

ICS 77.120.01
CCS H 14

YS

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

YS/T 745.9-2012

**Methods for chemical analysis of copper anode slime. Part 9:
Determination of antimony content. Flame atomic absorption
spectrophotometry method**

铜阳极泥化学分析方法 第9部分：锑量的测定 火焰原子吸收光谱法
(English Translation)

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Industry and Information Technology

Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instrument

Foreword

YS/T 745 "Methods for chemical analysis of copper anode mud" is divided into nine sections.

- Part 1. Determination of copper content iodometry;
- Part 2. gold and silver content determination fire assay gravimetric method;
- Part 3. the amount of platinum and palladium contents - fire assay enrichment - Inductively coupled plasma atomic emission spectrometry;
- Part 4. Determination of the amount of selenium iodometry;
- Part 5. Determination of tellurium content dichromate method;
- Part 6. Determination of lead content Na₂EDTA titration;
- Part 7. Determination of bismuth content - Flame atomic absorption spectrometric method and Na₂EDTA titration;
- Part 8. Determination of arsenic content by hydride generation - atomic fluorescence spectrometry;
- Part 9. Determination of antimony content - Flame atomic absorption spectrometry.

This section YS/T Section 9745 of.

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 unit. Daye Nonferrous Metals Corporation.

This section is drafted. Guangzhou Nonferrous Metal Research Institute.

Participated in the drafting of this section. Jinchuan Group Ltd., Tongling Nonferrous Metals

Group Holdings Co., Jiangxi Copper Company Limited Division Shuikoushan Hunan
Nonferrous Metals Group Co., Ltd.

1 Scope

YS/T in this part 745 specifies the method for determination of copper anode mud antimony content.

This section applies to the determination of copper anode mud antimony content.
Measuring range. 0.50% to 10.00%.

2 Method summary

The sample is dissolved in nitric acid, ammonium hydrogen fluoride was added to dissolve silicate, adding sulfuric acid smoke. Tartaric acid solution as complexing agent, in hydrochloric acid medium Using air - acetylene flame atomic absorption spectrometer wavelength 217.6nm measured absorbance of antimony, calculated as working curve method antimony content.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

ammonium hydrogen fluoride.

3.2

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

3.3

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

3.4

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

3.5

tartaric acid solution (200g/L).

3.6

Antimony standard stock solution. Weigh 0.5000g metal antimony ($\geq 99.95\%$) placed in 250mL beaker, add 20mL sulfuric acid (3.4), cover the dish table, a hot plate at low heat until completely dissolved, remove the cooling. Sulfuric acid (13) The solution was transferred to 500mL capacity Flask, and dilute to the mark with sulfuric acid (13), and mix. This solution 1mL 1mg containing antimony.

3.7

Antimony standard solution. Pipette 25.00mL antimony standard stock solution (3.6) in 250mL volumetric flask, was added 50mL of hydrochloric acid (3.3), Dilute with water to volume, and mix. This solution 1mL containing 100 μ g antimony.

4 Instrument

Atomic absorption spectrometer, with antimony hollow cathode lamp.

Under optimum working conditions for those who can reach the following indicators can be used.

--- Sensitivity. consistent with measurements in a solution matrix solution, characterized in measuring the concentration of antimony standard solution should be less than 0.2 μ g/mL.

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed the average absorbance of 1.0%;

The lowest concentration of standard solution used (instead of "zero" concentration of the solution) absorbance measured 10 times, and the standard deviation should not exceed the maximum concentration 0.5% of the mean absorbance of standard solution.

--- Linear curve. the curve according to concentration, divided into five sections, the difference between the absorbance of the absorbance difference between the highest and the lowest segment Ratio of not less than 0.7.