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

YS/T 745.4-2010

**Methods for chemical analysis of copper anode slime. Part 4:
Determination of selenium content. Iodine titrimetric method**

铜阳极泥化学分析方法 第4部分：硒量的测定 碘量法

(English Translation)

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Table of Contents

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

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 is Part 4.

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

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. Jiangxi Copper Company Limited.

Participated in the drafting of this section. Daye Nonferrous Metals Co., Ltd., Guangzhou Nonferrous Metal Research Institute, Yunnan Copper Co., Ltd., Jinchuan Group Limited.

1 Scope

YS/T 745 This section specifies the determination of copper anode slime content of selenium.

This section applies to the determination of copper anode slime content of selenium.
Measuring range. 1.00% to 15.00%.

2 Method summary

Sample dissolved in nitric acid, sulfuric acid after smoke in hydrochloric acid medium 6mol/L, the hydroxylamine with hydrochloric acid reduction to elemental selenium and other impurities Separating the precipitate is dissolved in acid with starch as indicator, potassium iodide, sodium thiosulfate standard titration solution titration to the disappearance of the blue end.

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

hydrochloride (rho1.19g/mL).

3.2

hydrochloride (11).

3.3

hydrochloride (120).

Nitrate 3.4 (rho1.42g/mL).

3.5

sulfate (rho1.84g/mL).

3.6

tartaric acid.

3.7

hydroxylamine hydrochloride.

3.8

urea.

3.9

starch solution (5g/L). Weigh 0.25g starch in 100mL beaker, add a small amount of water wet, then add 20mL boiling water, cook to clear, after cooling diluted to 50mL, shake.

3.10

potassium iodide solution (100g/L). said 10g potassium iodide, dissolved and diluted with water to 100mL, and mix stored in a brown drip Bottle.

3.11

sodium thiosulfate standard titration solution [$c(\text{Na}_2\text{S}_2\text{O}_3) \sim 0.1\text{mol/L}$].

3.11.1

preparation. Weigh 26g sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) (or 16g anhydrous sodium thiosulfate), plus 0.2g of anhydrous carbonate Sodium, dissolved in 1000mL of water, slowly boiled 10min, cooled. After filtration for two weeks.

3.11.2

Calibration. Weigh 0.18g previously dried to constant weight at $120^\circ\text{C} \pm 2^\circ\text{C}$ baseline potassium dichromate, placed in 250mL conical beaker, The water dissolved in 25mL, 20mL plus 2g of potassium iodide and sulfuric acid solution (14), shaken, placed in the dark for 10min. Add 150mL water ($15^\circ\text{C} \sim 20^\circ\text{C}$), with a good standard titration solution of sodium thiosulfate titration, near the end add 2mL starch solution preparation (3.9), continue to drop to the solution from blue to light green. While doing the blank test.

According to equation (1) calculate the standard volumetric sodium thiosulfate solution actual concentration.

$$c = m \times 1000 (V_1 - V_2) \cdot M \quad (1)$$