

Continuously hot-dip coated strip and sheet of steels with higher yield strength for cold forming — Technical delivery conditions

The European Standard EN 10292:2000, with the incorporation of amendment A1:2003 and A2:2004, has the status of a British Standard

ICS 77.140.50

National foreword

This British Standard is the official English language version of EN 10292:2000, including amendments A1:2003 and A2:2004.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted by Technical Committee ISE/10, Flat rolled steel products, to Subcommittee ISE/10/8, Coated steel flat rolled products, which has the responsibility to:

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- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

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English version

**Continuously hot-dip coated strip and sheet of steels with higher
yield strength for cold forming - Technical delivery conditions
(includes amendments A1:2003 and A2:2004)**

Bandes et tôles en aciers à haute limite d'élasticité revêtues
en continu par immersion à chaud pour formage à froid -
Conditions techniques de livraison
(inclut les amendements A1:2003 et A2:2004)

Kontinuierlich schmelztauchveredeltes Band und Blech aus
Stählen mit hoher Streckgrenze zum Kaltumformen -
Technische Lieferbedingungen
(enthält Änderungen A1:2003 und A2:2004)

This European Standard was approved by CEN on 1 April 2000. Amendment A1 was approved by CEN on 20 February 2003. Amendment A2 was approved by CEN on 18 November 2004.

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard 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 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to Amendment A1

This document EN 10292:2000/A1:2003 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 October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

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.

Foreword to Amendment A2

This document EN 10292:2000/A2:2004 has been prepared by Technical Committee ECISS/TC 27, Surface coated flat products, 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 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This document supersedes EN 10292:2000/A1:2003.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies requirements for continuously hot-dip zinc (Z), zinc-iron alloy (ZF), zinc-aluminium alloy (ZA), aluminium-zinc alloy (AZ) and aluminium-silicon alloy (AS) coated flat products made of steels with higher yield strength for cold forming (see Tables 1 and 3) with thicknesses up to and including 3,0 mm unless otherwise agreed. 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 products covered by this European Standard are mainly used where cold formability and corrosion resistance for a defined minimum yield strength are the most important factors.

2 Normative references

A2 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 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 iron products.*

prEN 10027-1, *Designation systems for steel – Part 1: Steel names.*

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.*

EN 606, *Bar coding – Transport and handling labels for steel products.*

EURONORM 12¹⁾, *Bend test for steel sheet and strip less than 3 mm thick.*

ISO 10113, *Metallic materials – Sheet and strip – Determination of plastic strain ratio.* **A2**

A2 1) Until it is transformed into a European Standard, either EURONORM 12 or the corresponding national standard may be applied. **A2**

ISO 10275, *Metallic materials – Sheet and strip – Determination of tensile strain hardening exponent*.

EN ISO 14284, *Steel and iron – Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

3 Terms and definitions

For the purposes of this Standard the following terms and definitions apply in addition to the terms and definitions in EN 10020, EN 10021, EN 10079 and EN 10204:

3.1

hot-dip zinc coating (Z, ZF)

application of a zinc coating by immersing the prepared products in a molten bath containing a zinc content of at least 99%

3.2

hot-dip zinc-aluminium alloy coating (ZA)

application of a zinc-aluminium coating by immersing the prepared products in a molten bath which is composed of zinc, approximately 5% aluminium and small amounts of misch metal

3.3

hot-dip aluminium-zinc alloy coating (AZ)

application of an aluminium-zinc coating by immersing the prepared products in a molten bath which is composed of 55% aluminium, 1,6% silicon and the balance zinc

3.4

hot-dip aluminium-silicon alloy coating (AS)

application of an aluminium-silicon coating by immersing the prepared products in a molten bath which is composed of aluminium and 8% to 11% silicon

NOTE In the present cases, the wide strip is continuously hot-dip coated in a bath, the composition of which is given in 3.1 to 3.4.

