

ICS 77.120.01
CCS H 13

YS

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

YS/T 775.7-2011

**Methods for chemical analysis of lead anode slime. Part 7:
Determination of arsenic, copper and selenium content.
Inductively coupled plasma atomic emission spectrometry**

铅阳极泥化学分析方法 第7部分：砷、铜、硒量的测定电感耦合等离子体原子发射光谱法

(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 Method summary
3 Reagent
4 Instruments

Foreword

YS/T 775-2011 "lead anode mud chemical analysis method" is divided into seven parts.

- Part 1. Determination of lead content - Na₂EDTA titration;

Part 2. Determination of Bismuth Flame Atomic Absorption Spectrometry and Na₂EDTA Titration;

- Part 3. Determination of arsenic content - Potassium bromate titration;

- Part 4. Determination of antimony content - Flame atomic absorption spectrometry and cerium sulphate titration;

- Part 5. Determination of gold and silver;

- Part 6. Determination of copper content - Iodometric method;

Part 7. Determination of arsenic, copper and selenium - Inductively coupled plasma atomic emission spectrometric method.

This section is part 7.

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

This part is the national nonferrous Metals Standardization Technical Committee (SAC/TC243).

This part is responsible for drafting units. Shaanxi Dongling Smelting Co., Ltd.

This part of the drafting unit. Beijing Nonferrous Metals Research Institute.

This part participates in the drafting unit. Zhuzhou Smelting Group Co., Ltd., Shaanxi Dongling Smelting Co., Ltd., Tongling Nonferrous Metals Group Co., Ltd., Beijing Mining and Metallurgy Research Institute.

1 Scope

This part of YS/T 775 specifies the determination of arsenic, copper and selenium content in lead anode mud.

This part is applicable to the determination of arsenic, copper and selenium in lead anode mud. Determination range. arsenic. 0.10% ~ 2.00%, copper. 1.00% ~ 5.00%, selenium. 0.10% to 4.00%.

2 Method summary

The sample was dissolved in nitric acid in the presence of tartaric acid. The inductively coupled plasma emission spectra were used at the recommended wavelength and instrument operating conditions Direct Determination of Arsenic, Copper and Selenium by.

3 Reagent

Unless otherwise stated, only the reagents identified as analytical reagents and distilled or deionized water or comparable purity were used in the analysis.

3.1

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

3.2

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

3.3

Hydrochloric acid (1 1).

3.4

nitric acid (1 1).

3.5

Hydrochloric acid (5 95).

3.6

tartaric acid solution (200g/L).

3.7

copper standard solution. Weigh 1.0000g metal copper ($w_{\text{Cu}} \geq 99.99\%$), placed in a 300mL beaker, add 20mL nitric acid (3.2) Dissolve at low temperature, remove the nitrogen oxide by heating, remove and cool, move into a 1000mL volumetric flask, add 50mL nitric acid (3.4), dilute with water to the scale, mix. 1 mL of this solution contains 1 mg of copper.

3.8

arsenic standard solution. Weigh 1.3203g arsenic trioxide ($w_{As_2O_3} \geq 99.99\%$, pre-drying at $100\text{ }^{\circ}\text{C} \sim 105\text{ }^{\circ}\text{C}$ 1h, placed in Dried in a desiccator, cooled to room temperature), placed in a 300 mL beaker, 20 mL of sodium hydroxide solution (100 g/L) was added, Solution, diluted with water to 100mL, add 2 drops of phenolphthalein, nitric acid (3.4) neutral and neutral, and excessive 40mL, into the 1000mL volumetric flask , Diluted with water to the mark, mix well. This solution 1mL containing 1mg arsenic.

3.9

Selenium standard solution. Weigh 1.0000 g selenium ($w_{Se} \geq 99.99\%$) In a 100 mL beaker, add 30 mL of nitric acid (3.4) in a water bath Dissolved in the heating, decomposition completely into the 1000mL volumetric flask, add 50mL nitric acid (3.4), diluted with water to the mark, mix. this Solution 1mL containing 1mg selenium.

3.10

argon ($w_{Ar} \geq 99.995\%$).

4 Instruments

4.1

Inductively Coupled Plasma Atomic Emission Spectrometer.

4.2

Spectral lines. The recommended analytical lines are listed in Table 1.