



SLOVENSKI STANDARD

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Continuously organic coated (coil coated) steel flat products - Part 1: General information (definitions, materials, tolerances, test methods)

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Kontinuierlich organisch beschichtete (bandbeschichtete) Flacherzeugnisse aus Stahl - Teil 1: Allgemeines (Definitionen, Werkstoffe, Grenzabweichungen, Prüfverfahren)

Produits plats en acier revetus en continu de matieres organiques (prélaqués) - Partie 1: Généralités (définitions, matieres, tolérances, méthodes d'essai)

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77.140.50	Ú[[z aã\ ^} áå å^ áå] [ã å^ ã	Flat steel products and semi-products

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**Continuously organic coated (coil coated) steel flat products -
Part 1: General information (definitions, materials, tolerances,
test methods)**

Produits plats en acier revêtus en continu de matières
organiques (prélaqués) - Partie 1: Généralités (définitions,
matériaux, tolérances, méthodes d'essai)

Kontinuierlich organisch beschichtete (bandbeschichtete)
Flacherzeugnisse aus Stahl - Teil 1: Allgemeines
(Definitionen, Werkstoffe, Grenzabweichungen,
Prüfverfahren)

This European Standard was approved by CEN on 25 April 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 10169-1:2003) has been prepared by Technical Committee ECISS/TC 27 "Surface coated flat products - Qualities, dimensions, tolerances and specific tests", the secretariat of which is held by DIN.

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 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document supersedes EN 10169-1:1996.

This European Standard consists of the following parts under the general title *Continuously organic coated (coil coated) steel flat products*:

- Part 1: General information (definitions, materials, tolerances, test methods);
- Part 2: Products for building exterior applications (ENV);
- Part 3: Products for building interior applications.

Annex A is informative.

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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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

EN 10169-1:2003 (E)**1 Scope**

1.1 This European Standard provides information on the selection and ordering of continuously organic coated (coil coated) steel flat products and specifies appropriate technical requirements for the products, e.g. for test methods and tolerances on coating thickness, appearance, and product dimensions and shape.

This European Standard applies to rolled steel flat products, with or without metallic coatings, that are continuously organic coated by the coil coating process.

This European Standard applies to strip of all widths and to sheets cut from it (≥ 600 mm width) and cut lengths (< 600 mm width).

1.2 The products covered by this European Standard may be used to advantage in cases where corrosion resistance and decorative appearance are of primary importance. They have applications throughout the flat products processing industry, e.g. in the building construction, automotive, appliances, furniture and technical packaging industries.

Coil coated steel flat products may be delivered in numerous type and grades, depending on the base material used (various grades of steel with or without metallic coating), on the coating material and coating type and on the requirements for the surface appearance, the formability and general performance. The properties of the products may vary within greater or smaller limits depending on the choice and combination of the characteristics mentioned and the time of storage.

1.3 For specific applications of coil coated steel flat products ENV 10169-2 and EN 10169-3 apply.

1.4 This European Standard is not applicable to continuously organic coated

— tin mill flat products,

— electrical steels,

— steel strapping.

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2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 971-1, *Paints and varnishes - Terms and definitions for coating materials - Part 1: General terms.*

EN 10020, *Definition and classification of grades of steel.*

EN 10021, *General technical delivery requirements for steel and steel products.*

EN 10025, *Hot rolled products of non-alloy structural steels - Technical delivery conditions.*

EN 10027-1, *Designation systems for steel – Part 1: Steel names - principal symbols.*

EN 10027-2, *Designation systems for steel – Part 2: Numerical system.*

EN 10048, *Hot rolled narrow steel strip – Tolerances on dimensions and shape.*

EN 10051, *Continuously hot-rolled uncoated plate, sheet and strip of non-alloy and alloy steels – Tolerances on dimensions and shape.*

