

ICS 73.060.01
CCS D 04

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

SN/T 5250-2020

**Determination of sulfur content in mineral products
High-frequency combustion infrared absorption method**

矿产品中硫含量的测定 高频燃烧红外吸收法

(English Translation)

Issued on: August 27, 2020

Implemented on: March 1, 2021

Issued by: General Administration of Customs

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and managed by the General Administration of Customs of the People's Republic of China.

Drafting organizations of this standard. Guiyang Customs of the People's Republic of China, Dalian Customs of the People's Republic of China, Nanjing of the People's Republic of China Customs, Hohhot Customs of the People's Republic of China, Taiyuan Customs of the People's Republic of China.

1 Scope

This standard specifies the high-frequency combustion-infrared absorption method for the determination of mineral products (iron ore, lead ore, tin ore, manganese ore, molybdenum

ore, copper ore, tungsten Method for detecting sulfur in ore, chrome ore).

This standard applies to high-frequency combustion of sulfur content in mineral products (iron ore, lead ore, tin ore, manganese ore, molybdenum ore, copper ore, tungsten ore, chrome ore) Measured by burning infrared absorption method, the measuring range is 0.005% to 55.0%.

Note: This method can be used as a guideline test method with universal analytical procedures or techniques, which is convenient for laboratories to compile their internal detailed standards on this basis.

Standardized operating procedures (SOP) or special applications, unless the parameters of the method are specified, the performance parameters in the method are for reference only and are not suitable for use as a laboratory the approved absolute quality control limit is used.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For documents, for undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T.2007.2 General Rules for Sampling and Sample Preparation of Bulk Mineral Products Manual Sample Preparation Method GB/T 6379.2 Accuracy of measurement methods and results (accuracy and precision) Part 2: Determine the repeatability of standard measurement methods and the basic method of reproducibility (ISO 5725-2:1994, IDT) GB/T 6682 Analytical laboratory water specifications and test methods

3 Method summary

In the presence of flux, the mineral products are directly weighed or mixed and diluted by adding silica powder, and then enriched in a high-frequency infrared induction furnace.

In the oxygen stream, it is heated and burned at high temperature, and the generated sulfur dioxide is carried by the oxygen to the measuring chamber of the infrared analyzer, and absorbs infrared energy of a specific wavelength.

The absorption energy is proportional to its concentration, and the sulfur content is measured according to the change in the energy received by the detector.

4 Reagents and materials

Unless otherwise specified, the reagents are all analytically pure, and the experimental water is secondary water that meets the requirements of GB/T 6682.

4.1

Potassium sulfate. standard reagent, the content is greater than 99.95%, dried at 105 °C for 2 h, and then cooled in a desiccator for later use.

4.2

Silica powder. high purity, particle size less than 150 μm, sulfur content less than 0.0005%.

4.3

Pure iron flux. the sulfur content is less than 0.000 5%, and the particle size is 0.80 mm to 1.68 mm.

4.4

Tin particles. The sulfur content is less than 0.000 3%, and the particle size is 0.4 mm to 0.8 mm.

4.5

Tin capsule. 250 μL in capacity, 5 mm in diameter and 13 mm in length.

4.6

Tungsten particles. The sulfur content is less than 0.000 2%, and the particle size is 0.8 mm to 1.4 mm.

4.7

Magnesium perchlorate. granular.

4.8

Oxygen. purity $\geq 99.5\%$.

4.9

Power gas. nitrogen or compressed air. purity $\geq 99.5\%$.

4.10

Quartz wool. 5μm ~ 10μm in diameter.

5 Apparatus and equipment

5.1

High-frequency infrared carbon and sulfur analyzer (see Appendix A for instrument conditions).

5.2

Analytical balance. the sensitivity is 0.01 mg.

5.3

Analytical balance. Sensitivity 0.1 mg.

5.4

Mixing grinder. including grinding balls, with a volume of 25 mL to 50 mL, and a maximum oscillation frequency of 25 times/s.

5.5

High-temperature furnace. The maximum operating temperature is 1200°C.

5.6

Oven. The highest operating temperature is 300°C.

5.7

Porcelain crucible. burn it in a high temperature furnace at 1100 °C for at least 4 h before use, cool it, and store it in a desiccator.

5.8

Micropipette (micropipette). 50 µL, 100 µL.

6 Sample preparation

6.1

Prepare the sample according to GB/T.2007.2, and the particle size of the sample should be less than 150 µm.

6.2

The sample is pre-baked at 100 °C for 2 hours, and then placed in a desiccator to cool to room temperature for later use.

Note: The ore samples containing bound water should be roasted in a high-temperature furnace in advance.

7.1 Preparation

7.1.1

Preparation of the instrument. turn on the instrument, warm up for 1 hour, check and debug the instrument, ensure that the instrument is in a normal and stable working state, and confirm the best working conditions.

7.1.2

Preparation before analysis. adjust and stabilize the instrument by burning several similar samples to be tested.