
Kontinuirno vroče prevlečene pločevine in trakovi - Mejni odstopki mer in tolerance oblike

Continuously hot-dip coated steel sheet and strip - Tolerances on dimensions and shape

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ICS

Will supersede EN 10143:1993

English version

Continuously hot-dip coated steel sheet and strip - Tolerances on dimensions and shape

Tôles et bandes en acier revêtues en continu par
immersion à chaud - Tolérances sur les dimensions et sur
la forme

Kontinuierlich schmelztauchveredeltes Blech und Band aus
Stahl - Grenzabmaße und Formtoleranzen

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (prEN 10143:2004) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 10143:1993.

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1 Scope

This European Standard applies to continuously zinc (Z), zinc-iron alloy (ZF), zinc-aluminium alloy (ZA), aluminium-zinc alloy (AZ) and aluminium-silicon alloy (AS) hot-dip coated flat products made of low carbon and high strength steels for cold forming and of structural steels with a minimum thickness of 0,35 mm and, unless otherwise agreed at the time of enquiry and order, a maximum thickness of 3 mm, delivered as sheet, wide strip, slit wide strip or cut lengths obtained from slit wide strip or sheet. The concerned standards are EN 10292, EN 10326, EN 10327 and EN 10336.

It does not apply for

- hot-rolled sheet and strip without coating (see EN 10051) and
- uncoated or electrolytically coated cold rolled sheet and strip (see EN 10131).

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 10079, *Definition of steel products*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions of the cold rolled uncoated and coated flat products listed in clause 1 are those given in EN 10079.

Additionally the following definition applies:

3.1

nominal (specified) thickness

whole order thickness of the metallurgically coated product

NOTE Nominal thickness covers both substrate and coating.

4 Designation

4.1 Products conforming to this European Standard shall be designated in the following order (see also clause 5):

- a) type of product (sheet, wide strip, slit wide strip or cut length);
- b) the reference to this European Standard (EN 10143);
- c) nominal thickness in mm;
- d) the letter S for products ordered with special tolerances on thickness;
- e) nominal width in mm;
- f) the letter S for products ordered with special tolerances on width;
- g) nominal length in mm;
- h) the letter S for products ordered with special tolerances on length (sheets and cut lengths only);

- i) the letter FS for sheets or cut lengths ordered with special tolerances on flatness;
- j) the letters CS for slit strip ordered with special tolerances on camber.

4.2 The product designation in accordance with 4.1 shall be followed by the complete designation of the steel ordered (e.g. according to EN 10327).

Example 1: Strip, delivered with dimensional tolerances in accordance with EN 10143 with nominal thickness of 0,80 mm, ordered with normal thickness tolerances, nominal width 1200 mm, ordered with normal width tolerances, nominal length 2500 mm, ordered with normal flatness tolerances, made of steel DX53D+ZF (1.0355+ZF) in accordance with EN 10327, coating mass 100 g/m² (100), coating finish R, surface quality B, surface treatment oiled (O):

Strip EN 10143-0,80x1200x2500-steel EN 10327 DX53D+ZF100-R-B-O

or:

Strip EN 10143-0,80x1200x2500-steel EN 10327 1.0355+ZF100-R-B-O

Example 2: 1 sheet, delivered with dimensional tolerances in accordance with EN 10143 with nominal thickness of 0,80 mm, ordered with special thickness tolerances (S), nominal width 1200 mm, ordered with special width tolerances (S), nominal length 2500 mm, ordered with special flatness tolerances (FS), made of steel HXT600X+ZF (1.0941+ZF) in accordance with EN 10336, coating mass 100 g/m² (100), coating finish R, surface quality B, surface treatment oiled (O):

1 sheet EN 10143-0,80Sx1200Sx2500FS-steel EN 10336 HXT600X+ZF100-R-B-O

or:

1 sheet EN 10143-0,80Sx1200Sx2500FS-steel EN 10336 1.0941+ZF100-R-B-O

5 Condition of delivery

5.1 Flat products according to this European Standard may be delivered as follows:

- a) with normal or special thickness tolerances (see Tables 1 to 4);
- b) with normal or special width tolerances (see Tables 5 and 6);
- c) with normal or special length tolerances for sheet or cut lengths (see Table 7);
- d) with normal or special flatness tolerances for sheet or cut lengths (see Tables 8 and 9);
- e) with normal or special tolerances on camber for slit strip of width less than 600 mm (see clause 11).

