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

YS/T 990.8-2014

Methods for chemical analysis of copper matte. Part 8: Determination of arsenic content. Hydride generation-atomic fluorescence spectrometry, silver diethyldithiocarbamate spectrophotometry and potassium bromate titrimetry

冰铜化学分析方法 第8部分：砷量的测定氢化物发生—原子荧光光谱法、二乙基二硫代氨基甲酸银分光光度法和溴酸钾滴定法

(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 Section 8990 of.

This part of arsenic in Method 2 overlapping portion arbitration.

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 arsenic content in the matte.

This section applies to the determination of copper in ice arsenic content. 1 measured in the range of 0.010% to 0.20%; Tier 2 measurement range 0.010% to 0.20%; Tier 3 measurement ranges from 0.20% to 5.00%.

2.1 Method summary

After the sample is dissolved by acid, ascorbic acid pre-reduction with thiourea impurity element in the hydride generator, arsenic test solution is Potassium borohydride reduction of hydride with argon gas into the quartz furnace atomizer, the fluorescence intensity measured on the atomic fluorescence spectrometer.

2.2 Reagents

Unless otherwise specified in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

2.2.1

thiourea. pure class distinctions.

2.2.2

Ascorbic acid. pure class distinctions.

2.2.3

potassium borohydride. pure class distinctions.

2.2.4

Potassium hydroxide. pure class distinctions.

2.2.5

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

2.2.6

hydrochloric acid (19).

2.2.7

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

2.2.8

nitric acid (19).

2.2.9

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

2.2.10

sulfuric acid (11).

2.2.11

sodium hydroxide solution (10%).

2.2.12

thiourea - ascorbic acid solution (100g/L). Weigh 5g thiourea (2.2.1) and 5g ascorbic acid (2.2.2), and dissolved in water Diluted to 100mL, and mix. The time is now equipped with.

2.2.13

potassium borohydride (10g/L) and potassium hydroxide (5g/L) mixed solution. Weigh accurately 1g potassium borohydride (2.2.3) and 0.5g hydroxide Potassium (2.2.4) dissolved in 100mL of water, and mix.

2.2.14

arsenic standard stock solution. Weigh 0.1320g advance at 100 °C ~ 105 °C drying 1h baseline arsenic trioxide, placed 100mL beaker, add 10mL of sodium hydroxide solution (2.2.11), heat gently to dissolve after adding 40mL water and 1 drop of phenolphthalein ethanol solution (2.2.17), with sulfuric acid (2.2.10) and to a phenolphthalein red faded and excess 2mL, cooled to room temperature and transferred to 1000mL volumetric flask with water Dilute to volume, and mix. This solution 1mL containing 100μg arsenic.

2.2.15

arsenic standard solution. Pipette 10.00mL arsenic standard stock solution (2.2.14) in 100mL volumetric flask, dilute to the mark, mix