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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  
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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.

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)).

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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).

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## 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.