SLOVENSKI STANDARD
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Kovinske in druge anorganske prevleke - Galvanske prevleke kroma za tehnično uporabo (ISO/DIS 6158:2017)

Metallic and other inorganic coatings - Electrodeposited coatings of chromium for engineering purposes (ISO/DIS 6158:2017)

Metallische und andere anorganische Überzüge - Galvanische Chromüberzüge für technische Zwecke (ISO/DIS 6158:2017)

Revêtements métalliques et autres revêtements inorganiques - Dépôts électrolytiques de chrome pour usages industriels (ISO/DIS 6158:2017)

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Metallic and other inorganic coatings — Electrodeposited coatings of chromium for engineering purposes

Revêtements métalliques et autres revêtements inorganiques — Dépôts électrolytiques de chrome pour usages industriels

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on 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.

The committee responsible for this document is ISO/ ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*.

This second edition cancels and replaces the first edition (ISO 6158:2004), of which has been technically revised.

Introduction

Electrodeposited chromium coatings are frequently deposited from hexavalent chromium solutions similar to those used for decorative electroplating. Engineering chromium coatings, however, are generally thicker than decorative ones. Regular or conventional chromium is the type most frequently specified, but porous, cracked or specially profiled surfaces and duplex chromium are also applied to achieve oil-retaining or non-sticking surfaces, or to improve corrosion resistance.

Electrodeposited chromium coatings for engineering applications are most often applied directly to the basis metal to increase wear and abrasion resistance, to increase fretting resistance, to reduce static and kinetic friction, to reduce galling and seizing, to increase corrosion resistance, and to build up undersize or worn parts. For protection against severe corrosion, nickel or other metallic undercoats may be applied prior to the electrodeposition of chromium, or the corrosion resistance of the chromium coating may be increased by alloying, e.g. with molybdenum.

Metallic and other inorganic coatings — Electrodeposited coatings of chromium for engineering purposes

WARNING — This International Standard may not be compliant with some countries' health and safety legislations and calls for the use of substances and/or procedures that may be injurious to health if adequate safety measures are not taken. This International Standard does not address any health hazards, safety or environmental matters and legislations associated with its use. It is the responsibility of the user of this International Standard to establish appropriate health, safety and environmentally acceptable practices and take suitable actions to comply with any national and International regulations. Compliance with this International Standard does not in itself confer immunity from legal obligations.

1 Scope

This International Standard specifies requirements for electroplated coatings of chromium, with or without undercoats, on ferrous and non-ferrous metals for engineering purposes. The coating designation provides a means of specifying the thickness of chromium appropriate for typical engineering applications.

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 1463, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*

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 2177, *Metallic coatings — Measurement of coating thickness — Coulometric method by anodic dissolution*

ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method*

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

ISO 3497, *Metallic coatings — Measurement of coating thickness — X-ray spectrometric methods*

ISO 3543, *Metallic and non-metallic coatings — Measurement of thickness — Beta backscatter method*

ISO 3882, *Metallic and other inorganic coatings — Review of methods of measurement of thickness*

ISO 4516, *Metallic and other inorganic coatings — Vickers and Knoop microhardness tests*

ISO 4519, *Electrodeposited metallic coatings and related finishes — Sampling procedures for inspection by attributes*

ISO 4526, *Metallic coatings — Electroplated coatings of nickel for engineering purposes*

ISO 9220, *Metallic coatings — Measurement of coating thickness — Scanning electron microscope method*

ISO 9587, *Metallic and other inorganic coatings — Pretreatment of iron or steel to reduce the risk of hydrogen embrittlement*

ISO 9588, *Metallic and other inorganic coatings — Post-coating treatments of iron or steel to reduce the risk of hydrogen embrittlement*

ISO 10309, *Metallic coatings — Porosity tests — Ferroxyl test*

ISO 10587, *Metallic and other inorganic coatings — Test for residual embrittlement in both metallic-coated and uncoated externally-threaded articles and rods — Inclined wedge method*

ISO 12686, *Metallic and other inorganic coatings — Automated controlled shot-peening of metallic articles prior to nickel, autocatalytic nickel or chromium plating, or as a final finish*

ISO 15724, *Metallic and other inorganic coatings — Electrochemical measurement of diffusible hydrogen in steels — Barnacle electrode method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2064, ISO 2080, ISO 3882, ISO 9587, ISO 9588 and ISO 12686 apply.

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 Information to be supplied by the purchaser to the processor

When ordering articles to be processed in accordance with this International Standard, the purchaser shall provide the following essential information in writing, for example, in the contract or purchase order, or on the engineering drawings:

a) the designation (see Clause 5);

b) the nominal composition or specification, and metallurgical condition of the basis metal including hardness (see 5.3); in the case of reclaimed articles, it may not be possible to supply this information, and it may, therefore, be difficult to guarantee the quality of the coating;

c) the nature, condition and finish of the basis metal if they are likely to affect the serviceability and/or appearance of the coating (see 6.3);

d) the significant surface, indicated by drawings of the articles or by suitably marked samples (see 6.2);

e) the requirements for special test specimens (see 6.1);

f) the appearance and surface finish of the chromium coating, e.g. as-plated, ground or machined (see 6.2 and 6.3); alternatively, samples showing the appearance and required finish shall be supplied or approved by the purchaser, and used for comparison purposes (see 6.2);

g) the necessity for any treatment to induce compressive stress, e.g. peening before or after electroplating (see 6.10);

h) any special requirements for, or restrictions on, pretreatment, e.g. vapour blasting instead of acid pretreatment;

i) positions, where unavoidable, contact marks and the type, size and number of other defects that are acceptable (see 6.2);

j) requirements for undercoats (see 5.5 and 6.11) and stripping (see 6.12);