- EN 10079, *Definition of steel products.*
- EN 10111, *Continuously hot-rolled low carbon steel sheet and strip for cold forming – Technical delivery conditions.*
- EN 10130, *Cold rolled low carbon steel flat products for cold forming – Technical delivery conditions.*
- EN 10131, *Cold rolled uncoated low carbon and high yield strength steel flat products for cold forming – Tolerances on dimensions and shape.*
- EN 10139, *Cold rolled uncoated mild steel narrow strip for cold forming – Technical delivery conditions.*
- EN 10140, *Cold rolled narrow steel strip – Tolerances on dimensions and shape.*
- EN 10143, *Continuously hot-dip metal coated steel sheet and strip – Tolerances on dimensions and shape.*
- EN 10152, *Electrolytically zinc coated cold rolled steel flat products – Technical delivery conditions.*
- EN 10204, *Metallic products – Types of inspection documents.*
- EN 10268, *Cold-rolled flat products made of high yield strength steels for cold forming – General delivery conditions.*
- EN 10292, *Continuously hot-dip coated strip and sheet of steels with higher yield strength for cold forming – Technical delivery conditions.*
- prEN 10326, *Continuously hot-dip coated strip and sheet of structural steels – Technical delivery conditions.*
- prEN 10327, *Continuously hot-dip coated strip and sheet of low carbon steels for cold forming – Technical delivery conditions.*
- prEN 10336, *Continuously hot-dip coated and electrolytically coated strip and sheet of multiphase steels for cold forming – Technical delivery conditions.*
- EN 13523-0, *Coil coated metals – Test methods – Part 0: General introduction and list of test methods.*
- EN 13523-1, *Coil coated metals – Test methods – Part 1: Coating thickness.*
- EN 13523-2, *Coil coated metals – Test methods – Part 2: Specular gloss.*
- EN 13523-3, *Coil coated metals – Test methods – Part 3: Colour difference – Instrumental comparison.*
- EN 13523-4, *Coil coated metals – Test methods – Part 4: Pencil hardness.*
- EN 13523-5, *Coil coated metals – Test methods – Part 5: Resistance to rapid deformation (impact test).*
- EN 13523-6, *Coil coated metals – test methods – Part 6: Adhesion after indentation (cupping test).*
- EN 13523-7, *Coil coated metals – Test methods – Part 7: Resistance to cracking on bending (T-bend test).*
- EN 13523-8, *Coil coated metals – Test methods – Part 8: Resistance to salt spray (fog).*
- EN 13523-10, *Coil coated metals – Test methods – Part 10: Resistance to fluorescent UV light and water condensation.*
- prEN 13523-12, *Coil coated metals – Test methods – Part 12: Resistance to scratching.*
- EN 13523-14, *Coil coated metals – Test methods – Part 14: Chalking (Helmen method).*
- EN 13523-15, *Coil coated metals – Test methods – Part 15: Metamerism.*
- EN 13523-21, *Coil coated metals – Test methods – Part 21: Evaluation of outdoor exposure panels.*

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EN 13523-22, *Coil coated metals – Test methods – Part 22: Colour difference – Visual comparison.*

ENV 606, *Bar coded transport and handling labels for steel products.*

ENV 10169-2, *Continuously organic coated (coil coated) steel flat products – Part 2: Products for building exterior applications.*

EN ISO 1043-1, *Plastics – Symbols and abbreviated terms – Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001).*

EN ISO 2815, *Paints and varnishes – Buchholz indentation test (ISO/DIS 2815:2003).*

EN ISO 7253, *Paints and varnishes – Determination of resistance to neutral salt spray (fog) (ISO 7253:1996).*

ISO/DIS 4628-4, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 4: Assessment of degree of cracking.*

ISO/DIS 4628-5, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 5: Assessment of the degree of flaking.*

ISO 4997, *Cold-reduced steel sheet of structural quality.*

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply in addition to the terms and definitions in EN 971-1, EN 10020, EN 10021, EN 10079, EN 10204 and EN 13523-0.

3.1**coil coating**

method in which an (organic) coating material is applied on rolled metal strip in a continuous process. This process includes cleaning, if necessary, and chemical pre-treatment of the metal surface and either:

- one-side or two-side, single or multiple application of (liquid) paints or coating powders which are subsequently cured or
- laminating with plastic films

3.2**metal substrate**

base material from rolled steel flat products, with or without metallic coating

3.3**coating material**

material comprising organic polymers, i.e. synthetic resin or plastics, to which pigments, additives and solvents (if required) have generally been added, suitable for coil coating

NOTE These may be paints (in liquid or powder form) that when applied form an opaque film or plastic film providing protective, decorative and/or specific properties.

3.4**organic coating**

dry paint film of the coated product or the plastic film of the film/metal laminate

3.5**top side**

side of the strip with the highest decorative demand and/or corrosion protection and which, in normal production, is uppermost, respectively the exterior side of a coil

3.6**reverse side**

underside of the strip coated according to 3.7.2, 3.7.3, 3.8 or 3.12

3.7 Coating systems

3.7.1 coating system, general

sum of the coatings applied on either the top side or the reverse side consisting of one or more coats of one or more coating materials, the designation of which derived from the relevant coating material

3.7.2 single-coat system

single coating either with requirements on appearance (see 3.18), formability, corrosion protection, subsequent painting, foam adhesion, etc, or as a priming coat with special properties regarding adhesion and corrosion protection for post-finishing applications

3.7.3 multiple-coat system

system comprising a priming coat, possibly intermediate coat(s) and a top coat with particular requirements on appearance, corrosion protection, formability, etc.

3.8 backing coat

coating of any type with no particular requirements on appearance, corrosion protection, formability, etc.

NOTE In the case of particular requirements see 3.7.2 and 3.7.3.

3.9 priming coat

first coat of a multiple-coat system

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NOTE In the case of particular requirements see 3.7.2 and 3.7.3.

