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

GB/T 29559-2013

**Surface chemical analysis -- Analysis of zinc and/or aluminium
based metallic coatings by glow discharge optical emission
spectrometry**

表面化学分析 辉光放电原子发射光谱 锌和/或铝基合金镀层的分析

(English Translation)

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Foreword

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

This standard uses the translation method identical with ISO 16962:2005 "Surface chemical analysis - Glow Discharge Atomic Emission Spectroscopy zinc and/or Analysis of aluminum alloy coating. " Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 19502-2004 Surface chemical analysis - Glow discharge optical emission spectrometry method General (ISO 14707:2000, IDT)

--- GB/T 20066-2006 Steel and iron - Determination of the chemical composition of the sample and sample preparation methods (ISO 14284 with 1996, IDT) the standard micro-beam analysis by the National Standardization Technical Committee (SAC/TC38) and focal points.

This standard was drafted. Baoshan Iron & Steel Co., Ltd., Institute of Physics, Chinese Academy of Sciences, Institute of Chemistry.

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Surface chemical analysis Glow Discharge Atomic Emission Spectroscopy Zinc and/or aluminum alloy plating analysis

1 Scope

This standard specifies the glow discharge atomic emission spectrometry zinc and/or aluminum alloy coating thickness of the coating, the coating quality (surface unit Product) and the chemical composition of the metal coating. Alloying elements to consider are nickel, iron, silicon, lead and antimony.

This standard applies to the elements of the mass fraction range. Zinc (0.01% to 100%), aluminum (0.01% to 100%), nickel (0.01% to 20%), iron (0.01% to 20%), silicon (from 0.01% to 10%), lead (0.005% to 2%), antimony (0.005% to 2%).

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

Sampling and sample preparation method (Steel and iron-Sampling and sample for ISO 14284 Determination of the chemical composition of steel and iron preparation of samples for the determination of chemical composition) ISO 14707 Surface chemical analysis - Glow discharge optical emission spectrometry method General (Surface chemical analysis-Glow discharge optical emission spectrometry (GD-OES) -Introduction to use) Alloy plating coating mass per unit area and chemical composition of the steel surface ISO 17925 Gravimetric method, inductively coupled plasma Emission spectrometry and flame atomic absorption spectrometry (Zinc and/or aluminum based coatings on steel-Determination of coating mass per unit area and chemical composition-Gravimetry, inductively coupled plasma atomic emission spectrometry and flame atomic absorption spectrometry) Principle 3 Analysis Glow Discharge Atomic Emission Spectrometry include the following operations.

- a) DC or RF glow light source device, the sample surface coating to produce cathode sputtering.
- b) analyte atomization, in turn, is excited in the plasma.
- c) The analysis of the elements characteristic spectral line emission intensities measured. When the depth of analysis, emission intensity is recorded as a function of time.
- d) In-depth analysis by (quantitative) curve, the intensity function of time into the mass fraction of the sputtering depth letter number. Known by measuring the composition curve of the sample sputtering rate can be established this calibration system.

4.1 Glow Discharge Atomic Emission Spectrometer

The instrument should include the type or the like fitted Grimm glow discharge source (DC or RF) and a multi-course Atomic Emission Spectroscopy Instrument, as described in ISO 14707. At the same time, it should be equipped with appropriate elements to be analyzed spectral channels (see Appendix B of the recommended lines).

Hollow anode glow discharge light source shall inner diameter 2mm ~ 8mm, sheet analysis is recommended to use a cooling device, such as a belt loop cooling