SLOVENSKI STANDARD
SIST EN 10214:1997

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Kontinuirno vroče pocinkani poaluminjeni (ZA) jekleni trakovi in pločevine - Tehnični dobavni pogoji

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

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

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

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English version

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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.

The European Standards exist 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.

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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

Contents

Foreword

This European Standard was prepared by the Technical Committe 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 zinc-aluminium (ZA) coated steel sheet and strip.

The draft prEN 10214 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of an identical text or by endorsement, at the latest by August 1995, and conflicting national standards shall be withdrawn at the latest by August 1995.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.

1 Scope

1.1 This European Standard specifies requirements for continuously hot-dip zinc-aluminium alloy coated flat products made of low carbon steels for cold forming (see table 1) or of structural steels (see table 2) in thicknesses ≤ 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 coating is composed of zinc with approximately 5 % aluminium and may contain small amounts of mischmetal.

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 aluminium-zinc alloy (AZ) coated steel flat products (see EN 10215),

- 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 steel flat 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	Metallic products - types of inspection documents
ECISS IC 10:	Designation systems for steel - additional symbols for steel names
EURONORM 12[1)]	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 zinc-aluminium alloy coating (ZA): application of an zinc-aluminium coating by immersing the prepared products in the molten metal alloy.

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

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

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 10214),

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. 130 = 130 g/m² including both surfaces, see tables 3 and 4),

e) Letter denoting the surface quality (A, B or C, see 5.4 and table 3),

f) Letter denoting the surface treatment (C, O, CO or U, see 5.5).

EXAMPLE 1: Designation of strip made of steel DX53D+ZA, coating mass 130 g/m² (130), surface quality B; surface treatment chemical passivation (C):

Strip EN 10214-DX53D+ZA130-B-C
or: Strip EN 10214-1.0355+ZA130-B-C

EXAMPLE 2: Designation of sheet made of steel S250GD+ZA, coating mass 95 g/m² (95), surface quality C, surface treatment chemical passivation and oiling (CO):

Sheet EN 10214-S250GD+ZA95-C-CO.
or: Sheet EN 10214-1.0242+ZA95-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+ZA	:	bending and profiling quality,
DX52D+ZA	:	drawing quality
DX53D+ZA	:	deep drawing quality
DX54D+ZA	:	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			Yield strength	Tensile strength	Elongation
Steel grade		Symbol for the type of hot-dip coating	R_e N/mm² max. 1) 2) 3)	R_m N/mm² max. 1) 3)	A_{80} % min. 1) 4)
Steel name	Steel number				
DX51D	1.0226	+ ZA	-	500	22
DX52D	1.0350	+ ZA	300 5)	420	26
DX53D	1.0355	+ ZA	260	380	30
DX54D	1.0306	+ ZA	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 ≤ 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			Yield strength	Tensile strength	Elongation
Steel grade		Symbol for the type of hot-dip coating	R_{eH} N/mm² min. [1) 2)]	R_m N/mm² min. [1)]	A_{80} % min. [1) 3)]
Steel name	Steel number				
S220GD	1.0241	+ ZA	220	300	20
S250GD	1.0242	+ ZA	250	330	19
S280GD	1.0244	+ ZA	280	360	18
S320GD	1.0250	+ ZA	320	390	17
S350GD	1.0529	+ ZA	350	420	16
S550GD	1.0531	+ ZA	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 ≤ 0,7 mm the minimum elongation values (A_{80}) shall be reduced by 2 units.

5.2 Coatings

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. In these cases 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.

Table 3: Available coatings and surface qualities

Steel grade	Coating [1]	Surface quality [2]		
		A	B	C
DX51D+ZA DX52D+ZA S220GD+ZA S250GD+ZA S280GD+ZA S320GD+ZA S350GD+ZA S550GD+ZA	95	x	x	x
	130	x	x	x
	185	x	x	x
	200	x	x	x
	255	x	x	x
	300	x	-	-
DX53D+ZA and DX54D+ZA	95	x	x	x
	130	x	x	x
	185	x	x	x
	200	x	x	x
	255	x	-	-

[1] See also 5.2.1
[2] x : current production
- : only available on special agreement

5.3 Coating finish

The products are supplied with a normal coating finish.

The normal coating finish has a metallic lustre, that is the result of unrestricted growth of the zinc-aluminium crystals during normal solidification. Crystals of different sizes and brightness may appear depending on the manufacturing conditions. The quality of the coating is not affected by this.

5.4 Surface quality

5.4.1 General

According to the indications given in table 3 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 surface appearance, dark spots, stripe marks and light passivation stains are permissible. Leveller breaks or run-off marks may appear.

5.4.3 Improved surface (B)