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

YS/T 1115.14-2016

**Methods for chemical analysis of copper ores and tailings-Part 14:
Determination of arsenic content-Hydride generation-atomic
fluorescence spectrometric and potassium bromate titrimetric method**

铜原矿和尾矿化学分析方法 第14部分：砷量的测定氢化物发生原子荧光光谱法和
溴酸钾滴定法

(English Translation)

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Foreword

YS/T 1115-2016 "Copper ore and tailings chemical analysis method" is divided into the following 14 sections.

- Part 1. Determination of copper content by flame atomic absorption spectrometry;
- Part 2. Determination of lead content by flame atomic absorption spectrometry;
- Part 3. Determination of zinc content by flame atomic absorption spectrometry;
- Part 4. Determination of nickel content by flame atomic absorption spectrometry;
- Part 5. Determination of cobalt content by flame atomic absorption spectrometry;
- Part 6. Determination of cadmium content by flame atomic absorption spectrometry;
- Part 7. Determination of manganese content by flame atomic absorption spectrometry;
- Part 8. Determination of magnesium content by flame atomic absorption spectrometry;
- Part 9. Determination of sulfur content by high-frequency infrared absorption and combustion - potassium iodate titration;
- Part 10. Determination of phosphorus content molybdenum blue spectrophotometry;
- Part 11. Determination of molybdenum content thiocyanate spectrophotometry;
- Part 12. Determination of copper, lead, zinc, nickel, cobalt, cadmium, magnesium and manganese content; Inductively coupled plasma atomic emission spectrometry;
- Part 13. Determination of fluorine content ion selective electrode method and ion chromatography;
- Part 14. Determination of arsenic hydride generation atomic fluorescence spectrometry and potassium bromate titration.

This section is YS/T 1115-2016 part 14.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This part of the National Non-ferrous Metal Standardization Technical Committee (SAC/TC243) centralized.

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1 Scope

YS/T 1115 provisions of this part of the copper ore and tailings Determination of arsenic content.

This section applies to the determination of arsenic in copper ore and tailings. Hydride generation atomic fluorescence spectrometry range of 0.0020% ~ 0.20%; potassium bromate titration range of more than 0.20% to 1.00%.

2.1 Method summary

The sample was decomposed by nitric acid and potassium chlorate, prereduced with ascorbic acid, the impurity elements were masked with thiourea, the arsenic was reduced with potassium borohydride to Hydride, with argon gas introduced into the quartz furnace at atomic fluorescence spectrometer to measure the fluorescence intensity, working curve method to calculate the amount of arsenic.

2.2 Reagents

Unless otherwise specified, only reagents identified as analytical grade are used in the analysis. The water used is either distilled or deionized water or equivalent Water.

2.2.1

Thiourea.

2.2.2

Ascorbic acid.

2.2.3

potassium borohydride.

2.2.4

sodium hydroxide, excellent grade pure.

2.2.5

potassium chlorate, excellent pure grade.

2.2.6

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

2.2.7

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

2.2.8

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

2.2.9

Hydrochloric acid (1 1).

2.2.10

Sulfuric acid (1 1).

2.2.11

Hydrochloric acid (1 9).

2.2.12

sodium hydroxide solution (200g/L).

2.2.13

thiourea-ascorbic acid mixed solution Weigh 5g thiourea (2.2.1) and 5g ascorbic acid (2.2.2), dissolved in water, diluted to 100mL, mix well. When used with the time.

2.2.14

potassium borohydride and sodium hydroxide mixed solution Weigh 2.5g of potassium borohydride (2.2.3) and 0.4g of sodium hydroxide (2.2.4) was dissolved in 100mL water, mix well. When used with the time.

2.2.15

arsenic standard storage solution Weigh 0.1320g arsenic trioxide (reference reagent, pre-baked at $100\text{ }^{\circ}\text{C} \sim 105\text{ }^{\circ}\text{C}$ 1h, placed in dry Cooled to room temperature in a desiccator) in 100mL beaker, add 5mL sodium hydroxide solution (2.2.12), low temperature heating to dissolve, add 50mL Water, 2 drops of phenolphthalein ethanol solution (2.2.18),

with hydrochloric acid (2.2.9) and red just disappeared, and then an excess of 2mL, transferred to 1000mL volumetric flask , Diluted with water to the mark, mix, the solution 1mL containing 100µg arsenic.