic content.

This section applies to the determination of tin in high purity arsenic content. Measuring range. 0.00001% 0.00010%.

2 Principle of the method

Sample with nitric acid and hydrochloric acid dissolved in hydrochloric acid solution with zinc tablets to restore arsenic into arsine, generated arsine and anti-mercuric bromide paper should generate a yellow-brown spots arsenic mercury, arsenic and depth of color is proportional to the amount of spots. Whereby the standard gradation comparing results of arsenic content.

3 Reagents

Unless otherwise indicated in the analysis using recognized as excellent pure reagents and distilled or deionized water or equivalent purity. Laboratory are fully cleaned thoroughly with water after soaking in a vessel with a nitric acid solution (119).

3.1

arsenic-free zinc particles ($w_{As} \leq 0.000001\%$).

3.2

hydrochloric acid ($\rho = 1.19\text{g/mL}$). UP level or equivalent purity.

3.3

nitric acid ($\rho = 1.42\text{g/mL}$). UP level or equivalent purity.

3.4

sulfuric acid ($\rho = 1.84\text{g/mL}$). UP level or equivalent purity.

3.5

hydrochloride (11).

3.6

sulfate (11).

3.7

potassium iodide solution (150g/L). Weigh 15g of potassium iodide was dissolved in 100mL of water, and mix. Store in a brown bottle.

3.8

tin dichloride solution (100g/L). Weigh 10g tin dichloride was dissolved in 50mL hot hydrochloric acid (3.2) was added 50mL of water, and mix.

Using now.

3.9

Lead acetate cotton. the cotton wool soaked in 4% lead acetate solution (100mL each lead acetate solution containing acetic acid 2mL), 10min after taking Out, squeeze excess solution, low-temperature drying.

3.10

mercuric bromide paper. quantitative filter paper soaked in 5% ethanol solution of mercuric bromide removed after 40min, to air dry.

3.11

arsenic standard stock solution. Weigh accurately 0.1320g reference reagent arsenic trioxide (previously dried in a sulfuric acid desiccator) to 300mL beaker, was added 20mL of sodium hydroxide solution (100g/L), completely dissolved by heating with hydrochloric acid (3.5) and to slightly cold However, moved into 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL arsenic 100 μ g.

3.12

Arsenic standard solution. Pipette arsenic standard stock solution (3.11) 10.00mL in 1000mL volumetric flask, dilute to the mark, mix uniform. This solution 1mL arsenic 1 μ g.

4 Instrumentation

Smoked arsenic bottle (shown schematically in Figure 1).