3.5

coating mass

total mass of coating including both surfaces of the product (expressed in grams per square metre)

3.6

bake-hardening steels (B)

steels that demonstrate an increase in proof strength following heating in the region of 170°C for 20 min

3.7

rephosphorized steels (P)

steels that contain up to 0,12% P and achieve the required proof strength levels

3.8

low alloy/micro-alloyed steels (LA)

steels containing one or more elements of alloys Nb, Ti and V to achieve required proof strength levels

3.9

interstitial free steels (Y)

steel whose composition is controlled to achieve improved r - and n -values

4 Classification and designation

4.1 Classification

The steel grades according to this European Standard are classified according to their minimum yield strength at room temperature.

4.2 Designation

4.2.1 Steel names

 For the steel grades covered by this document, the steel names as given in Tables 1 and 3 are allocated in accordance with EN 10027-1. 

NOTE Letters “LA (low alloy)” are not covered by CR 10260 but are taken from EN 10268.

4.2.2 Steel numbers

 For the steel grades covered by this document, the steel numbers as given in Tables 1 and 3 are allocated in accordance with EN 10027-2. 

5 Information to be supplied by the purchaser

5.1 Mandatory information

The following information shall be supplied by the purchaser at the time of enquiry and order:

- a) the quantity to be delivered;
- b) the type of product (strip, sheet, cut length);
- c) the number of the dimensional standard (EN 10143);
- d) the nominal dimensions and the tolerances on dimensions and shape and, if applicable, letters denoting relevant special tolerances;
- e) the term “steel”;
- f) number of this standard (EN 10292);

A₂ g) steel name or steel number and symbol for the type of hot-dip coating as given in Tables 1 and 3, and if the mechanical properties apply either for the transverse or the longitudinal direction (see Table 3, footnote a); **A₂**

h) number designating the nominal mass of coating (e.g. 080 = 80 g/m² including both surfaces, see Table 4);

i) in case of hot-dip zinc coated products, letter denoting the coating finish (N, M or R, see Tables 5 and 6 and 7.4);

j) letter denoting the surface quality (A, B or C, see 7.5);

A₂ k) letter denoting the surface treatment (C, O, CO, S, P or PO, see 7.6); **A₂**

l) the method of determining the BH₂-value (see 8.5.3).

A₂ EXAMPLE 1 sheet, delivered with dimensional tolerances according to EN 10143 with a nominal thickness of 0,70 mm, ordered with special thickness tolerances (S), nominal width 1 200 mm, ordered with special width tolerances (S), nominal length 2 500 mm, ordered with special flatness tolerances (FS), made of steel HX300LAD+AS080-C-CO (1.0932+AS080-C-CO) according to EN 10292.

1 sheet EN 10143–0,70Sx1 200Sx2 500FS–steel EN 10292–HX300LAD+AS080–C–CO

or

1 sheet EN 10143–0,70Sx1 200Sx2 500FS–steel EN 10292–1.0932–AS080–C–CO **A₂**

5.2 Options

A number of options are specified in this European Standard and listed below. If the purchaser does not indicate his wish to implement one of these options, the supplier shall supply in accordance with the basic specification of this European Standard (see 5.1).

a) any verification of the product analysis (see 7.1.2);

b) any steel products suitable for the manufacture of a specific part (see 7.2.2);

c) any coating masses different from those of Table 4 (see 7.3.2);

d) any special requirements for different coating masses on each surface (see 7.3.3);

e) any hot-dip zinc coated products with pronounced spangle (see 7.4.1.1);

f) any special requirements for a maximum Fe-Al-Si alloy layer mass occurring during hot-dip aluminium-silicon coating (see 7.4.5);

g) any products supplied free from coil breaks (see 7.7);

h) any maximum or minimum value for the coating mass per product surface (see 7.9.2);

i) notification of which surface has been inspected (see 7.11.1);

- j) any testing for compliance with the requirements of this standard (see 8.1.1 and 8.1.2);
- k) any supply of an inspection document and type of document (see 8.7);
- l) any marking desired by branding of the products (see 9.2);
- m) any requirements for packing (see clause 10).

6 Manufacturing process

The processes used in steelmaking and manufacture of the products are left to the discretion of the manufacturer.

7 Requirements

7.1 Chemical composition

7.1.1 Cast analysis

The chemical composition determined by cast analysis shall be in accordance with the requirements given in Table 1.