



DRAFT INTERNATIONAL STANDARD ISO/DIS 2081

ISO/TC 107/SC 3

Secretariat: ANSI

Voting begins on:
2003-10-09

Voting terminates on:
2004-03-09

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Metallic coatings — Electroplated coatings of zinc with supplementary treatments on iron or steel

Revêtements métalliques — Dépôts électrolytiques de zinc avec traitements supplémentaires sur fer ou acier

[Revision of second edition (ISO 2081:1986)]

ICS 25.220.40

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

In accordance with the provisions of Council Resolution 15/1993 this document is circulated in the English language only.

Conformément aux dispositions de la Résolution du Conseil 15/1993, ce document est distribué en version anglaise seulement.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

Copyright notice

This ISO document is a Draft International Standard and is copyright-protected by ISO. Except as permitted under the applicable laws of the user's country, neither this ISO draft nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Reproduction may be subject to royalty payments or a licensing agreement.

Violators may be prosecuted.

Contents

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Information to be supplied to the electroplater	2
5 Designation	3
6 Requirements	4
7 Sampling	7
Annex A (normative) Designation of chromate conversion coatings and other supplementary treatments	8
Annex B (normative) Measurement of average thickness of coating on small articles	10
Annex C (informative) Additional information on corrosion resistance, rinsing and drying, processing parts in bulk and dyeing of chromate conversion coatings	11

(standards.iteh.ai)

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 2081 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*.

This third edition cancels and replaces the second edition (ISO 2081:1986) which has been technically revised.

ITEH STANDARD PREVIEW

(standards.iteh.ai)

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

Introduction

Zinc coatings are applied to iron or steel articles for protective and decorative purposes by electrodeposition from acid zinc chloride, alkaline non-cyanide zinc, and alkaline zinc cyanide solutions. Electroplated, bright zinc coatings are popular and the processes for preparing bright zinc coatings are widely used.

The ability of a zinc coating to prevent corrosion is a function of its thickness and the type of service conditions to which it is exposed. For example, the rate of corrosion of zinc will be greater in industrial exposures than in rural ones. The type of service condition should, therefore, be taken into consideration when specifying the minimum coating thickness. Chromate conversion coatings and other supplementary treatments enhance the corrosion resistance of electrodeposited zinc coatings and are commonly applied after electroplating.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/DIS 2081](https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081)

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

Metallic coatings — Electroplated coatings of zinc with supplementary treatments on iron or steel

1 Scope

This International Standard specifies requirements for electroplated coatings of zinc with supplementary treatments on iron or steel. It includes information to be supplied by the purchaser to the electroplater, and the requirements for heat treatment before and after electroplating.

It does not apply to zinc coatings applied to sheet, strip or wire in the non-fabricated form; to close-coiled springs; or for other than protective or decorative purposes.

This International Standard does not specify requirements for the surface condition of the basis metal prior to electroplating with zinc. Because the appearance and serviceability of zinc coatings depends on the surface condition of the basis metal, agreement should be reached between the interested parties that the surface finish of the basis metal is satisfactory for electroplating [See 4.1c) and 4.1e)].

The coating thickness that can be applied to threaded components may be limited by dimensional requirements, including class or fit. Attention is drawn to ISO 4042 (Ref. 1) which specifies the maximum thickness that can be applied to standard threads.

ISO/DIS 2081

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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, *Electroplating and related processes – 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, *Measurement of coating thickness - X-ray spectrometric methods.*

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

ISO 3613, *Chromate conversion coatings on zinc and cadmium - Test methods.*

ISO 3892, *Conversion coatings on metallic materials – Determination of mass per unit area – Gravimetric method.*

ISO 4518, *Metallic coatings — Measurement of coating thickness - Profilometric method.*

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

ISO 9227, *Corrosion tests in artificial atmosphere - Salt spray tests.*

ISO 9587, *Metallic and other inorganic coatings - Pre-treatments of iron or steel to reduce the risk of hydrogen embrittlement.*

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

ISO 10289, *Metallic and other inorganic coatings on metallic substrates - Rating of test specimens and manufactured articles subjected to corrosion tests.*

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

3 Terms and definitions

For the purposes of this International Standard, the definitions given in ISO 2064 and ISO 2080 apply. Also see Ref. 2.

[ISO/DIS 2081](#)

<https://standards.iteh.ai/catalog/standards/sist/5e3ad227-2ced-4ee1-9556-c52f068ee18a/iso-dis-2081>

4 Information to be supplied to the electroplater

4.1 Essential information

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

- a) the designation (see clause 5);
- b) the significant surface indicated, for example, by drawings or by the provision of suitably marked samples;
- 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 clause 1);
- d) the position on the surface for unavoidable defects, such as rack marks (see 6.1);
- e) the finish required, for example, bright, dull or other finish, preferably accompanied by approved samples of the finish (see 6.1);
- f) the type of chromate conversion coating or supplementary treatment (see 6.3 and Annex A). Chromate conversion coatings shall only be omitted, and alternative conversion coatings and/or other supplementary treatments (see Table A.2) or conformal coatings, such as lacquers, applied over the chromate coating at the specific request of the purchaser;

- g) the requirements for thickness, adhesion and accelerated corrosion test requirements (see 6.2, 6.4 and 6.5)
- h) the tensile strength of the parts and the requirements for heat treatment before and/or after electrodeposition (see 6.6 and 6.7);
- i) sampling methods, acceptance levels or any other inspection requirements, if different from those given in ISO 4519 (see clause 7);
- j) any requirements for accelerated corrosion testing (see 6.5) and rating (see 6.5.2).

4.2 Additional information

- a) any special requirements for, or restrictions on, preparation of the article to be coated.

5 Designation

The designation shall appear on engineering drawings, in the purchase order, the contract or in the detailed product specification. The designation specifies, *in the following order*, the basis metal, stress relief requirements, the type and thickness of undercoats, *if present*; the thickness of the zinc coating, heat treatment requirements after electroplating, and the type of conversion coating and/or supplementary treatment.

5.1 General

The designation shall comprise the following:

- a) the term, Electrodeposited coating;
- b) the number of this International Standard, ISO 2081;
- c) a hyphen;
- d) the chemical symbol of the basis metal, Fe (iron or steel);
- e) SR designation, if necessary (see 5.2 and 5.3);
- f) a solidus (/);
- g) the chemical symbol for zinc, Zn;
- h) a number indicating the minimum local thickness, in micrometres, of the zinc coating followed by a solidus;
- i) ER designation, if necessary (see 5.2), followed by a solidus;
- j) if appropriate, codes designating the chromate conversion coating, followed by a solidus;
- k) If appropriate, codes designating any supplementary treatments (see Annex A).

Solidi (/) shall be used to separate data fields in the designation corresponding to the different sequential processing steps. Double solidi shall be used when a processing step is omitted or not specified.

If other supplementary treatments other than or in addition to chromate conversion coating are used, the designation shall be Fe/Zn25/X/Y where X represents one of the chromate conversion coating codes given in Table A.1, and Y represents one of the codes for other supplementary coatings given in Table A.2.

NOTE It is recommended that the specific alloy be identified by its standard designation following the chemical symbol of the basis metal; for example, its UNS number, or the national or regional equivalent may be placed between the symbols, < >. For example, Fe<G43400> is the UNS designation for one high-strength steel. See Ref. 4.

5.2 Designation of heat treatment requirements

The heat treatment requirements shall be in brackets and designated as follows: