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NONFERROUS METAL INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

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YS/T 953.9-2014

**Methods for chemical analysis of fire smelting nickel
substrate material - Part 9: Determination of carbon
and sulfur contents - Infrared absorption method after
high frequency combustion**

火法冶炼镍基体料化学分析方法

第 9 部分：碳、硫量的测定 高频燃烧红外吸收法

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Foreword

YS/T 953 "Methods for chemical analysis of fire smelting nickel substrate material" is divided into 11 parts:

- Part 1: Determination of nickel content - Dimethylglyoxime spectrophotometric method and dimethylglyoxime gravimetric method;
- Part 2: Determination of silicon content - Molybdosilicate blue spectrophotometric method and perchloric acid dehydration gravimetric method;
- Part 3: Determination of phosphorus content - Bismuth phosphomolybdate blue spectrophotometric method;
- Part 4: Determination of chrome content - Ammonium ferrous sulfate titration method;
- Part 5: Determination of manganese content - Potassium periodate spectrophotometric method;
- Part 6: Determination of cobalt content - 5-CI-PADAB spectrophotometric method and flame atomic absorption spectrometric method;
- Part 7: Determination of copper content - BCO spectrophotometric method and flame atomic absorption spectrometric method;
- Part 8: Determination of iron content - Titanium trichloride reduction-potassium dichromate titrimetric method;
- Part 9: Determination of carbon and sulfur contents - Infrared absorption method after high frequency combustion;
- Part 10: Determination of nickel, chromium, manganese, cobalt, copper and phosphorus contents - Inductively coupled plasma atomic emission spectrometric method;
- Part 11: Determination of Lead, Arsenic, Cadmium and Mercury contents - Inductively coupled plasma-mass spectrometric method.

This Part is Part 9 of YS/T 953.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part shall be under the jurisdiction of National Technical Committee 243 on Nonferrous Metals of Standardization Administration of China (SAC/TC 243).

Methods for chemical analysis of fire smelting nickel substrate material - Part 9: Determination of carbon and sulfur contents - Infrared absorption method after high frequency combustion

1 Scope

This Part of YS/T 953 specifies the infrared absorption method after high frequency combustion for the determination of carbon and sulfur contents in the fire smelting nickel substrate material.

This Part applies to the determination of carbon and sulfur contents in the fire smelting nickel substrate material. The determination range is 0.010%~5.50% for carbon, 0.0050%~0.60% for sulfur.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 20066 Steel and iron - Sampling and preparation of samples for the determination of chemical composition

3 Method summary

The test portion and flux are burned at high temperature in the oxygen flow of the high frequency induction furnace. The generated carbon dioxide and sulfur dioxide are carried by oxygen to the infrared absorption cell; absorb infrared light of a certain wavelength respectively. The absorbed energy is proportional to the concentration. According to the change of energy received by the infrared detector, measure the carbon and sulfur contents.

4 Reagents

4.1 Flux: pure tungsten or tungsten tin. Carbon content is less than 0.0008%;

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