



SLOVENSKI STANDARD SIST EN 10215:1998

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Continuously hot-dip aluminium-zinc (AZ) coated steel strip and sheet - Technical delivery conditions

Kontinuierlich schmelztauchveredeltes Band und Blech aus Stahl mit Aluminium-Zink-Überzügen (AZ) - Technische Lieferbedingungen

Bandes et tôles en acier revetues d'alliage aluminium-zinc (AZ) a chaud en continu - Conditions techniques de livraison

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Ta slovenski standard je istoveten z: EN 10215:1995

ICS:

77.140.50 Ú[[z æã\ |^} æ å^| æ Flat steel products and semi-products
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EUROPEAN STANDARD

EN 10215

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English version

Continuously hot-dip aluminium-zinc (AZ) coated steel strip and sheet - Technical delivery conditions

iTeh STANDARD PREVIEW

Bandes et tôles en acier revêtues d'alliage
aluminium-zinc (AZ) à chaud en continu -
Conditions techniques de livraison

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard was prepared by the Technical Committee ECISS/TC 27 "Surface coated flat products - Qualities, dimensions, tolerances and specific tests" of which the secretariat is held by DIN.

It is the first edition of European technical delivery conditions for continuously hot-dip aluminium-zinc (AZ)-coated steel sheet and strip.

The draft prEN 10215 was published for CEN enquiry in August 1992. At a meeting of ECISS/TC 27 on 16 March 1993 in Düsseldorf the text was agreed for the final edition of the European Standard. The following countries were represented at this meeting: Austria, Belgium, France, Germany, Netherlands, Sweden and United Kingdom.

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of an identical text or by endorsement, at the latest by August 1995, and conflicting national standards shall be withdrawn at the latest by August 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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1 Scope

1.1 This European Standard specifies requirements for continuously hot-dip aluminium-zinc alloy coated flat products made of low carbon steels for cold forming (see table 1) or of structural steels (see table 2) in thicknesses $\leq 3,0$ mm. The thickness is the final thickness of the delivered product after coating.

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

The aluminium-zinc alloy composition by mass is nominally 55 % Al, 1,6 % Si, and the balance zinc.

The available coating masses, coating finishes and surface qualities are given in 5.2 to 5.4 and table 3.

1.2 The products covered by this European Standard are mainly intended for applications where the protection of the steel base against corrosion is of prime importance.

1.3 This European Standard is not applicable to

- continuously hot-dip zinc-aluminium alloy (ZA) coated steel flat products (see EN 10214),
- continuously hot-dip zinc coated low carbon steel sheet and strip for cold forming (see EN 10142),
- continuously hot-dip zinc coated structural steel sheet and strip (see EN 10147),
- electrolytically zinc coated steel flat products (see EN 10152),
- continuously organic coated flat steel products (see EN 10169, in preparation).

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate points in the text and the publications are listed hereafter. Subsequent amendments to, or revisions of, any of these publications apply to this European

Standard only when incorporated in it by amendment or revision. In the case of undated references, the most recent edition of the publications referred to applies.

- EN 10002-1 Metallic materials. Tensile testing - Part 1: Method of testing (at ambient temperature)
- EN 10020 Definition and classification of grades of steel
- EN 10021 General technical delivery requirements for steel and steel products
- EN 10027-1 Designation systems for steels - Part 1: Steel names; principal symbols
- EN 10027-2 Designation systems for steels - Part 2: Numerical system
- EN 10079 Definition of steel products
- EN 10143 Continuously hot-dip metal coated steel sheet and strip - tolerances on dimensions and shape
- EN 10204 SIST EN 10215:1998
Metallic products - types of inspection documents
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- ECISS IC 10: Designation systems for steel - additional symbols for steel names
- EURONORM 12¹⁾ Bend test for steel sheet and strip less than 3 mm thick

3 Definitions

For the purposes of this European Standard the following definitions apply in addition to the definitions in EN 10020, EN 10021, EN 10079 and EN 10204 (see clause 2):

3.1 Hot-dip aluminium-zinc alloy coating (AZ): application of an aluminium-zinc coating by immersing the prepared products in the molten metal alloy.

In the present case, wide strip is continuously hot-dip coated

¹⁾ Until it is transformed into an European Standard, either EURONORM 12 or the corresponding national standard may be applied.

in a bath the composition of which is given in 1.1.

3.2 Coating mass: total mass of coating on both surfaces of the product (expressed in grams per square metre).

4 Designation

4.1 The steel names are allocated in accordance with EN 10027-1 and ECISS Information Circular IC 10; 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 10215),
- c) Steel name or steel number and symbol for the type of hot-dip coating as given in table 1 or table 2,
- d) Number denoting the nominal mass of coating (e. g. 150 = 150 g/m² including both surfaces, see table 3),
- e) Letter denoting the surface quality (A, B or C, see 5.4),
- f) Letter denoting the surface treatment (C, O, CO or U, see 5.5).

EXAMPLE 1: Designation of strip made of steel DX53D+AZ, coating mass 150 g/m² (150), surface quality B; surface treatment chemical passivation (C):

Strip EN 10215 - DX53D+AZ150-B-C
or: Strip EN 10215 - 1.0355+AZ150-B-C

EXAMPLE 2: Designation of sheet made of steel S250GD+AZ, coating mass 185 g/m² (185), surface quality C, surface treatment chemical passivation and oiling (CO):

Sheet EN 10215 - S250GD+AZ185-C-CO.
or: Sheet EN 10215 - 1.0242+AZ185-C-CO.

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 12).

5 Classification of grades and types of delivery

5.1 Steel grades

The steel grades available are given in table 1 and table 2.

Table 1 contains low carbon steels listed in the following order of increasing suitability for cold forming:

- DX51D+AZ : bending and profiling quality,
- DX52D+AZ : drawing quality
- DX53D+AZ : deep drawing quality
- DX54D+AZ : special deep drawing quality.

Table 2 contains structural steels listed in order of increasing specified minimum yield strength values.

Table 1: Grades and mechanical properties of low carbon steels for cold forming

| Designation | | Symbol for the type of hot-dip coating | Yield strength | Tensile strength | Elongation |
|-------------|--------------|--|--|---|----------------------------|
| Steel grade | Steel number | | R_e | R_m | A_{80} |
| Steel name | Steel number | Symbol for the type of hot-dip coating | R_e N/mm ² max. ^{1) 2) 3)} | R_m N/mm ² max. ^{1) 3)} | % min. ^{1) 4)} |
| DX51D | 1.0226 | + AZ | - | 500 | 22 |
| DX52D | 1.0350 | + AZ | 300 ⁵⁾ | 420 | 26 |
| DX53D | 1.0355 | + AZ | 260 | 380 | 30 |
| DX54D | 1.0306 | + AZ | 220 | 350 | 36 |

¹⁾ The values apply to transverse test pieces.

²⁾ The yield strength values apply to the 0,2 % proof stress if the yield point is not pronounced, otherwise to the lower yield strength (R_{eL}).

³⁾ For all steel grades a minimum value of 140 N/mm² for the yield strength (R_e) and of 270 N/mm² for the tensile strength (R_m) may be expected.

⁴⁾ For product thickness $\leq 0,7$ mm the minimum elongation values (A_{80}) shall be reduced by 2 units.

⁵⁾ This value applies to skin passed products only (surface qualities B and C).

Table 2: Grades and mechanical properties of structural steels

| Designation | | Symbol for the type of hot-dip coating | Yield strength | Tensile strength | Elongation |
|-------------|--------------|--|--|---|----------------------------|
| Steel name | Steel number | | R_{eH} | R_m | A_{80} |
| | | | N/mm ² min. ^{1) 2)} | N/mm ² min. ¹⁾ | % min. ^{1) 3)} |
| S250GD+AZ | 1.0242 | + AZ | 250 | 330 | 19 |
| S280GD+AZ | 1.0244 | + AZ | 280 | 360 | 18 |
| S320GD+AZ | 1.0250 | + AZ | 320 | 390 | 17 |
| S350GD+AZ | 1.0529 | + AZ | 350 | 420 | 16 |
| S550GD+AZ | 1.0531 | + AZ | 550 | 560 | - |

1) The values apply to longitudinal test pieces.

2) The yield strength values apply to the 0,2 % proof stress if the yield point is not pronounced, otherwise to the upper yield strength (R_{eH}).

3) For product thickness $\leq 0,7$ mm the minimum elongation values (A_{80}) shall be reduced by 2 units.

5.2 Coatings

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5.2.1 The coating masses are given in table 3.

For special applications coating masses which are different from those of table 3 can be supplied. The masses and the relevant surface condition shall be as agreed upon between the producer and the user.

Thicker coatings limit the formability and weldability of the products. Therefore, the forming and weldability requirements should be taken into account when ordering the coating mass.

5.2.2 If agreed at the time of ordering, different coating masses on each surface may be supplied. The two surfaces may have a different appearance as a result of the manufacturing process.

5.3 Coating finish

The products are supplied with a normal spangle.

Normal spangle is a coating finish, having a metallic lustre,

that is the result of unrestricted growth of the aluminium-zinc crystals during normal solidification.

5.4 Surface quality

5.4.1 General

The products may be supplied with one of the surface qualities described in 5.4.2 to 5.4.4 (see also 4.2e and 6.8).

5.4.2 As coated surface (A)

Imperfections such as small pits, variations in spangle size, dark spots, stripe marks and light passivation stains are permissible. Leveller breaks or run-off marks may appear.

5.4.3 Improved surface (B)

Surface quality B is obtained by skin passing.

With this surface quality, small imperfections such as stretch levelling breaks, skin pass marks, scratches, indentations, spangle structure, run-off marks and light passivation marks are permissible. The surface has no pits.

5.4.4 Best quality surface (C)

Surface quality C is obtained by skin passing.

The better surface shall not impair the uniform appearance of a high-class paint finish. The other surface shall have at least the characteristics of surface quality B (see 5.4.3).

5.5 Surface treatment (temporary surface protection)

5.5.1 General

Hot-dip aluminium-zinc coated flat products generally receive a surface protection at the producer's plant as specified in 5.5.2 to 5.5.5 (see also 4.2f). The period of protection afforded depends on the atmospheric conditions.

5.5.2 Chemical passivation (C)

Chemical passivation may be carried out after coating to protect the surface against humidity and to reduce the risk of formation of wet storage stain (known as black rust).