5.2 In the absence of information on the order in respect of the condition of delivery given in 5.1, the flat products shall be delivered with normal tolerances on thickness, width, length, flatness and camber.

6 Tolerances on thickness

6.1 The thickness may be measured at any point located more than 40 mm from the edges.

In the case of slit coils or cut lengths having a width \leq 80 mm, the position of the measurement shall be at the middle axis.

6.2 The tolerances on thickness shall be as given in Tables 1 to 4 and apply over the whole length. For coating thicknesses corresponding to coating designations Z450 and Z600, the normal and special tolerances specified in Tables 1 to 4 are increased by \pm 0,01 mm apply.

Tolerances closer than special tolerances may be agreed at the time of enquiry and order.

In the case of products for which no yield strength is specified, the tolerances specified in Table 2 for the grade DX51D and in Table 4 for all other grades apply, unless otherwise agreed at the time of enquiry and order.

Table 1 — Tolerances on thickness for steel grades with specified minimum yield strength $R_e < 260$ MPa

Dimensions in mm

Nominal thickness	Normal tolerances ^a for a nominal width w			Special tolerances (S) ^a for a nominal width w		
	≤ 1200 ^b	$1200 < w \leq 1500$	> 1500	≤ 1200 ^b	$1200 < w \leq 1500$	> 1500
0,35 to 0,40	$\pm 0,04$	$\pm 0,05$	$\pm 0,06$	$\pm 0,030$	$\pm 0,035$	$\pm 0,040$
$> 0,40$ to 0,60	$\pm 0,04$	$\pm 0,05$	$\pm 0,06$	$\pm 0,035$	$\pm 0,040$	$\pm 0,045$
$> 0,60$ to 0,80	$\pm 0,05$	$\pm 0,06$	$\pm 0,07$	$\pm 0,040$	$\pm 0,045$	$\pm 0,050$
$> 0,80$ to 1,00	$\pm 0,06$	$\pm 0,07$	$\pm 0,08$	$\pm 0,045$	$\pm 0,050$	$\pm 0,060$
$> 1,00$ to 1,20	$\pm 0,07$	$\pm 0,08$	$\pm 0,09$	$\pm 0,050$	$\pm 0,060$	$\pm 0,070$
$> 1,20$ to 1,60	$\pm 0,10$	$\pm 0,11$	$\pm 0,12$	$\pm 0,060$	$\pm 0,070$	$\pm 0,080$
$> 1,60$ to 2,00	$\pm 0,12$	$\pm 0,13$	$\pm 0,14$	$\pm 0,070$	$\pm 0,080$	$\pm 0,090$
$> 2,00$ to 2,50	$\pm 0,14$	$\pm 0,15$	$\pm 0,16$	$\pm 0,090$	$\pm 0,100$	$\pm 0,110$
$> 2,50$ to 3,00	$\pm 0,17$	$\pm 0,17$	$\pm 0,18$	$\pm 0,110$	$\pm 0,120$	$\pm 0,130$

^a The thickness tolerances in the region of coil welds may be increased by a maximum of 50 % over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to normal and special (negative and positive) tolerances. For thicker coatings, see 6.2.

^b Wide strip: width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width up to 600 mm.

