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

YS/T 1115.11-2016

**Methods for chemical analysis of copper ores and tailings-Part
11: Determination of molybdenum content-Thiocyanate
spectrophotometric method**

铜原矿和尾矿化学分析方法 第11部分：钼量的测定 硫氰酸盐分光光度法
(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagent
4 Instruments

Foreword

YS/T 1115 "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 part 11.

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.

The main drafting units in this section. Beijing Mining and Metallurgy Research Institute, Zijin Mining Group Co., Ltd., Zhejiang Fu Ye Group Co., Ltd..

This section participates in the drafting unit. Beijing Nonferrous Metal Research Institute, Xiamen Zijin Mining and Metallurgical Technology Co., Ltd., China Nonferrous Guilin Mineral Quality Research Institute Co., Ltd., Zhongtiaoshan Nonferrous Metals Group Co., Ltd.

1 Scope

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

This section applies to the determination of molybdenum content of copper ore and tailings. The measurement range of 0.0030% ~ 0.040%.

2 Method summary

The sample was dissolved with sodium carbonate-sodium peroxide, leached with water and filtered to separate the molybdenum from most of the elements such as copper, iron, lead, zinc, silver and calcium.

In sulfuric acid medium, the copper salt as a catalyst, with thiourea molybdenum reduction pentavalent, molybdenum and thiocyanate to generate orange-red complex, in the spectrophotometric Absorbance was measured at a wavelength of 460 nm and molybdenum content was calculated using the working curve.

3 Reagent

Unless otherwise noted, only reagents identified as analytical grade were used in the analysis, all of which used distilled or deionized water or equivalent purity Water.

3.1

anhydrous sodium carbonate.

3.2

Sodium peroxide.

3.3

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

3.4

Sulfuric acid (1 1).

3.5

Sulfuric acid copper sulfate mixed solution Weigh 0.2g copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) dissolved in 1L sulfuric acid (3.4).

Thiourea solution (50 g/L).

3.7

potassium thiocyanate solution (200g/L).

3.8

Sodium hydroxide solution (200 g/L).

3.9

Sodium hydroxide solution (20 g/L).

3.10

molybdenum standard storage solution Weigh 1.5003g molybdenum trioxide (mass fraction $\geq 99.99\%$, pre-fired in a 500°C muffle furnace 20min and cooled to room temperature in a desiccator), placed in 250mL beaker, 20mL sodium hydroxide solution (3.8), dissolved by heating all, remove, cool to room temperature, transferred to 1000mL plastic volumetric flask, diluted with sodium hydroxide solution (3.9) to the mark, mix well. This solution 1mL contains 1mg molybdenum.

3.11

molybdenum standard solution Pipette 10.00mL molybdenum standard stock solution (3.10) in 1000mL plastic volumetric flask, with sodium hydroxide solution (3.9) diluted to the mark, mix well. 1 mL of this solution contains 10 μg of molybdenum.

3.12

phenolphthalein ethanol solution (10g/L).

4 Instruments

Spectrophotometer.