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

YS/T 1046.4-2015

**Methods for chemical analysis of copper slag concentrates -
Part 4: Determination of iron content - Potassium dichromate
titration method**

铜渣精矿化学分析方法 第4部分：铁量的测定 重铬酸钾滴定法

(English Translation)

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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 4.

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.

It participated in the drafting of this section. Daye Nonferrous Metals Group Holdings Co., Ltd., Beijing General Research Institute of Mining and Metallurgy, Zhongtiaoshan Nonferrous Metals Group Ltd., Yanggu Yoshimitsu Copper Co., Ltd., Hunan Nonferrous Metal Research Institute, Beijing Nonferrous Metal Research Institute.

1 Scope

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

This section applies to the determination of copper slag concentrate iron content.
Determination of the range of 23.00% ~ 40.00%.

2 Method summary

Sample by the use of hydrochloric acid, nitric acid, sulfuric acid dissolved ammonia - ammonium chloride precipitation of iron and copper substrate separated in hydrochloric acid medium, with stannous chloride reduction Most iron, iron from the remaining small amount of sodium tungstate as an indicator of titanium trichloride reduction diphenylamine sulfonate as indicator with standard potassium dichromate Titration solution was titrated to the end point.

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 chloride.

3.2

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

3.3

hydrochloride (11).

3.4

hydrochloric acid (595).

3.5

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

3.6

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

3.7

phosphoric acid ($\rho = 1.69\text{g/mL}$).

3.8

sulfur nitrate mixed acid (73). A 30mL sulfuric acid (3.6) slowly injected 70mL of nitric acid (3.5) and continue stirring to mix.

3.9

parathion mixed acid. A 150mL sulfuric acid (3.6) slowly into 600mL of water, mix and keep stirring, cooled to room temperature, 150mL Phosphoric acid (3.7) and mix.

3.10

aqueous ammonia ($\rho = 0.88\text{g/mL}$).

3.11

ammonia bath. 10mL ammonia diluted with water (3.10) to 100mL.

3.12

hydrogen peroxide solution (30%).

3.13

saturated solution of ammonium hydrogen fluoride.

3.14

stannous chloride solution (50g/L). Weigh 5g of stannous chloride dissolved in 20mL hot hydrochloric acid (3.2), diluted with water to 100mL, mix uniform. Using now.

3.15

sodium tungstate solution (250g/L). Weigh 25g of sodium tungstate dissolved in an appropriate amount of water, was added 5mL phosphate (3.7), diluted with water to 100mL.

3.16

titanium trichloride solution (110). Pipette 3mL titanium trichloride solution [15% to 20% (volume fraction)], was diluted with hydrochloric acid (3.3) to 30mL. The time is now equipped with.

3.17

iron standard solution (0.025mol/L). Weigh 1.3950g metallic iron ($w_{\text{Fe}} \geq 99.99\%$) in 500mL conical beaker in the neck