Table 2 — Tolerances on thickness for steel grades with specified minimum yield strength $260 \text{ MPa} \leq R_e < 340 \text{ MPa}$

Dimensions in mm

Nominal thickness	Normal tolerances ^a for a nominal width w			Special tolerances (S) ^a for a nominal width w		
	≤ 1200 ^b	$1200 < w \leq 1500$	> 1500	≤ 1200 ^b	$1200 < w \leq 1500$	> 1500
0,35 to 0,40	$\pm 0,05$	$\pm 0,06$	$\pm 0,07$	$\pm 0,035$	$\pm 0,040$	$\pm 0,045$
$> 0,40$ to 0,60	$\pm 0,05$	$\pm 0,06$	$\pm 0,07$	$\pm 0,040$	$\pm 0,045$	$\pm 0,050$
$> 0,60$ to 0,80	$\pm 0,06$	$\pm 0,07$	$\pm 0,08$	$\pm 0,045$	$\pm 0,050$	$\pm 0,060$
$> 0,80$ to 1,00	$\pm 0,07$	$\pm 0,08$	$\pm 0,09$	$\pm 0,050$	$\pm 0,060$	$\pm 0,070$
$> 1,00$ to 1,20	$\pm 0,08$	$\pm 0,09$	$\pm 0,11$	$\pm 0,060$	$\pm 0,070$	$\pm 0,080$
$> 1,20$ to 1,60	$\pm 0,11$	$\pm 0,13$	$\pm 0,14$	$\pm 0,070$	$\pm 0,080$	$\pm 0,090$
$> 1,60$ to 2,00	$\pm 0,14$	$\pm 0,15$	$\pm 0,16$	$\pm 0,080$	$\pm 0,090$	$\pm 0,110$
$> 2,00$ to 2,50	$\pm 0,16$	$\pm 0,17$	$\pm 0,18$	$\pm 0,110$	$\pm 0,120$	$\pm 0,130$
$> 2,50$ to 3,00	$\pm 0,19$	$\pm 0,20$	$\pm 0,20$	$\pm 0,130$	$\pm 0,140$	$\pm 0,150$

^a The thickness tolerances in the region of coil welds may be increased by a maximum of 50 % over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to normal and special (negative and positive) tolerances. For thicker coatings, see 6.2.

^b Wide strip: width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width up to 600 mm.

**Table 3 — Tolerances on thickness for steel grades with specified minimum yield strength
340 MPa ≤ R_e ≤ 420 MPa**

Dimensions in mm

Nominal thickness	Normal tolerances ^a for a nominal width <i>w</i>			Special tolerances (S) ^a for a nominal width <i>w</i>		
	≤ 1200 ^b	1200 < <i>w</i> ≤ 1500	> 1500	≤ 1200 ^b	1200 < <i>w</i> ≤ 1500	> 1500
0,35 to 0,40	± 0,05	± 0,06	± 0,07	± 0,040	± 0,045	± 0,050
> 0,40 to 0,60	± 0,06	± 0,07	± 0,08	± 0,045	± 0,050	± 0,060
> 0,60 to 0,80	± 0,07	± 0,08	± 0,09	± 0,050	± 0,060	± 0,070
> 0,80 to 1,00	± 0,08	± 0,09	± 0,11	± 0,060	± 0,070	± 0,080
> 1,00 to 1,20	± 0,10	± 0,11	± 0,12	± 0,070	± 0,080	± 0,090
> 1,20 to 1,60	± 0,13	± 0,14	± 0,16	± 0,080	± 0,090	± 0,110
> 1,60 to 2,00	± 0,16	± 0,17	± 0,19	± 0,090	± 0,110	± 0,120
> 2,00 to 2,50	± 0,18	± 0,20	± 0,21	± 0,120	± 0,130	± 0,140
> 2,50 to 3,00	± 0,22	± 0,22	± 0,23	± 0,140	± 0,150	± 0,160

^a The thickness tolerances in the region of coil welds may be increased by a maximum of 50 % over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to normal and special (negative and positive) tolerances. For thicker coatings, see 6.2.

^b Wide strip: width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width up to 600 mm.

