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

GB/T 5121.4-2008

Replacing GB/T 5121.4-1996; GB/T 13293.13-1991

**Methods for chemical analysis of copper and copper alloys --
Part 4: Determination of carbon and sulfur content**

铜及铜合金化学分析方法 第4部分：碳、硫含量的测定

(English Translation)

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Foreword

GB/T 5121 "Copper and copper alloy chemical analysis method" a total of 27 sections.

- Part 1. Determination of copper content;
- Part 2. Determination of phosphorus content;
- Part 3. Determination of lead content;
- Part 4. Carbon, Determination of sulfur content;
- Part 5. Determination of nickel content;
- Part 6. Determination of bismuth content;
- Part 7. Determination of arsenic content;
- Part 8. Determination of oxygen content;
- Part 9. Determination of iron content;
- Part 10. Determination of tin content;
- Part 11. Determination of zinc content;
- Part 12. Determination of antimony content;
- Part 13. Determination of aluminum content;
- Part 14. Determination of manganese content;
- Part 15. Determination of cobalt content;
- Part 16. Determination of chromium content;
- Part 17. Determination of beryllium content;

- Part 18. Determination of magnesium content;
- Part 19. Determination of silver content;
- Part 20. Determination of zirconium content;
- Part 21. Determination of titanium content;
- Part 22. Determination of cadmium content;
- Part 23. Determination of silicon content;
- Part 24. selenium, tellurium content was measured;
- Part 25. Determination of boron content;
- Part 26. Determination of mercury content;
- Part 27. Inductively coupled plasma atomic emission spectrometry.

This is Part 4.

This section includes a method, second method, Method three. The mass fraction of sulfur at less than 0.0010% 0.0020% recommended method of arbitration two. The mass fraction of sulfur in 0.010% 0.030% arbitrate a recommended method.

This section Method Three identical with ISO 7266. 1984 "Copper and copper alloys - Determination of sulfur content - Combustion titration method", compared with the original International Standard We made the following editorial changes.

- With a decimal point instead of a comma as the decimal point in the international standard " , " . " , " ;
- Use the "method" instead of "this International Standard";
- Revised international standard-Africa legal units of measurement;
- The formula, reg number, table number to re-annotate;
- Remove the cover of the international standards, directory, foreword and introduction.

This Part replaces GB/T 5121.4-1996 "Copper and copper alloys - Determination of the amount of carbon and sulfur" and GB/T 13293.13-1991 "high purity copper cathode chemical analysis of combustion - potassium iodate titration method for the determination of sulfur content." this portion of the GB/T 5121.4-1996 have the following main changes and GB/T 13293.13-1991 compared.

- One method of GB/T 5121.4-1996 revision, complementing the quality assurance and control provisions, increasing the precision of the terms;
- Second method is GB/T 13293.13-1991 amendments. Measured by the scope of 0.0004% ~ 0.0030% revised to 0.0004% to 0.0020% supplemented with quality assurance

and control provisions, increasing the precision of the terms;

--- Adds three. 1984 "Copper and copper alloys - Determination of sulfur content --- combustion titration method". identical with the international standard ISO 7266.

This part is proposed by the China Nonferrous Metals Industry Association.

The non-ferrous metal part by the National Standardization Technical Committee.

This section Chinalco Luoyang Copper Co., Ltd., Beijing General Research Institute of Mining and Metallurgy, China Nonferrous Metals Industry is responsible Institute of Standards Metrology and Quality Drafted.

This section a method by Chinalco Luoyang Copper Co. drafted.

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1.1 Scope

This method specifies the method for determination of copper and copper alloy of carbon and sulfur content.

This method is applicable to the determination of copper and copper alloy of carbon and sulfur content. Measurement range. 0.0010% to 0.20% carbon; Sulfur 0.0010% to 0.030%.

1.2 Principle of the method

Sample in the flux and flow of oxygen, high frequency induction heating and melting, carbon and sulfur respectively generate carbon dioxide, sulfur dioxide, loaded infrared detection Detector. According to the measured gas infrared light absorption of a specific wavelength variation measured mass of carbon and sulfur.

1.3 Reagents and materials

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

1.3.1

ethanol.

1.3.2

acetone.

1.3.3

oxygen (> 99.5%).

1.3.4

nitrogen gas (> 99.5%).

1.3.5

alkali asbestos.

1.3.6

anhydrous magnesium perchlorate.

1.3.7

platinized silica gel.

1.3.8

glass wool.

1.3.9

cellulose.

1.3.10

tungsten, tin-type flux. particle size of about 400 μ m ~ 800 μ m.

1.3.11

porcelain crucible (x h. 25mm x 25mm). Before use in a muffle furnace at 1200 °C burning at least 4h, in order to reduce and stabilize empty White. Let cool to room temperature and stored in a desiccator stand.

1.3.12

copper and copper alloy standard samples (carbon content. 0.0026% to 0.35% and the mass fraction of sulfur. 0.0026% to 0.035%.)

1.4 Instrument

1.4.1

frequency heating infrared absorption spectrometer. a electronic AC power supply.

1.4.2

The instrument should be able to achieve the following indicators.

--- High-frequency furnace power 1.0kW ~ 2.5kW;

--- Frequency is greater than 6.0MHz;

--- Detector sensitivity. 0.0001%.