

ICS 77.120.60
CCS H 13

YS

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

YS/T 1046.3-2015

**Methods for chemical analysis of copper slag concentrates -
Part 3: Determination of sulfur content - Combustion-titration
method**

铜渣精矿化学分析方法 第3部分：硫量的测定燃烧滴定法

(English Translation)

Issued on: April 30, 2015

Implemented on: October 1, 2015

Issued by: Ministry of Industry and Information Technology

Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents

Foreword

YS/T 1046-2015 "copper slag concentrates chemical analysis method" is divided into seven sections.

- Part 1. Determination of copper content iodometry;
- Part 2. Determination of gold and silver atomic absorption spectroscopy and fire assay gravimetric method;
- Part 3. Determination of sulfur content of combustion titration method;
- Part 4. Determination of iron content dichromate method;
- Part 5. Determination of the amount of silica silicon potassium fluoride titration;
- Part 6. aluminum oxide content - Inductively coupled plasma atomic emission spectrometry;
- Part 7. arsenic, antimony, bismuth, lead, zinc, magnesium oxide content - Inductively coupled plasma atomic emission spectrometry.

This is Part 3.

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 Group Holdings Limited, Zhongtiaoshan Nonferrous Metals Group Co., Ltd.

This section is drafted. Tongling Nonferrous Metals Group Holdings Limited.

Participated in the drafting of this section. Beijing Mining Research Institute, Zhongtiaoshan Nonferrous Metals Group Co., Ltd., Jiangxi Copper Company Limited, Yanggu Yoshimitsu Copper Limited.

1 Scope

This section YS/T 1046 specifies the method for determination of copper slag concentrate sulfur content.

This section applies to the determination of copper slag concentrate sulfur content.
Determination of the range of 3.00% - 18.00%.

2 Method summary

Combustion of the sample at 1250 °C ~ 1300 °C air stream is converted to sulfur dioxide, the absorption and oxidation with hydrogen peroxide to sulfuric acid, in order to Methyl red - methylene blue solution as indicator, titrated with standard sodium hydroxide solution was titrated to the end point.

3 Reagents

Unless otherwise indicated, the reagents used in the analysis were of analytical grade, which is distilled and deionized water or equivalent purity water.

3.1

copper ($w_{\text{Cu}} \geq 99.95\%$).

3.2

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

3.3

nitric acid (11).

3.4

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

3.5

sulfate (11).

3.6

ethanol.

3.7

Hydrogen peroxide (30%).

3.8

Absorption of hydrogen peroxide solution. pipette 50mL of hydrogen peroxide (3.7), diluted with water to 1L, 6mL add methyl red - Methylene Blue mixed indicator Agent (3.11) and mix.

3.9

lead sulfate. Weigh 10g metallic lead ($w_{Pb} \geq 99.99\%$) was dissolved in 100mL nitric acid (3.3), add 100mL of water was added slowly 100mL sulfuric acid (3.5), with stirring. To stand overnight, the precipitated medium speed filter paper and the precipitate move roasting dish at 800 °C Burning 1h.

3.10

sodium hydroxide standard titration solution [$c(\text{NaOH}) \sim 0.05\text{mol/L}$].

3.10.1

Configuration. Sodium hydroxide formulated into a saturated solution, until the solution is clear and placed in a plastic bottle, draw 25mL above serum, with no Dilution water containing carbon dioxide to 10L, and mix.

3.10.2

Calibration. Weigh 0.30g (accurate to 0.0001g) lead sulfate (3.9), placed evenly porcelain combustion boat (4.6), the following analytical press Method step (6.3) operations.

The actual concentration of sodium hydroxide standard titration solution according to equation (1).

$c(\text{NaOH}) =$

$m \times 1000$

$V_1 \times M_1$

Where.

C --- the actual concentration of sodium hydroxide standard titration solution, expressed in moles per liter (mol/L);

When V_1 --- calibration, the volume of sodium hydroxide standard titration solution consumption in milliliters (mL);