



**SLOVENSKI STANDARD**  
**SIST EN 10169-2:2006**  
**01-julij-2006**

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Continuously organic coated (coil coated) steel flat products - Part 2: Products for building exterior applications

Kontinuierlich organisch beschichtete (bandbeschichtete) Flacherzeugnisse aus Stahl - Teil 2: Erzeugnisse für den Bauaußeneinsatz

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Produits plats en acier revetus en continu de matieres organiques (prélaqués) - Partie 2 : Produits pour applications extérieures dans le bâtiment

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English Version

Continuously organic coated (coil coated) steel flat products -  
Part 2: Products for building exterior applications

Produits plats en acier revêtus en continu de matières  
organiques (prélaqués) - Partie 2 : Produits pour  
applications extérieures dans le bâtiment

Kontinuierlich organisch beschichtete (bandbeschichtete)  
Flacherzeugnisse aus Stahl - Teil 2: Erzeugnisse für den  
Bauaufseinsatz

This European Standard was approved by CEN on 27 February 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 10169-2:2006) 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 October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

This document supersedes ENV 10169-2:1999.

This document 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;*
- *Part 3: Products for building interior applications.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## 1 Scope

This document gives the specific requirements for continuously organic coated (coil coated) steel flat products used for building exterior applications. It particularly specifies the performance requirements.

The products covered are wide strip, sheet cut from wide strip, slit wide strip, strip rolled in widths less than 600 mm and cut lengths (from sheet or strip).

General information concerning continuously organic coated steel flat products is provided by EN 10169-1.

Products for building interior applications are covered by EN 10169-3.

## 2 Normative references

The following referenced documents are indispensable for the application 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.

EN 10020:2000, *Definition and classification of grades of steel*

EN 10021:1993, *General technical delivery requirements for steel and steel products*

EN 10079:1992, *Definition of steel products*

EN 10143, *Continuously hot-dip metal coated steel sheet and strip – Tolerances on dimensions and shape*

EN 10169-1:2003, *Continuously organic coated (coil coated) steel flat products – Part 1: General information (definitions, materials, tolerances, test methods)*

EN 10204:2004, *Metallic products – Types of inspection documents*

EN 10292, *Continuously hot-dip coated strip and sheet of steels with higher yield strength for cold forming – Technical delivery conditions*

EN 10326, *Continuously hot-dip coated strip and sheet of structural steels – Technical delivery conditions*

EN 10327, *Continuously hot-dip coated strip and sheet of low carbon steels for cold forming – Technical delivery conditions*

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 13523-6, *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*

EN 13523-19, *Coil coated metals – Test methods – Part 19: Panel design and method of atmospheric exposure testing*

EN 13523-21, *Coil coated metals – Test methods – Part 21: Evaluation of outdoor exposed panels*

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

EN ISO 2409, *Paints and varnishes – Cross-cut test (ISO 2409:1992)*

EN ISO 12944-2:1998, *Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments (ISO 12944-2:1998)*

EN ISO 8044, *Corrosion of metals and alloys – Basic terms and definitions (ISO 8044:1999)*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions in addition to the those in EN 10020:2000, EN 10021:1993, EN 10079:1992, EN 10169-1:2003, EN 10204:2004, EN ISO 8044 and EN ISO 12944-2:1998 apply.

#### 3.1

##### **Building exterior applications**

all applications in buildings for which the concerned products are submitted to the influence of exterior atmospheres

NOTE 1 Building products include, for example, ribbed profiles for roofing and walling, curved profiles, brake-pressed profiles, concealed fix roofing and walling, standing seam roofing, corrugated sheeting, factory foamed sandwich panels for roofing and walling, roof tiles, accessories (flashings, trims), rainwater goods (gutters, down pipes), metal doors and garage doors.

NOTE 2 For exterior building elements, it is important that the risk of corrosive attack on internal, i.e. reverse side surfaces, should also be considered. In particular, buildings with wet or chemically polluted internal environments or open-sided buildings and canopies the reverse side of which is exposed to sea salt aerosols can require a reverse side organic coating selected to provide enhanced corrosion protection.

This can be especially important in double-skin assemblies (e.g. built-up insulated cladding) where the reverse side of the exterior element is not easily accessible for maintenance and/or in situations where the exterior element is expected to provide long term durability.

NOTE 3 Besides the requirements written in this document, other international or national requirements regarding fire resistance, safety etc. can be agreed on at the time of enquiry and order.

