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

Analyse chimique des surfaces — Analyse des revêtements métalliques à base de zinc et/ou d'aluminium par spectrométrie d'émission optique à décharge luminescente

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 201, *Surface chemical analysis*, Subcommittee SC 8, *Glow discharge spectroscopy*.

This second edition cancels and replaces the first edition (ISO 16962:2005), which has been technically revised.

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Introduction

This document is a revision of ISO 16962. Developments in both GD-OES instrumentation and the types of zinc- and/or aluminium-based metallic coatings currently produced have rendered ISO 16962 partly obsolete, and this revision is intended to bring it up to date.

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

1 Scope

This document specifies a glow-discharge optical-emission spectrometric method for the determination of the thickness, mass per unit area and chemical composition of metallic surface coatings consisting of zinc- and/or aluminium-based materials. The alloying elements considered are nickel, iron, silicon, lead and antimony.

This method is applicable to zinc contents between 0,01 mass % and 100 mass %; aluminium contents between 0,01 mass % and 100 mass %; nickel contents between 0,01 mass % and 20 mass %; iron contents between 0,01 mass % and 20 mass %; silicon contents between 0,01 mass % and 15 mass %; magnesium contents between 0,01 mass% and 20 mass%; lead contents between 0,005 mass % and 2 mass %, antimony contents between 0,005 mass % and 2 mass %.

NOTE Due to environmental and health risks, lead and antimony are avoided nowadays, but this document is also applicable to older products including these elements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition*

ISO 17925, *Zinc and/or aluminium 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*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Principle

The analytical method described here involves the following processes:

a) preparation of the sample to be analysed, generally in the form of a flat plate or disc of dimensions appropriate to the instrument or analytical requirement (round or rectangular samples with a width of more than 5 mm, generally 20 mm to 100 mm, are suitable);

b) cathodic sputtering of the surface coating in a direct current or radio frequency glow-discharge device;

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