

ICS 77.120.01; 77.150.01
CCS H 14

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

YS/T 745.2-2016

Replacing YS/T 745.2-2010

**Methods for chemical analysis of copper anode slime--Part 2:
Determination of gold and silver contents--Fire assay
gravimetric method**

铜阳极泥化学分析方法 第2部分：金量和银量的测定 火试金重量法
(English Translation)

Issued on: July 11, 2016

Implemented on: January 1, 2017

Issued by: Ministry of Industry and Information Technology

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Foreword

YS/T 745 "copper anode mud chemical analysis method" is divided into nine parts.

- Part 1. Determination of copper content - Iodometric method;
 - Part 2. Determination of gold and silver;
 - Part 3. Determination of the amount of platinum and palladium - Fire - test enrichment - Inductively coupled plasma - atomic emission spectrometry;
 - Part 4. Determination of selenium content - Iodometric method;
 - Part 5. Determination of tellurium content - Potassium dichromate titration;
 - Part 6. Determination of lead content - Na₂EDTA titration;
 - Part 7. Determination of bismuth - Flame atomic absorption spectrometry and Na₂EDTA titration;
 - Part 8. Determination of arsenic hydride generation - Atomic fluorescence spectrometry;
 - Part 9. Determination of antimony content - Flame atomic absorption spectrometric method.
- This part is part 2 of YS/T 745.

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

Part I Replacement YS/T 745.2-2010 "Methods for chemical analysis of copper anodic mud
Part 2. Determination of gold and silver quantities Fire test Weight method ", compared with YS/T 745.2-2010, the main changes are as follows.

--- increase the co-grain and gold particles in the determination of the amount of impurities;

The amount of gold and silver measured by the direct weight method to reduce weight method;

--- Added unsuitability statement.

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.

This part participates in the drafting unit. Daye Nonferrous Design Research Institute Co., Ltd., Zijin Mining & Metallurgy Testing Technology Co., Ltd., Shandong Hengbang Smelting Co., Ltd., Zhongzhan Nonferrous Metals Group Co., Ltd., Zhejiang Furu Group Co., Ltd., Tongling Nonferrous Metals Group Holdings Co., Ltd.

Ltd., Jiangxi Copper Co., Ltd., Jinchuan Group Co., Ltd., China Aluminum Luoyang Copper Co., Ltd., Guangzhou Nonferrous Metals Research Institute, Kun Ming Metallurgical Research Institute, China Nonferrous Guilin Mineral Geology Research Institute Co., Ltd., Hunan Nonferrous Metals Research Institute, Chenzhou Jinguui Silver Industry Co., Ltd.

Limited company.

1 Scope

This part of YS/T 745 specifies the method for the determination of gold and silver in copper anodic mud.

This part is applicable to the determination of gold and silver in copper anode. Measuring range. gold 0.100kg/t ~ 20.000kg/t, silver 20.00kg/t ~ 300.00kg/t.

This part will not apply if the sample contains interfering elements (such as rhodium, iridium, osmium, ruthenium, etc.) that affect the accuracy of this method.

2 Method summary

The sample is melted with the right amount of flux to lead gold and silver to form a lead buckle. Other impurities and flux to produce fusible slag, the use of lead and with Slag density is different, so that the lead buckle and slag separation, the lead buckle ash blowing, get gold and silver particles, weighing with the determination of the quality of particles. Use gold insoluble in the nature of nitric acid, so that gold and silver and co-particles in the residual trace impurities, weighing the quality of gold. Inductively coupled plasma emission spectroscopy Determination of the quality of impurities in the gold and gold particles, the amount of particles minus the gold and granules in the impurity quality is the amount of silver, gold particles minus the gold Impurity quality is gold quality.

3 Reagent

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

3.1

anhydrous sodium carbonate, industrial pure, powder.

3.2

lead oxide, powder.

3.3

Silica, industrial pure, powdery.

3.4

borax, industrial pure, powder.

3.5

sodium chloride, industrial pure, powder.

3.6

Starch, powdery.

3.7

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

3.8

Hydrochloric acid (1:1).

3.9

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

3.10

nitric acid (1:1), without chloride ions.

3.11

nitric acid (1:7), without chloride ions.

312 acetic acid (1:3).

3.13

mixed acid. 3 parts hydrochloric acid plus 1 part nitric acid, mixed.

3.14

Gold Standard Storage Solution. Weigh 0.1000 g of gold ($w_{\text{Au}} \geq 99.99\%$) in a 100 mL beaker, add 2 mL of nitric acid (3.9) and 6 mL hydrochloric acid (3.7), cover the surface of the dish, heated to completely dissolved, steamed to near dry, remove the slightly cold, add 20 mL hydrochloric acid (3.8), with a small amount of water Rinse the cup wall and the surface dish, boil to the depleted nitrogen oxide, remove the cooling. The solution was transferred to a 100 mL volumetric flask and diluted with water Degree, mix. This solution

1mL containing 1mg gold.