#### 3.2

##### **Performance test**

test, the result of which should be related to the effective behaviour of the product on site

#### 3.3

##### **Local environment**

atmospheric conditions prevailing around a constituent element of a structure [EN ISO 12944-2].

NOTE 1 These conditions determine the corrosivity category and include both meteorological and pollution parameters [EN ISO 12944-2].

NOTE 2 It should be recognized that in some local areas within a region, environmental conditions can apply which are not typical of the region as a whole, e.g. in a rural atmosphere close to a fossil fuel burning power generation plant, areas immediately down wind of the prevailing wind direction can be subjected to an environment closer to urban or even industrial atmospheres. Such special cases should be considered when organic coatings are chosen.

#### 3.4

##### **Corrosivity category**

category which indicates the corrosivity of the environment taking into account both local and micro-environmental effects and shall be used for the selection of the appropriate product

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NOTE The relationship between corrosivity categories and types of atmospheres is given in Table 1.

### 3.5

#### Coating flexibility

ability of a coating to follow without damage the deformation during cold forming of the substrate evaluated by the T-bend test

### 3.6

#### Corrosion resistance category

category of product which presents a certain level of corrosion resistance, the choice of which depends on the corrosivity category, the period of resistance and the accessibility

### 3.7

#### UV resistance category

category of coating which presents a certain level of resistance to degradation by UV radiation

### 3.8

#### Accessibility

ease of access to the steel components for the purpose of inspection and maintenance without any work over and above that concerned with routine inspection

### 3.9

#### Saturated colour

colour with Chroma  $C^* \geq 40$

NOTE Chroma  $C^*$  is defined by CIE 15.3:2004.

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## 4 Designation

4.1 For the steel substrates covered by this document the steel names are allocated in accordance with EN 10027-1; the steel numbers are allocated in accordance with EN 10027-2.

NOTE Applicable steel substrates are specified in EN 10292, EN 10326 and EN 10327 (see 6.1.1).

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

- a) type of product (e.g. strip, sheet or cut length, see EN 10079),
- b) number of this document (EN 10169-2),
- c) complete designation of the substrate, i.e.:
  - steel name or number,
  - type and nominal mass of the metal coating,
  - number of the standard for the substrate,
  - dimensions and tolerances (EN 10143),
- d) symbol "OC" for organic coated when no other symbols (see 4.2e)) are given,
- e) symbol for the organic coating material on the top side and, if required, that on the reverse side (see EN 10169-1:2003, Annex A),
- f) nominal thickness, in  $\mu\text{m}$ , of the organic coating on the top side and, if required, 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.

- g) product flexibility (see 6.2.2.2 ),
- h) if applicable, corrosion protection category (see Tables 1 and 2) of the top side followed by the one of the reverse side when required,
- i) if applicable, UV resistance category (see Tables 1 and 4) of the top side.

EXAMPLE 1 Designation of strip in accordance with EN 10169-2, substrate made of hot-dip zinc coated steel of grade S280GD(+Z) with a coating mass of 275 g/m<sup>2</sup> (275) according to EN 10326, top side organic coated with polyamide-modified polyester (SP-PA) with a nominal thickness of 25 µm, product flexibility 4 T, corrosion resistance category 2 (RC2), UV resistance category 2 (R<sub>UV2</sub>).

Strip EN 10169-2–S280GD+Z275–SP-PA25–EN 10326–4T–RC2–R<sub>UV2</sub>

or

Strip EN 10169-2–1.0244+Z275–SP-PA25–EN 10326–4T–RC2–R<sub>UV2</sub>

EXAMPLE 2 Designation of sheet in accordance with EN 10169-2, substrate made of hot-dip zinc-aluminium coated steel of grade DX53D(+ZA) with a coating mass of 255 g/m<sup>2</sup> (255) according to EN 10327, two side coated with polyester (SP) with a nominal coating thickness of 25 µm each, product flexibility 3 T, corrosion resistance category 3 (RC3) on the top side / corrosion protection category 2 (RC2) on the reverse side, UV resistance category 2 (R<sub>UV2</sub>).

Sheet EN 10169-2–DX53D+ZA255–SP25/SP25–EN 10327–3T–RC3/RC2–R<sub>UV2</sub>

or

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Sheet EN 10169-2–1.0355+ZA255–SP25/SP25–EN 10327–3T–RC3/RC2–R<sub>UV2</sub>

## 5 Information to be supplied by the purchaser

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

- a) complete designation of the product (see 4.2);
- b) where appropriate, details of the required decorative properties (colour, gloss, embossing, printing) and subsequent surface treatment (see 6.1.2.3);
- c) nominal dimensions of the product substrate;
- d) quantity;
- e) internal and maximum external diameter and mass limit for coils, or limit dimensions and mass limit for bundles of sheets;
- f) testing required at the manufacturer's works, type of test and type of inspection document (see 7.1.1 and 7.1.2);
- g) requirement concerning marking (see clause 8);
- h) requirement on packing and despatch (see clause 9).

## 6 Requirements

### 6.1 General

In addition to the requirements specified in EN 10169-1, the following requirements shall apply.

#### 6.1.1 Steel substrates

The initial product for continuously organic coated steel flat products according to this European standard shall be steel strip with metallic coating complying with one of the following standards:

EN 10292 or EN 10326 or EN 10327

If agreed at the time of enquiry and order the products may be supplied with other steel substrates.

Minimum metal coating masses as specified for certain applications shall be indicated at the time of enquiry and order.

**NOTE** The mechanical properties of the substrate material can be altered by the coil coating process. The use of substrates which can be subject to ageing will result in an increase in yield point and tensile strength, reduction in elongation and the possibility of appearance of Luders lines and the occurrence of fluting effects.

#### 6.1.2 Organic coatings

##### 6.1.2.1 Coating materials

The more common coating materials used on the exposed sides of organic coated flat products suitable for building exterior applications, together with their coating thickness (dry film thickness) are given in Annex A of EN 10169-1:2003.

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##### 6.1.2.2

##### Coil coating systems

The type of coating on either side of the product shall be agreed between the purchaser and the supplier to meet the purchaser's requirements of the product flexibility, the corrosion protection category of the top and reverse sides and the UV resistance category of the top side.

**NOTE** The reverse side coating should be chosen as appropriate. It is normally required to withstand handling and storage. In some circumstances, it can also be required to provide corrosion protection and/or aesthetic appearance or to be compatible with foam or adhesive bonding.

For strip supplied in coil form, the top side is normally the outside of the coil; for sheets and cut lengths (in stacks or bundles) the top side is normally uppermost.

If the purchaser requires an alternative arrangement, this shall be expressively stated at the time of enquiry and order.

### 6.1.2.3 Temporary protection treatment

Coil coated products can be supplied with the additional temporary protection of a strippable film. Additional temporary protection is recommended, when special requirements during transportation, storage or processing are expected.

The type of temporary protection shall be agreed upon at the time of enquiry and order. Type and thickness of the coating shall be taken into consideration when choosing protective films.

NOTE 1 The user should ensure proper stock rotation to maintain easy removal of strippable films.

NOTE 2 Outdoor weathering exposure time of coated products protected by strippable films should be strictly limited.

### 6.1.3 Manufacturing process

Within the context of the data on coil coating (see 6.1.2.2), the details of the manufacture of the product is at the discretion of the manufacturer.

## 6.2 Coating properties

### 6.2.1 Properties which form part of factory production control

#### 6.2.1.1 Dimensions and shape

The tolerances on the thickness of the substrate and the width, length, flatness, edge camber and out-of-squareness of the organic coated steel flat product shall be as specified in EN 10143.

NOTE It should be indicated at the time of enquiry and order if the normal or special tolerances as covered by the above mentioned standard apply.

#### 6.2.1.2 Thickness of the organic coating

The tolerances on the ordered coating thickness specified in EN10169-1:2003, Table 2 shall apply.

NOTE For definition of coating thickness and nominal/specified coating thickness, see also EN 10169-1.

#### 6.2.1.3 Colour

Appropriate colour tolerances, the method of measurement and the measurement device shall be agreed at the time of enquiry and order.

NOTE Metallic and pearlescent paints exhibit directionality. It is important that this directionality is maintained to ensure colour consistency.

#### 6.2.1.4 Gloss

When required the tolerances shall be as given in Table 3 of EN 10169-1:2003.

#### 6.2.1.5 Adhesive strength after cupping or bending

For liquid coatings with a thickness up to 60 µm, one of the following requirements applies, the choice is left at the discretion of the manufacturer.

- a) no loss of adhesion after taping for an indentation depth of 4 mm.
- b) no loss of adhesion after a 2 T bend test.