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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 11950

Cold-reduced tinmill products — Electrolytic chromium/chromium oxide-coated steel

*Aciers pour emballage laminés à froid — Fer chromé
électrolytique*

ICS: 77.140.50

ISO/TC 17/SC 9

Secretariat: JISC

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2025-04-18

Voting terminates on:
2025-07-11

This document is circulated as received from the committee secretariat.

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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).

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).

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.

This document was prepared by Technical Committee ISO/TC 17, Subcommittee SC 9.

This third edition cancels and replaces the second edition (ISO 11949:2016), which has been technically revised.

The main changes are as follows:

- Either the trivalent chromium process or the hexavalent chromium process can be used for electrolytic chromium/chromium oxide-coated steel (3.2).
- Sheet numbers in bulk package other than multiples of 100 may be supplied (16.2).
- The maximum weight of sheets in bulk package can be increased up to 3 000 kg instead of 2 000 kg (16.2).
- Several steel grades are added (Tables A.1, A.2 and B.1)
- The lower yield strength, R_{eL} is specified for CA (9.3, 13.3.2, Annex B, Annex D)
- Editorial update is done.

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.

Cold-reduced tinmill products — Electrolytic chromium/chromium oxide-coated steel

1 Scope

This International Standard specifies requirements for single and double cold-reduced electrolytic chromium/chromium oxide-coated steel (ECCS) in the form of sheets or coils.

Single cold-reduced ECCS is generally specified in nominal thicknesses that are multiples of 0,005 mm, from 0,150 mm up to and including 0,600 mm. Double cold-reduced ECCS is generally specified in nominal thicknesses that are multiples of 0,005 mm, from 0,100 mm up to and including 0,390 mm.

This International Standard applies to coils and sheets cut from coils in nominal minimum rolling widths of 600 mm.¹⁾

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 404, *Steel and steel products — General technical delivery requirements*

ISO 4288, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 10474, *Steel and steel products — Inspection documents*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

blackplate

cold-reduced low-carbon mild steel, applied for manufacturing ECCS

Note 1 to entry: See ISO 11951^[1].

1) Nominal minimum rolling widths of 500 mm may be applied by agreement between the purchaser and the manufacturer.

3.2

electrolytic chromium/chromium oxide-coated steel

ECCS

cold-reduced low-carbon mild steel sheet or coil, electrolytically treated to produce on both surfaces a duplex film of metallic chromium adjacent to the steel substrate with a top layer of hydrated chromium oxide or hydroxide.

Note 1 to entry: This can either be produced by a hexavalent chromium process or by a trivalent chromium process.

3.3

single cold-reduced

description of product in which the blackplate has been reduced to the desired thickness in a cold-reduction mill and subsequently annealed and temper rolled

3.4

double cold-reduced

description of product in which the blackplate has had a second major reduction after annealing

3.5

standard grade ECCS sheet

product in sheet form which is confirmed to be suitable, under normal conditions of storage, for established lacquering and printing over the entire sheet and is

a) free from surface imperfections which render the material unsuitable for the intended use, and

b) free from damage which render the material unsuitable for the intended use

Note 1 to entry: The standard material is compliant with the requirements as specified in this International Standard.

3.6

batch annealed

box annealed

BA

annealed by the process in which the cold-reduced strip is annealed in coil form, within a protective atmosphere, for a predetermined time-temperature cycle

3.7

continuously annealed

CA

annealed by the process in which cold-reduced coils are unwound and annealed in strip form within a protective atmosphere

3.8

finish

appearance of the surface of ECCS, governed by the surface roughness, R_a , of the steel base which results from controlled preparation of the work rolls during the final stages of rolling

3.8.1

smooth finish

finish of blackplate resulting from the use of temper-mill work rolls that have been ground to a low roughness

Note 1 to entry: This finish is used for the production of bright finish ECCS.

3.8.2

bright finish

finish on ECCS using the smooth finish blackplate

3.8.3

fine stone finish

finish on ECCS characterized by a directional pattern, resulting from the use of final-mill work rolls that have been ground to a lower level of roughness than those used for stone finish

3.8.4

stone finish

finish characterized by a directional pattern, resulting from the use of final-mill work rolls that have been ground to a higher level of roughness than those used for the smooth finish

3.8.5

matt finish

finish resulting from the use of temper-mill work rolls with dull surface textured by shot blast, electro discharge texturing (EDT), electron beam texturing (EBT) or another suitable method

3.9

coil

rolled flat strip product which is wound into regularly superimposed laps so as to form a coil with almost flat sides

3.10

longitudinal bow

line bow

residual curvature in the strip remaining along the direction of rolling

3.11

transverse bow

cross bow

mode of curvature in the sheet such that the distance between its edges parallel to the direction of rolling is less than the sheet width

3.12

centre fullness

centre buckle

full centre

intermittent vertical displacement or wave in the strip occurring other than at the edges

Note 1 to entry: See [Figure 8](#).

3.13

edge wave

intermittent vertical displacement occurring at the strip edge when the strip is laid on a flat surface

3.14

feather edge

transverse thickness profile

variation in thickness, characterized by a reduction in thickness close to the edges, at right angles to the direction of rolling

3.15

edge camber

deviation of edge of coil/sheet from a straight line forming its chord

3.16

burr

metal displaced beyond the plane of the surface of the strip by shearing action

3.17

rolling width

width of the rolled strip perpendicular to the direction of rolling

3.18

pallet

base platform on which a coil is placed to facilitate ready transportation

3.19

stillage platform

base platform on which sheets are stacked to facilitate packing and ready transportation

3.20

consignment

quantity of material of the same specification made available for dispatch at the same time

3.21

bulk package

bulk

packaging unit comprising a stillage platform, the sheets and packaging material

3.22

line inspection

final inspection of the finished product performed by instruments and/or visual examination at normal production-line speeds

3.23

anvil effect

effect that a hard anvil can produce on the numerical hardness value obtained when a hardness test is performed on very thin sheet supported on such an anvil

4 General technical delivery condition

In cases where the technical delivery condition is not specified in this International Standard, then ISO 404 shall apply.

5 Classification

Steel grades for this International Standard are generally classified as non-alloy quality steels.

6 Information to be supplied by the purchaser

6.1 Designation

For the purposes of this International Standard, ECCS is designated in terms of a steel grade classification based either on the Rockwell HR30Tm hardness values or on the tensile properties. For the hardness requirements, the steel grade designations are given in [Table A.1](#) for single cold-reduced ECCS and in [Table A.2](#) for double cold-reduced ECCS. For the tensile properties requirements, the steel grade designations are given in [Table B.1](#).

ECCS covered by this International Standard shall be designated by the following characteristics in the given sequence:

- a) a reference to this International Standard, i.e. ISO 11950;
- b) the steel grade designation in accordance with [Table A.1](#), [Table A.2](#) or [Table B.1](#);
- c) the type of annealing used by the manufacturer (see [7.2](#));
- d) the type of finish (see [7.3](#));
- e) the dimensions, in millimetres:
 - for coils, thickness × width;
 - for sheets, thickness × width × length.