

<b>STN</b>	<b>Kovové a iné anorganické povlaky Elektrolyticky vylúčené povlaky chrómu na technické účely (ISO 6158: 2018)</b>	<b>STN EN ISO 6158</b>  03 8508
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Metallic and other inorganic coatings - Electrodeposited coatings of chromium for engineering purposes (ISO 6158:2018)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

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English Version

**Metallic and other inorganic coatings - Electrodeposited coatings of chromium for engineering purposes (ISO 6158:2018)**

Revêtements métalliques et autres revêtements inorganiques - Dépôts électrolytiques de chrome pour usages industriels (ISO 6158:2018)

Metallische und andere anorganische Überzüge - Galvanische Chromüberzüge für technische Zwecke (ISO 6158:2018)

This European Standard was approved by CEN on 12 November 2018.

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**EN ISO 6158:2018 (E)**

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## **European foreword**

This document (EN ISO 6158:2018) has been prepared by Technical Committee ISO/TC 107 "Metallic and other inorganic coatings" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Endorsement notice**

The text of ISO 6158:2018 has been approved by CEN as EN ISO 6158:2018 without any modification.

# INTERNATIONAL STANDARD

# ISO 6158

Fourth edition  
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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*



Reference number  
ISO 6158:2018(E)

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## ISO 6158:2018(E)

### 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.

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](http://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](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

This fourth edition cancels and replaces the third edition (ISO 6158:2011), which has been technically revised. The main changes compared with the previous edition are as follows:

- the Scope has been corrected;
- in [Clause 4](#), additional required information on special technical and engineering (surface) purposes for the electrodeposited metallic chromium coating has been added;
- in [5.2](#), additional information on surface roughness grade/quality for designation has been added;
- in [5.2](#), additional information for the description of the necessary final surface roughness of the complete finished parts given by the purchaser has been added;
- in [5.6](#), object temperature during heat treatment has been added;
- in [5.6](#), an example of designation with additional information on the final surface roughness of the completed parts has been added;
- in [6.1](#), important information for receiving reliable test results has been added;
- in [6.11](#), important information for the pretreatment of chromium plating has been added;
- in [6.13](#), information for corrosion resistance has been added;
- in [6.14](#) and [Annex D](#), information on surface roughness and structure has been added.

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](http://www.iso.org/members.html).



## **Introduction**

Electrodeposited chromium coatings are frequently deposited from hexavalent chromium solutions similar to those used for electroplating. Engineering chromium coatings, however, are generally thicker than decorative ones. Regular or conventional chromium is the type most frequently specified, but microporous, microcracked or specially profiled surfaces and duplex chromium are also applied to achieve oil-retaining or non-sticking surfaces, or to improve corrosion resistance. These properties are the main reason for using metallic chromium coatings for engineering purposes. Summarized electrodeposited coatings of metallic chromium for engineering purposes have in total more than 35 coating and process properties simultaneously.

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 document calls for the use of substances and/or procedures that may be injurious to health if adequate safety measures are not taken. This document does not address any health hazards, safety or environmental matters associated with its use. It is the responsibility of the user of this document to establish appropriate health, safety and environmentally acceptable practices.

## 1 Scope

This document specifies requirements for electroplated coatings of metallic 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 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 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

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 — Ferroxy 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*

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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*

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