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Hot rolled narrow steel strip - Tolerances on dimensions and shape

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Swedish Standards corresponding to documents referred to in this Standard are listed in "Catalogue of Swedish Standards", issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

Varmvalsade smala band av stål - Toleranser för dimensioner och form

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English version

**Hot rolled narrow steel strip -
Tolerances on dimensions and shape**

Feuillards laminés à chaud – Tolérances de
dimensions et de forme

Warmgewalzter Bandstahl – Grenzabmaße
und Formtoleranzen

This European Standard was approved by CEN on 1995-10-04. 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.

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

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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 13 "Flat products for cold working - Qualities, dimensions, tolerances and specific tests" the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by February 1997, and conflicting national standards shall be withdrawn at the latest by February 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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 and the United Kingdom.

1 Scope

1.1 This European Standard applies to uncoated hot rolled narrow steel strip, of width less than 600 mm, made of the steel grades covered by the following:

- EURONORMS 85, 86, 89, 96, 132;
- European Standards EN 10025, EN 10028-2, EN 10028-3, EN 10083-1, EN 10083-2, EN 10083-3, EN 10088-2, EN 10113-2, EN 10113-3, EN 10137-2, EN 10137-3, EN 10149-2, EN 10149-3, EN 10155, EN 10207 and EN 10208-2;
- draft European Standards prEN 10028-5, prEN 10028-6 and prEN 10084.

NOTE: This European Standard may be applied to other types of steels if agreed at the time of ordering.

1.2 This European Standard does not apply to hot rolled wide strip and narrow strip (width < 600 mm) obtained by slitting hot rolled wide strip. (The tolerances on shape and dimensions applicable to these products are given in EN 10051.)

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 10025	Hot rolled products of non-alloy structural steels - Technical delivery conditions
EN 10028-2	Flat products made of steels for pressure purposes - Part 2: Non-alloy and alloy steels with specified elevated temperature properties
EN 10028-3	Flat products made of steels for pressure purposes - Part 3: Weldable fine grain steels, normalized
prEN 10028-6 ¹⁾	Flat products made of steels for pressure purposes - Part 6: Weldable fine grain steels, quenched and tempered
EN 10051	Continuously hot-rolled uncoated plate, sheet and strip of non-alloy and alloy steels - tolerances on dimensions and shape
EN 10079	Definition of steel products
EN 10083-1	Quenched and tempered steels - Part 1: Technical delivery conditions for special steels
EN 10083-2	Quenched and tempered steels - Part 2: Technical delivery conditions for unalloyed quality steels
EN 10083-3	Quenched and tempered steels - Part 3: Technical delivery conditions for boron steels
prEN 10084 ¹⁾	Case hardening steels - Technical delivery conditions
EN 10113-2	Hot rolled products in weldable fine grain structural steels - Part 2: Delivery conditions for normalized rolled steels
EN 10113-3	Hot rolled products in weldable fine grain structural steels - Part 3 : Delivery conditions for thermomechanically rolled steels
EN 10155	Structural steels with improved atmospheric corrosion resistance - Technical delivery conditions
EN 10207	Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars
EN 10088-2	Stainless steels - Part 2: Technical delivery conditions for sheet, plate and strip for general purposes

EN 10137-2	Plate and wide flats of high yield strength quenched and tempered or precipitation hardened structural steels - Part 2: Delivery conditions for quenched and tempered steels
EN 10137-3	Plate and wide flats of high yield strength quenched and tempered or precipitation hardened structural steels - Part 3 : Delivery conditions for precipitation hardened steels
EN 10149-2	Hot rolled flat products of high yield strength steels for cold forming - Part 2 : Delivery conditions for thermomechanically rolled steels
EN 10149-3	Hot rolled flat products of high yield strength steels for cold forming - Part 3: Delivery conditions for normalized/normalizing rolled steels
EN 10208-2	Steel pipes for pipelines for combustible fluids - Technical delivery conditions - Part 2 : Pipes of requirement class B.
EURONORM 85 ¹⁾	Nitriding steels - Quality Specifications
EURONORM 86 ²⁾	Steel for flame and induction hardening - Quality specifications
EURONORM 89 ²⁾	Alloy steels for hot formed and treated springs - Quality specifications
EURONORM 96 ²⁾	Tool steels - Quality requirements
EURONORM 132 ²⁾	Cold rolled steel strip for springs - Quality requirements

3 Definitions

For the definition of the terms “hot rolled”, “strip”, “hot rolled wide strip” and “narrow strip”, see EN 10079.

¹⁾ Until these EURONORMS are transformed into European Standards, they may either be used or reference may be made to the corresponding national standards, the list of which is given in annex B of this standard.

4 Forms and condition of delivery

4.1 Forms of delivery

Hot rolled narrow strip covered by this European Standard may be delivered:

- in coils, the diameter and weight of which shall be agreed at the time of ordering, or
- in cut lengths (when the coils have been decoiled and cut to lengths), the length and finish of which shall be agreed at the time of ordering.

4.2 Condition of delivery

4.2.1 Products covered by this European Standard are usually supplied in the as rolled condition. By agreement the products may also be supplied mechanically or chemically descaled (pickled), neutralized and oiled.

4.2.2 The products are usually supplied with as-rolled edges. Delivery with slit edges shall be the subject of a special agreement.