**Table 4 — Tolerances on thickness for steel grades with specified minimum yield strength
420 MPa < R_e ≤ 700 MPa**

Dimensions in mm

Nominal thickness	Normal tolerances ^a for a nominal width <i>w</i>			Special tolerances (S) ^a for a nominal width <i>w</i>		
	≤ 1200 ^b	1200 < <i>w</i> ≤ 1500	> 1500	≤ 1200 ^b	1200 < <i>w</i> ≤ 1500	> 1500
0,35 to 0,40	± 0,06	± 0,07	± 0,08	± 0,045	± 0,050	± 0,060
> 0,40 to 0,60	± 0,06	± 0,08	± 0,09	± 0,050	± 0,060	± 0,070
> 0,60 to 0,80	± 0,07	± 0,09	± 0,11	± 0,060	± 0,070	± 0,080
> 0,80 to 1,00	± 0,09	± 0,11	± 0,12	± 0,070	± 0,080	± 0,090
> 1,00 to 1,20	± 0,11	± 0,13	± 0,14	± 0,080	± 0,090	± 0,110
> 1,20 to 1,60	± 0,15	± 0,16	± 0,18	± 0,090	± 0,110	± 0,120
> 1,60 to 2,00	± 0,18	± 0,19	± 0,21	± 0,110	± 0,120	± 0,140
> 2,00 to 2,50	± 0,21	± 0,22	± 0,24	± 0,140	± 0,150	± 0,170
> 2,50 to 3,00	± 0,24	± 0,25	± 0,26	± 0,170	± 0,180	± 0,190

^a The thickness tolerances in the region of coil welds may be increased by a maximum of 50 % over a length of 10 m. This increase is applicable to all thicknesses and, unless otherwise agreed at the time of enquiry and order, to normal and special (negative and positive) tolerances. For thicker coatings, see 6.2.

^b Wide strip: width ≥ 600 mm; slit wide strip: rolling width ≥ 600 mm, slit to width up to 600 mm.

7 Tolerances on width

7.1 General

Width is measured perpendicularly to the longitudinal axis of the product.

The tolerances on width of flat products in low carbon and high yield strength steels are given in 7.2 for sheet and wide strip and in 7.3 for slit wide strip of width < 600 mm.

7.2 Sheet and wide strip

The tolerances on width of sheet and wide strip shall be as given in Table 5.

Table 5 — Tolerances on width of sheet and wide strip

Dimensions in mm

Nominal width w	Normal tolerances	Special tolerances (S)
$w \leq 1200$	+5 0	+2 0
$1200 < w \leq 1500$	+6 0	+2 0
$w > 1500$	+7 0	+3 0

7.3 Slit wide strip of width less than 600 mm

The tolerances on width of slit wide strip of width < 600 mm shall be as given in Table 6.

Table 6 — Tolerances on slit wide strip of width less than 600 mm

Dimensions in mm

Tolerance class	Nominal thickness t	Nominal width			
		$w < 125$	$125 \leq w < 250$	$250 \leq w < 400$	$400 \leq w < 600$
Normal	$t < 0,6$	+0,4 0	+0,5 0	+0,7 0	+1,0 0
	$0,6 \leq t < 1,0$	+0,5 0	+0,6 0	+0,9 0	+1,2 0
	$1 \leq t < 2$	+0,6 0	+0,8 0	+1,1 0	+1,4 0
	$2 \leq t \leq 3$	+0,7 0	+1,0 0	+1,3 0	+1,6 0
Special (S)	$t < 0,6$	+0,2 0	+0,2 0	+0,3 0	+0,5 0
	$0,6 \leq t < 1,0$	+0,2 0	+0,3 0	+0,4 0	+0,6 0
	$1,0 \leq t < 2,0$	+0,3 0	+0,4 0	+0,5 0	+0,7 0
	$2,0 \leq t \leq 3,0$	+0,4 0	+0,5 0	+0,6 0	+0,8 0