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Electrodeposited nickel plus chromium coatings for automobile plastic parts — Specification and test requirements

Dépôts électrolytiques de nickel et de chrome pour pièces plastiques automobiles — Spécifications et exigences d'essai

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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This document was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document was developed in response to worldwide demand for minimum specifications governing electrodeposited metallic coatings on plastic parts of automobiles traded internationally, wherein most commercial batches of coatings developed by suppliers lack specific and unified standards.

In the absence of a specific International Standard for the electrodeposition of automotive plastic parts, the requirements of different automobile manufacturers vary. The appearance and serviceability of the electrodeposited metallic coatings on automotive plastic parts depend on the condition of the basis material. Thus, the substrate plastics are expected to meet the requirements of service conditions. Formulating a unified standard covering the requirements, indicators and test methods for electroplating plastic parts benefits automobile host manufacturers and electroplating manufacturers.

Hence, this document provides detailed specifications and requirements concerning the appearance, stress and thermal cycling of electrodeposited metallic decorative coatings on automotive parts as well as the types of plastic materials.

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Electrodeposited nickel plus chromium coatings for automobile plastic parts — Specification and test requirements

1 Scope

This document specifies requirements for electrodeposited metallic decorative coatings for automobile plastic parts, including test requirements.

This document does not apply to such coatings on plastics to be used for aerospace, electronics and engineering fields other than automobile applications.

This document applies to automobile plastic parts. It differs from ISO 4525, which is not applicable for engineering purposes.

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 1456:2009, *Metallic and other inorganic coatings — Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium*

ISO 2064, *Metallic and other inorganic coatings — Definitions and conventions concerning the measurement of thickness*

ISO 2080, *Metallic and other inorganic coatings — Surface treatment, metallic and other inorganic coatings — Vocabulary*

ISO 2819, *Metallic coatings on metallic substrates — Electrodeposited and chemically deposited coatings — Review of methods available for testing adhesion*

ISO 4525, *Metallic coatings — Electroplated coatings of nickel plus chromium on plastics materials*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 10289, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates — Rating of test specimens and manufactured articles subjected to corrosion tests*

ISO 16348, *Metallic and other inorganic coatings — Definitions and conventions concerning appearance*

ISO 16866, *Metallic and other inorganic coatings — Simultaneous thickness and electrode potential determination of individual layers in multilayer nickel deposits (STEP test)*

ISO 16750-4, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2064, ISO 2080 and ISO 16348 apply.

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

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

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

4 Information to be supplied by the purchaser to the electroplater

4.1 Essential information

The following information shall be supplied to the electroplater in writing, e.g. in the contract or purchase order or on engineering drawings:

a) the number of this document including the year of publication (ISO 12994:2025) and the designation (see Clause 6);

b) the designation of the type of plastic to be electroplated (see Annex C);

c) the finish required (e.g. bright, dull or other finish), preferably accompanied by approved samples of the finish; it shall be supplied or approved by the purchaser and used for comparison purposes in accordance with 6.1;

d) the significant surfaces to be indicated on drawings of the parts or by providing samples that are suitably marked;

e) additional portions of the significant surface where local thickness requirements are to be applied (see 6.2);

f) the required potential difference (see 6.3);

g) the number of micro-pores required in the chromium coating (see 6.4);

h) the minimum required adhesion between coating and substrate (see 6.5);

i) the maximum allowed stress between coatings and substrate (see 6.6);

j) whether copper or nickel undercoats shall be applied to meet the climate change stability test (see 6.7);

k) whether the corrosion testing is to be done continuously or cyclically (see 6.8);

4.2 Additional information

The following additional information may be provided by the purchaser when appropriate:

a) the limitations on the extent of tolerable surface defects resulting from moulding (see 6.1 and Annex A);

b) the extent to which defects are to be tolerated on non-significant surfaces (see 6.1).

5 Coating system and its designation

For a description of the coating system and its designation, see ISO 4525:2003, Clause 6.

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