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

GB/T 14203-2016

Replacing GB/T 14203-1993

**General rules for spark discharge atomic emission
spectrometry**

火花放电原子发射光谱分析法通则

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 14203-1993 "General rules for photoelectric emission spectrometry of steel and alloy". And GB/T 14203-1993 In contrast, in addition to editorial changes outside the main technical content changes are as follows:

- standard name to "spark discharge atomic emission spectrometry general rule";
- the original "1 theme content and scope of application" to "1 Scope", and modify the contents of this chapter;
- delete the original "2 general summary" section, and the contents into Chapter 1; - Added "2 normative reference documents" section and content;
- Added chapter and content of "3 terms and definitions";
- to increase the "4 principle" chapter and content, delete the original "3.1 summary" in the description of the principle of the instrument;
- "3", now "5 equipment", this chapter is divided into "5.1 instrument" and "5.2 subsidiary device" two sections, and the original "Figure 1 photoelectric hair The composition of the spectrum analyzer "is replaced by a block diagram of the instrument."
- 5.1 Instrument "is divided into"

1 Scope

GB/T 14203-2016 is the Chinese national standard on general rules for spark discharge atomic emission spectrometry, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 24 February 2016 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 November 2016. Classification: ICS 77.080.01, CCS H11. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the terms and definitions of spark discharge atomic emission spectroscopy, principles, apparatus, materials, samples, sampling and sample preparation Method, measurement conditions, quantitative analysis methods, instrument selection and installation conditions, accuracy, analysis error and monitoring, security protection. This standard applies to the application of spark emission atomic emission spectrometry, research, personnel training and so on.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 6379.1 Accuracy of measurement methods and results (accuracy and precision) - Part 1. General and definitions

GB/T 6379.6 Accuracy of measurement methods and results (accuracy and precision) - Part 6. Practical application of accuracy values

GB/T 13962 terminology for optical instruments

GB/T 13966 terminology for analytical instruments

GB/T 14666 Chemical terminology for analysis Sampling and sample preparation methods for the determination of chemical constituents of steels and iron GB/T

3 Terms and definitions

GB/T 13962, GB/T 13966 and GB/T 14666 and the following terms and definitions apply to this document.

3.1 Sample electrode samplecathode In the sample analysis, the analyzed sample is used as a cathode for the discharge pair, called the sample electrode.

3.2 On the electrode counterelectrode In the discharge process, with the sample electrode is opposed to the high pressure of the anode part.

3.3 Spark discharge sparkdischarge And a discontinuous discharge generated in the analysis gap formed between the sample electrode and the counter electrode. The discharge current is raised by the periodic charging capacitor for. After the spark is ignited, the discharge is formed, and the voltage between the gaps is calculated from the starting capacitance in a shorter time than the spark duration Pressure to low combustion voltage. Thus, compared to an arc, the spark can be considered essentially an intermittent arc with a high starting current (or peak Current) and short duty cycle (burning time versus non-burning time ratio).

3.4 Pole gauge gauge A gage for determining the distance between the electrode and the sample electrode.

3.5 Tracing profile By adjusting the position of any optical component such as a collimator, an entrance slit, a grating, etc. in the optical system to obtain the optimum luminous intensity.

3.2.5 Metering device "to"

5.1.3 metering system ","

5.1.3.1 photoelectric conversion detector "and"

5.1.3.2 data processing system "two The "Air Supply Device", "Sampling Equipment", "Sampling Equipment" and "Small Sample Jig" are described in "

5.2 Appendices" content;

--- delete the original "4 sampling, sample preparation of appliances and machinery" chapter and content;

--- the original "

5.2 control atmosphere of the gas" to "

6.2 gas", an increase of argon purity requirements; The original "7 sample preparation" to "8 sampling and sample preparation method", and modify the contents of this chapter; The original "8 measurement operation and quantitative analysis method" is broken down into "9 measurement conditions set" and "10 quantitative analysis method" two chapters. 9th Zhang Zhongyuan standard light indoor pressure "maintained at 2.67×10^5 Pa below", to "meet the equipment requirements", and increased the inflatable Light room requirements and description; Chapter 10 is divided into "the choice of analysis line" "internal standard selection" "line interference and calibration" "calibration" Product analysis "" quantitative value of the representation method "five parts to describe;

--- the original "9 instrument selection and settings" to "11 instrument selection and

installation conditions", and modify part of the content; - the addition of the "

12 Accuracy (accuracy and precision)" section describes the factors that cause the difference in accuracy;

--- "10", now "13", the "continuous repeat accuracy" to "short-term precision", "intermittent repeat accuracy" to "long-term precision" And short-term precision and long-term precision of the provisions; delete the original standard "reproduction accuracy" of the content;

--- "11", now "14", increase the "gas use precautions" and "sample preparation precautions" related content. This standard is proposed by China Iron and Steel Industry Association. This standard is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183). The drafting of this standard. Iron and Steel Research Institute, Wuhan Iron and Steel (Group) Company, Baosteel Group Co., Ltd., Anshan Iron and Steel Co., Ltd. Su Xinghai Special Steel Co., Ltd., Steel Yankee Detection Technology Co., Ltd. The main drafters of this standard. Jia Yunhai, Yang Jingwei, Luo Qianhua, Shen Ke, Wang Han, Yu Yuanjun. This standard replaced the previous version of the standard release.

--- GB/T 14203-1993. General rules for atomic emission spectrometric analysis of spark discharge

5.1.4 Control system "four, which the original"

3.1.1 light source generator "and"

3.1.2 light source of electricity Pole part "is described in"

5.1.1 Excitation System "and the generator type of the original standard light source generator is deleted Description and schematic diagram; the original "

3.2.3 condenser device" and "

3.2.4 splitter" in "

5.1.2 optical system" to describe the original "