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

YS/T 555.6-2009

**Methods for chemical analysis of molybdenum concentrate.
Determination of copper, lead, bismuth and zinc content. Flame
atomic absorption spectrometry**

钼精矿化学分析方法铜、铅、铋、锌量的测定火焰原子吸收光谱法

(English Translation)

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Foreword

YS/T 555 "Methods for chemical analysis of molybdenum concentrate" comprises 11 parts.

YS/T 555.1, Methods for chemical analysis of molybdenum concentrate.

Determination of molybdenum content. Lead molybdenum gravimetry;

YS/T 555.2, Methods for chemical analysis of molybdenum concentrate.

Determination of silicon dioxide content. Silicon molybdenum blue spectrophotometry and gravimetry;

YS/T 555.3, Methods for chemical analysis of molybdenum concentrate.

Determination of arsenic content. Atomic fluorescence spectrometry;

YS/T 555.4, Methods for chemical analysis of molybdenum concentrate.

Determination of tin content. Atomic fluorescence spectrometry;

YS/T 555.5, Methods for chemical analysis of molybdenum concentrate.

Determination of phosphorus content. Phosphorus molybdenum blue spectrophotometry;

YS/T 555.6, Methods for chemical analysis of molybdenum concentrate.

Determination of copper, lead, bismuth and zinc content. Flame atomic

absorption spectrometry;

YS/T 555.7, Methods for chemical analysis of molybdenum concentrate.

Determination of calcium oxide content. Flame atomic absorption spectrometry;

YS/T 555.8, Methods for chemical analysis of molybdenum concentrate.

Determination of tungsten content. Thiocyanate spectrophotometry;

YS/T 555.9, Methods for chemical analysis of molybdenum concentrate.

Determination of potassium and sodium content. Flame atomic absorption spectrometry;

YS/T 555.10, Methods for chemical analysis of molybdenum concentrate.

Determination of potassium and sodium content;

YS/T 555.11, Methods for chemical analysis of molybdenum concentrate.

Determination of oil and moisture content. Gravimetry.

This is Part 6.

This Part replaces YS/T 555.6-2006 "Molybdenum concentrates. Determination of copper and lead content" (formerly GB/T 15079.6-1994) and YS/T 555.9-2006 "Molybdenum concentrates. Determination of bismuth content" (formerly GB/T 15079.9-1994).

Compared with YS/T 555.6-2006 and YS/T 555.9-2006, the main changes in this Part are as follows.

- The determination of zinc content has been added;
- The sample preparation method for bismuth content has been changed;
- The upper limit range for bismuth content determination has been expanded;
- The lower limit range for lead content determination has been expanded;
- The sample preparation and determination methods for copper, lead, bismuth, and zinc have been standardized;
- The clauses on precision have been added.

This Part was proposed by and shall be under the jurisdiction of National Technical Committee on Non-ferrous Metals of Standardization Administration of China.

Main drafting organizations of this Part. Jinduicheng Molybdenum Group Co., Ltd., and China Nonferrous Metals Industry Standards, Metrology and Quality Research Institute.

The drafting organizations of this Part. Hunan Shizhuyuan Nonferrous Metals Co., Ltd., Luoyang Luanchuan Molybdenum Group Co., Ltd., and Jiangxi Copper Corporation (Dexing) Mining New Technology Development Co., Ltd.

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Versions of standard substituted by this Part are.

- GB/T 15079.6-1994, GB/T 15079.9-1994;
- YS/T 555.6-2006, YS/T 555.9-2006.

Methods for chemical analysis of molybdenum concentrate -

- Determination of copper, lead, bismuth and zinc content --

Flame atomic absorption spectrometry

1 Scope

This Part specifies the methods for determining the content of copper, lead, bismuth and zinc in molybdenum concentrate.

This Part applies to the determination of copper, lead, bismuth, and zinc content in molybdenum concentrate. The determination ranges for copper. 0.0050%~2.50%; lead. 0.010%~3.00%; bismuth. 0.0050%~2.50%; and zinc. 0.0050%~1.00%.

2 Method summary

The specimens are decomposed with hydrochloric acid and nitric acid. In a dilute hydrochloric acid medium, the absorbance is measured using the air-acetylene flame method at wavelengths of 324.7 nm for copper, 283.3 nm for lead, 223.1 nm for bismuth, and 213.9 nm for zinc on an atomic absorption spectrometer.

3 Reagents

Unless otherwise specified, only reagents confirmed to be analytically pure and distilled or deionized water or water of equivalent purity shall be used in the analysis.

3.5 Copper standard solution. weigh 0.1000 g of metallic copper (mass fraction $\geq 99.99\%$) into a 250 mL beaker. Slowly add 30 mL of nitric acid solution (3.3). Heat to dissolve, then cool. Transfer to a 1000 mL volumetric flask. Dilute to the mark with water and mix well. 1 mL of this solution contains 100 μg of copper.

3.6 Lead standard solution. weigh 0.1000 g of metallic lead (mass fraction $\geq 99.99\%$)

into a 250 mL beaker. Add 30 mL of nitric acid solution (3.3). Heat to dissolve, then cool. Transfer to a 1000 mL volumetric flask. Dilute to the mark with water. Mix well.

3.7 Bismuth standard solution. weigh 0.1000 g of metallic bismuth (mass fraction $\geq 99.99\%$) into a 250 mL beaker. Add 20 mL of nitric acid (3.1). Dissolve by heating at low temperature, then cool. Transfer to a 1000 mL volumetric flask. Dilute to the mark with water. Mix well. 1 mL of this solution contains 100 μg of bismuth.

3.8 Zinc standard stock solution. weigh 0.1000 g of metallic zinc (mass fraction $\geq 99.99\%$) into a 250 mL beaker. Add 30 mL of hydrochloric acid solution (3.4). Dissolve by heating at low temperature, then cool. Transfer to a 1000 mL volumetric flask. Dilute to the mark with water. Mix well. This solution contains 100 μg of zinc per mL.

500 mL volumetric flask. Add 15 mL of hydrochloric acid solution (3.4). Dilute to the

mark with water. Mix well. This solution contains 10 μg of zinc per mL.

4 Instruments

Atomic absorption spectrometer, equipped with copper, lead, bismuth, and zinc hollow cathode lamps.