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

**YS/T 1046.1-2015**

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**Methods for chemical analysis of copper slag concentrates.  
Part 1: Determination of copper content. Iodine titration method**

铜渣精矿化学分析方法 第1部分：铜量的测定碘量法

**(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 1.

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.

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## 1 Scope

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

This section applies to the determination of copper concentrate copper slag content was measured in the range of 13.00% ~ 40.00%.

## 2 Method summary

Samples with hydrochloric acid, nitric acid, perchloric acid, sulfuric acid and dissolved, a solution of ammonium acetate solution adjusted with a pH of 3.0 to 4.0, ammonium hydrogen fluoride Masking iron, potassium iodide and cupric role precipitated iodine with starch as indicator, titration solution of sodium thiosulfate standard titration.

## 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

Copper ( $w_{\text{Cu}} \geq 99.999\%$ ). metal copper into the micro-boiling acetic acid (3.14), the micro-boiling 1min, after removing water and ethanol (3.4) were rinsed twice more, bake 4min, cooling, grinding jar is placed in standby  $105\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$  oven.

### 3.2

potassium iodide.

### 3.3

ammonium hydrogen fluoride.

### 3.4

ethanol.

### 3.5

chloroform.

### 3.6

bromine.

### 3.7

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

**3.8**

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

**3.9**

nitric acid (11).

**3.10**

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

Sulfuric acid 3.11 (11).

**3.12**

perchloric acid ( $\rho = 1.67\text{g/mL}$ ).

**3.13**

Glacial acetic acid ( $\rho = 1.05\text{g/mL}$ ).

Acetic acid 3.14 (13).

**3.15**

iodine solution ( $0.04\text{mol/L}$ ).

**3.16**

sodium carbonate solution ( $4\text{g/L}$ ).

**3.17**

saturated solution of ammonium fluoride (stored in polyethylene bottles).

**3.18**

saturated ammonium acetate solution.

**3.19**

potassium thiocyanate solution ( $100\text{g/L}$ ). Weigh 10g of potassium thiocyanate in the 400mL beaker, dissolved in water and diluted to 100mL. plus Into 2g of potassium iodide (3.2) dissolved, 2mL starch solution (3.21), while shaking side drops of iodine solution (3.15) to just blue, then thiosulfate Sulfate standard titration solution (3.20) titration until the blue just disappears.