



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 2082:2017

Metallic and other inorganic coatings -  
Electroplated coatings of cadmium with  
supplementary treatments on iron or steel  
(ISO 2082:2017)

## I.S. EN ISO 2082:2017

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN ISO 2082:2017

*Published:*

2017-08-30

*This document was published under the authority of the NSAI and comes into effect on:*

2017-09-17

ICS number:

25.220.40

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN ISO 2082:2017 is the adopted Irish version of the European Document EN ISO 2082:2017, Metallic and other inorganic coatings - Electroplated coatings of cadmium with supplementary treatments on iron or steel (ISO 2082:2017)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

EUROPEAN STANDARD

EN ISO 2082

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2017

ICS 25.220.40

Supersedes EN ISO 2082:2008

English Version

## Metallic and other inorganic coatings - Electroplated coatings of cadmium with supplementary treatments on iron or steel (ISO 2082:2017)

Revêtements métalliques et autres revêtements inorganiques - Dépôts électrolytiques de cadmium avec traitements supplémentaires sur fer ou acier (ISO 2082:2017)

Metallische und andere anorganische Überzüge - Galvanische Cadmiumüberzüge auf Eisenwerkstoffen mit zusätzlicher Behandlung (ISO 2082:2017)

This European Standard was approved by CEN on 24 June 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**EN ISO 2082:2017 (E)**

| <b>Contents</b>               | <b>Page</b> |
|-------------------------------|-------------|
| <b>European foreword.....</b> | <b>3</b>    |

## **European foreword**

This document (EN ISO 2082:2017) 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 February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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.

This document supersedes EN ISO 2082:2008.

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 2082:2017 has been approved by CEN as EN ISO 2082:2017 without any modification.

This page is intentionally left blank



**INTERNATIONAL  
STANDARD**

**ISO  
2082**

Fourth edition  
2017-07

---

---

**Metallic and other inorganic  
coatings — Electroplated coatings  
of cadmium with supplementary  
treatments on iron or steel**

*Revêtements métalliques et autres revêtements inorganiques —  
Dépôts électrolytiques de cadmium avec traitements supplémentaires  
sur fer ou acier*



Reference number  
ISO 2082:2017(E)

© ISO 2017

**ISO 2082:2017(E)**



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

# Contents

Page

|  |           |
|--|-----------|
| <b>Foreword</b> .....  | <b>iv</b> |
| <b>Introduction</b> .....  | <b>v</b>  |
| <b>1 Scope</b> .....   | <b>1</b>  |
| <b>2 Normative references</b> .....  | <b>1</b>  |
| <b>3 Terms, definitions, abbreviated terms and symbols</b> .....   | <b>2</b>  |
| 3.1 Terms and definitions.....   | 2         |
| 3.2 Abbreviated terms.....   | 2         |
| 3.3 Symbols.....   | 2         |
| <b>4 Information to be supplied by the purchaser to the electroplater</b> .....  | <b>3</b>  |
| 4.1 Essential information.....   | 3         |
| 4.2 Additional information.....  | 3         |
| <b>5 Designation</b> .....   | <b>3</b>  |
| 5.1 General.....   | 3         |
| 5.2 Designation specification.....   | 4         |
| 5.3 Designation of the basis material.....   | 5         |
| 5.4 Designation of heat treatment requirements.....  | 5         |
| <b>6 Requirements</b> .....  | <b>5</b>  |
| 6.1 Appearance.....  | 5         |
| 6.2 Thickness.....   | 5         |
| 6.3 Conversion coatings and other supplementary treatments.....  | 6         |
| 6.4 Adhesion of cadmium and chromate coatings.....   | 6         |
| 6.5 Accelerated corrosion testing.....   | 6         |
| 6.5.1 Neutral salt spray test.....   | 6         |
| 6.5.2 Corrosion rating.....  | 7         |
| 6.6 Stress relief heat treatment before cleaning and metal deposition.....   | 7         |
| 6.7 Hydrogen-embrittlement-relief heat treatment after electroplating.....   | 7         |
| 6.8 Sampling.....  | 8         |
| <b>Annex A (normative) Designation of supplementary treatments</b> .....   | <b>9</b>  |
| <b>Annex B (normative) Measurement of average thickness of coating on small articles</b> .....   | <b>11</b> |
| <b>Annex C (informative) Additional information on corrosion resistance, rinsing and drying, processing parts in bulk and dyeing of chromate conversion coatings</b> ..... | <b>12</b> |
| <b>Bibliography</b> .....  | <b>13</b> |

## ISO 2082:2017(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 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](http://www.iso.org/iso/foreword.html).

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 262, *Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys*, in collaboration with ISO Technical Committee TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 2082:2008), which has been technically revised.

## Introduction

Electrodeposits of cadmium are used to protect iron and steel from corrosion. Cadmium is anodic and corrodes sacrificially, thus protecting ferrous basis metals even when exposed through pores or pits in the cadmium. Electrodeposited cadmium coatings have traditionally been applied to iron or steel from alkaline cyanide solutions, but in recent years, environmental concerns and regulations have led to increased use of acid sulfate, neutral chloride and acid fluoborate cadmium solutions.

Because the appearance and serviceability of electroplated cadmium coatings are influenced by the surface condition of the basis metal, agreement should be reached between the interested parties that the surface of the basis metal is satisfactory for electroplating.

Although concerns have been raised about the use of cadmium due to safety and environmental effects, there are critical applications, often aerospace-related, where the unique properties of electrodeposited cadmium coatings, for example, their corrosion resistance, intrinsic lubricity, ductility, electrical conductivity and low contact resistance, make continued use of cadmium coatings necessary.

The corrosion resistance of electroplated cadmium coatings and their tendency to tarnish when handled can be improved by applying chromate conversion and other supplementary coatings.

Chemical conversion coatings that do not contain hexavalent chromium are commercially available and their use is becoming more and more popular. The appearance of these substitutes may be different from those produced with hexavalent chromium. Due to the REACH Regulations, however, the use of hexavalent chromium compounds will be banned in Europe from September 2017 except where specifically authorized. Other conversion coatings that are chromium-free are also available. Substitutes are required to satisfy the corrosion requirements given in this document.



# Metallic and other inorganic coatings — Electroplated coatings of cadmium with supplementary treatments on iron or steel

**DANGER** — Cadmium vapour is highly toxic by inhalation. During heat treatment, all precautions should be taken to ensure that no person is exposed to it. Attention is also drawn to the danger arising from welding, soldering or heating and other operations, in which the possibility that cadmium will be vaporised exists. Because of its toxicity, cadmium should not be employed as a coating for any article that will come in contact with food or beverages or containers in contact with these items or any household goods.

## 1 Scope

This document specifies the requirements of electroplated coatings of cadmium with supplementary treatments on iron and steel. It includes information that is to be supplied by the purchaser to the electroplater, and describes coating requirements, including those for heat treatment before and after electroplating.

It is not applicable to coatings applied

- to sheet, strip or wire in the non-fabricated form,
- to close-coiled springs, or
- for purposes other than protective, intrinsic lubricity, ductility, electrical conductivity and low contact resistance use.

This document does not specify requirements for the surface condition of the basis metal prior to electrodeposition with cadmium.

The coating thickness that can be applied to threaded components can be limited by dimensional requirements, including class or fit.

Additional information on corrosion resistance, rinsing and drying, processing parts in bulk and dyeing of chromate conversion coatings is given in [Annex C](#).

## 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*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-