3.10 intermediate coat

any coat between the priming coat and the top coat

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3.11 top coat (finishing coat)

final (uppermost) coat of a multiple-coat system

3.12 film coating

plastic film applied to the substrate to which generally an adhesive and, if appropriate, a priming coat has been applied beforehand

3.13 strippable film coating

plastic film applied to the coated surface in order to afford a temporary protection against mechanical damage

3.14 uncoated

condition in which parts of the surface of the substrate (e.g. one side of the strip) remain uncoated

3.15 master coil

coated coil from which sheets, cut lengths or two or more smaller coils are produced

3.16 coating thickness

total thickness of the organic coating on either side

EN 10169-1:2003 (E)**3.17****nominal coating thickness**

ordered or specified coating thickness

NOTE The nominal thickness of a coil-coated product corresponds to that of the metal substrate, the coating thickness not taken into account.

3.18**colour/colour difference**

colour is the sensation resulting from the visual perception of radiation of a given composition.

A colour is uniquely characterized for a defined observer and a defined light source as well as illuminating and viewing geometry by the coordinates of a point in a space (colorimetric specification with tristimulus values). Colour difference is the magnitude and character of the visually perceived, i. e. qualitative, difference between two colours under daylight and artificial light respectively, or the magnitude and direction of the (instrumentally) measured and calculated difference of two colours (related to EN 13523-3)

3.19**gloss/specular gloss**

gloss is an optical property of a surface, characterized by its ability to reflect light. Specular gloss is the ratio of the luminous flux from an object in the specular direction for a specified source and receptor angle to the luminous flux from polished black glass (related to EN 13523-3)

NOTE For qualitative purposes, gloss ranges are often described by the terms "matt", "low gloss" or "semi-matt", "satin", "semi-gloss", "gloss" and "high gloss".

4 Designation**iTeh STANDARD PREVIEW**

4.1 For the steel substrates covered by this European Standard the steel names are allocated in accordance with EN 10027-1 and CR 10260; the steel numbers are allocated in accordance with EN 10027-2.

4.2 The products covered by this European Standard shall be designated as follows in the order given:

- a) type of product (e.g. strip, sheet or cut length);
- b) number of this standard (EN 10169-1);
- c) complete designation of the substrate according to the appropriate standard, i.e.:
 - steel name or number,
 - type and nominal mass of the metal coating, if applicable,
 - number of the standard for the substrate;
- d) symbol "OC" for organic coated, when no other symbols (see clause 4.2e)) are given;
- e) symbol for the organic coating material on the top side and, if need be, that on the reverse side (see Table A.1);
- f) nominal thickness, in μm , of the organic coating on the top side and, if need be, that on the reverse side.

NOTE 1 The information concerning the coating on the top side is separated from that relative to the reverse side by a slash mark.

NOTE 2 If the nature of the coating material on the reverse side is at the discretion of the manufacturer, it is not stated in the designation.

EXAMPLE 1:

Designation of sheet, substrate made of steel grade DC03 (or 1.0347) according to EN 10130, top side organic coated with epoxy (EP) with a nominal thickness of 10 μm .

Sheet EN 10169-1-DC03 EN 10130-EP10
or:

Sheet EN 10169-1–1.0347 EN 10130–EP10

EXAMPLE 2:

Designation of strip, substrate made of hot-dip zinc coated steel of grade DX53D+Z (or 1.0355+Z) with a coating mass of 275 g/m² (275) according to prEN 10327, top side organic coated with polyamide-modified polyester (SP-PA) with a nominal thickness of 25 µm.

Strip EN 10169-1–DX53D+Z275 prEN10327–SP-PA25

or:

Strip EN 10169-1–1.0355+Z275 prEN 10327–SP-PA25

EXAMPLE 3:

Designation of strip, substrate made of hot-dip zinc-aluminium coated steel of grade DX53D+ZA (or 1.0355+ZA) with a coating mass of 255 g/m² (255) according to prEN 10327, two side coated with polyester (SP) with a nominal thickness of 25 µm.

Strip EN 10169-1–DX53D+ZA255 prEN 10327–SP25/SP25

or:

Strip EN 10169-1–1.0355+ZA255 prEN 10327– SP25/SP25

If the coating material is not defined, insert "+OC" (see clause 4.2d)).

4.3 Where appropriate, additional information to the designation as specified in 4.2 shall be given to describe clearly the delivery requirements (see clause 5).

5 Information to be supplied by the purchaser

The following information is required from the purchaser so that the manufacturer may supply the products to conform with the requirements:

- a) complete designation (see 4.2);
- b) where appropriate, details on the required decorative properties (colour, gloss, embossing, printing) and required subsequent surface treatment (see 6.1.2.3);
- c) other requirements on the characteristics of the products (see 4.3);
- d) nominal dimensions of the product related to the substrate;
- e) quantity;
- f) internal and maximum external diameter and mass limit for coils, or limit dimensions and mass limit for the bundles of sheets;
- g) testing at the manufacturer's work, type of test and type of inspection document (see 7.1 and 7.3);
- h) selection of the test methods and specification of the minimum or maximum values for the relevant properties (see 7.5);
- i) marking by bar coding if required (see 8.2);
- j) marking by branding of the product if required (see 8.3);
- k) requirements on packing and dispatch (see clause 9).