Option 1

4.2.3 Hot rolled narrow strip in coils may be supplied with or without end tongues subject to agreement at the time of ordering.

Option 2

5 Information to be supplied by the purchaser

5.1 General

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

- a) description of the product (coil or length);
- b) number of this European Standard (EN 10048);
- c) nominal thickness and width in mm;
- d) the letters GK if strip with slit edges is ordered (see 4.2.2);
- e) nominal length in mm (for products cut to length);
- f) the letter S for products cut to length to tight tolerances on length;

g) the surface finish required (see 4.2.1);

h) the condition of the coil ends required (see 4.2.3);

5.2 Options

A number of options are specified in clause 11. In the event that the purchaser does not indicate his wish to implement any of these options, the supplier shall supply in accordance with the basic specification.

6 Designation

The designation of products in accordance with 5.1 shall also include the exact designation of the ordered grade of steel.

Examples of designation

a) strip in coil according to this European Standard with a nominal thickness of 2,5 mm, a nominal width of 500 mm, and with as rolled edges, of steel S235JR (or 1.0037), as specified in EN 10025.

- Strip EN 10048-2,5 x 500-EN 10025-S235JR

or

- Strip EN 10048-2,5 x 500-EN 10025-1.0037

b) cut lengths according to this European Standard with a nominal thickness of 2,0 mm, a nominal width of 450 mm, with slit edges (GK), in lengths of 4000 mm to tight length tolerances (S), of steel S355N (or 1.0562) as specified in EN 10113-2.

- Length EN 10048-2 x 450GK x 4000S-EN 10113-2-S355N

or

- Length EN 10048-2 x 450GK x 4000S-EN 10113-2-1.0562

7 Tolerances on dimensions

7.1 Thickness and tolerances on crown

The tolerances on thickness and the tolerances on crown are given in 7.1.1 for narrow steel strip with normal deformation resistance at elevated temperatures and in 7.1.2 for narrow steel strip exhibiting a high deformation resistance at elevated temperatures.

The specified tolerances on thickness are only valid for deliveries of more than two coils of the same steel grade and same nominal dimensions. For smaller deliveries, a special agreement shall be made at the time of ordering.

The tolerances on thickness of cut lengths are valid regardless of the quantities supplied.

7.1.1 Thickness and crown tolerances for narrow steel strip with normal deformation at elevated temperatures.

7.1.1.1 The tolerances on thickness, which include crown, are given in table 1.

These normal tolerances are designated category A, which comprise all the steels not listed in table 4, taking account of the restriction in Note 2 of this table.

Table 1: Tolerances on thickness

Dimensions in millimetres

Nominal thickness t_n	Tolerances on thickness for nominal widths W_n	
	$10 \leq W_n < 100$	$100 \leq W_n < 600$
$0,80 \leq t_n \leq 1,50$	$\pm 0,08$	$\pm 0,10$
$1,50 < t_n \leq 2,0$	$\pm 0,10$	$\pm 0,12$
$2,0 < t_n \leq 4,0$	$\pm 0,11$	$\pm 0,13$
$4,0 < t_n \leq 5,0$	$\pm 0,12$	$\pm 0,14$
$5,0 < t_n \leq 6,0$	$\pm 0,13$	$\pm 0,15$
$6,0 < t_n \leq 10,0$	$\pm 0,14$	$\pm 0,16$
$10,0 < t_n \leq 15,0$	$\pm 0,16$	$\pm 0,18$

7.1.1.2 It may be agreed at the time of ordering that the total tolerance on thickness be either all plus or all minus tolerance.

Option 3

7.1.1.3 For narrow strip intended for rerolling, the difference in thickness throughout one coil shall not exceed:

0,14 mm for nominal thicknesses ≤ 4 mm,
0,17 mm for nominal thicknesses > 4 and ≤ 8 mm,
0,20 mm for nominal thicknesses > 8 mm.

7.1.1.4 Variations in thickness shall be gradual and shall not occur irregularly.

7.1.1.5 For narrow strip intended for rerolling, the crown, i.e. the increase in thickness of the strip between two measuring points respectively 15 mm from the edge and the middle of the strip (see 9.1.3), shall not exceed the values given in table 2.

Table 2: Tolerances on crown for narrow strip intended for rerolling

Dimensions in millimetres

Nominal width of the narrow strip W_n	Tolerances on crown
$W_n < 250$	0 to 0,07
$250 \leq W_n < 600$	0 to 0,08

7.1.1.6 The crown shall be as regular and symmetrical as possible relative to the axis of the narrow strip.

7.1.2 Thickness and crown tolerances for narrow steel strip exhibiting a high deformation resistance at elevated temperatures.

The tolerances on thickness and on camber are those given in tables 1 and 2 with a percentage increase as specified in table 3.

Table 3: Percentage increase of tolerances on thickness and on crown of narrow strip exhibiting a high deformation resistance at elevated temperatures.

Percentage increase of tolerance on thickness and on crown relative to narrow strip made of mild steel %	Category ¹⁾
10	B
20	C
30	D

¹⁾ Categories B, C and D are defined in table 4 classifying all the steel grades covered by this European Standard as a function of the value to be considered for the percentage increase of tolerances on thickness and on camber.