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

YS/T 990.1-2014

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

冰铜化学分析方法 第1部分：铜量的测定碘量法

(English Translation)

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Foreword

YS/T 990 "Methods for chemical analysis of copper matte" is divided into 18 parts.

- Part 1. Determination of copper content iodometry;
- Part 2. Determination of gold and silver atomic absorption spectroscopy and fire assay;
- Part 3. Determination of sulfur content - Gravimetric method and combustion titration method;
- Part 4. Determination of the amount of bismuth atomic absorption spectrometry;
- Part 5. Determination of the amount of fluorine ion selective electrode method;
- Part 6. Determination of lead content - Atomic absorption spectrometry and Na₂EDTA titration;
- Part 7. Determination of cadmium content - Atomic absorption spectrometry;
- Part 8. Determination of arsenic content by hydride generation - atomic fluorescence spectrometry, diethyl dithiocarbamate spectrophotometry silver and potassium bromate titration;
- Part 9. Determination of iron content dichromate method;
- Part 10. Determination of silicon dioxide content molybdenum blue spectrophotometric method and silicon potassium fluoride titration;
- Part 11. Determination of the amount of nickel atom absorption spectrometry;
- Part 12. Determination of the amount of chromium oxide of aluminum Azure S Spectrophotometry;
- Part 13. Determination of magnesium oxide content - Atomic absorption spectrometry;
- Part 14. Determination of the amount of zinc atomic absorption spectrometry and Na₂EDTA titration;
- Part 15. Determination of antimony content - Atomic absorption spectrometry;

--- Part 16. Determination of mercury content - Cold atomic absorption spectrometry;

--- Part 17. Determination of the amount of cobalt atomic absorption spectrometry;

--- Part 18. lead, zinc, nickel, arsenic, bismuth, antimony, calcium, magnesium, cadmium, cobalt content - Inductively coupled plasma atomic emission spectrometry.

This section YS/T Part 1 990.

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 990 specifies the method for determination of copper content of the matte.

This section applies to ice - Determination of copper in copper content. Determination of the range of 20.00% ~ 77.00%.

2 Method summary

Samples with hydrochloric acid, nitric acid, sulfuric mixed decomposition, the solution was adjusted with aqueous ammonia solution pH of 3.0 to 4.0, with the iron mask ammonium hydrogen fluoride was added Potassium iodide and cupric role precipitated iodine with starch as indicator, titrated with sodium thiosulfate standard solution 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

potassium iodide.

3.2

urea.

3.3

ammonium hydrogen fluoride.

3.4

copper ($w_{\text{Cu}} \geq 99.999\%$). The copper into simmering glacial acetic acid (3.13), boil 1min, after removing water and ethanol (3.5) Were rinsed twice more 4min bake at 100 °C oven, cooled, placed in the grinding jar aside.

3.5

ethanol.

3.6

chloroform.

3.7

bromine.

3.8

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

3.9

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

3.10

nitric acid (11).

3.11

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

Sulfuric acid 3.12 (11).

3.13

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

Acetic acid 3.14 (13).

3.15

sulfur nitrate mixed acid. A 300mL sulfuric acid (3.11) nitric acid was slowly injected 700mL (3.9), and with stirring, and mix.

3.16

aqueous ammonia ($\rho = 0.90\text{g/mL}$).

3.17

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

3.18

iodine solution (0.04mol/L).

3.19

sodium carbonate solution (4g/L).

3.20

ferric chloride solution (100g/L).

3.21

potassium thiocyanate solution (100g/L). Weigh 10g of potassium thiocyanate in the 400mL beaker, add 100mL water dissolved (PH