



# SLOVENSKI STANDARD

## SIST EN 10051:1998

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Nadomešča:

dSIST EN 10051:1991:2007

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**Kontinuirno vroče valjane pločevine in trakovi iz legiranih in nelegiranih jekel brez prevlek - Mejni odstopki mer in tolerance oblik (vključuje dopolnilo A1:1997)**

Continuously hot-rolled uncoated plate, sheet and strip of non-alloy and alloy steels - Tolerances on dimensions and shape (includes amendment A1:1997)

Kontinuierlich warmgewalztes Blech und Band ohne Überzug aus unlegierten und legierten Stählen - Grenzabmaße und Formtoleranzen (enthält Änderung A1:1997)

Tôles, larges bandes et larges bandes ~~refendues non~~ revetues, laminées a chaud en continu, en aciers ~~alliés et non alliés~~ - Tolérances sur les dimensions et la forme (inclut l'amendement A1:1997)

**Ta slovenski standard je istoveten z: EN 10051:1991 + A1:1997**

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**ICS:**

|           |  |                                       |
|-----------|--|---------------------------------------|
| 77.140.50 | Ploščati jekleni izdelki in polizdelki | Flat steel products and semi-products |
|-----------|--|---------------------------------------|

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EUROPEAN STANDARD

EN 10051:1991+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1997

ICS 77.140.50

Descriptors: iron and steel products, hot rolled products, metal plates, wide strips, alloy steels, unalloyed steels, dimensional tolerances, form tolerances, measurements

English version

**Continuously hot-rolled uncoated plate, sheet and strip of non-alloy and alloy steels - Tolerances on dimensions and shape  
(includes amendment A1:1997)**

Tôles, larges bandes et larges bandes refendues non revêtues, laminées à chaud en continu, en aciers alliés et non alliés - Tolérances sur les dimensions et la forme (inclut l'amendement A1:1997)

Kontinuierlich warmgewalztes Blech und Band ohne Überzug aus unlegierten und legierten Stählen - Grenzabmaße und Formtoleranzen (enthält Änderung A1:1997)

This amendment A1 modifies the European Standard EN 10051:1991; it was approved by CEN on 24 July 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 amendment 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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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 including Amendment A1 has been prepared by Technical Committee ECISS/TC 12 "Structural steels and steels for pressure purposes, flat products - Dimensions and tolerances", the secretariat of which is held by NNI.

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 March 1998, and conflicting national standards shall be withdrawn at the latest by March 1998.

This document established by the secretariat of ECISS/TC 12 incorporates the text of EN 10051:1991 with the text of the amendment A1:1997. This amendment was prepared on request of ECISS/TC 13 "Steel flat products for cold working - Qualities, dimensions, tolerances and specific tests". ECISS/TC 12 was asked to prepare an Amendment to EN 10051, in which a table for tolerances on thickness for continuously hot-rolled low carbon steel sheet/plate for cold forming, as proposed by ECISS/TC 13 was added. Also the new designations according to EN 10027 Parts 1 and 2 and CR 10260 (ECISS/IC 10) and an updating of in the meantime published EN's are incorporated in this Amendment.

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.

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EN 10051:1991 + A1:1997

## 1 Scope

This European Standard applies to continuously hot-rolled uncoated flat products with a maximum width of 2200 mm of non-alloy and alloy steels including stainless steels in accordance with table 1.

This European Standard also applies to hot-rolled strip for cold rolling.

Table 1: Field of application

| Product  | Thickness mm | Steel grades according to  |
|--|--------------|--|
| Sheet/plate, wide strip (minimum width 600 mm), strip < 600 mm wide slit from wide strip | ≤ 25         | EURONORM 96, EN 10025, EN 10028-2, EN 10028-3, EN 10028-4, EN 10028-5, EN 10028-6, EN 10083-1, EN 10083-2, EN 10083-3, EN 10088-2, EN 10111, EN 10113-2, EN 10113-3, EN 10120, EN 10137-2, EN 10137-3, EN 10149-2, EN 10149-3, EN 10155, EN 10207, EN 10208-2, prEN 10028-7 and prEN 10084 |

This European Standard does not apply to hot-rolled strip rolled in widths < 600 mm (see EN 10048).

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places 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 10020   | Definition and classification of grades of steel   |
| 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                                    |
| EN 10028-4 | Flat products made of steels for pressure purposes - Part 4: Nickel alloy steels with specified low temperature properties             |
| EN 10028-5 | Flat products made of steels for pressure purposes - Part 5: Weldable fine grain steels, thermomechanically rolled                     |

|                                  |   |
|----------------------------------|---|
| EN 10028-6                       | Flat products made of steels for pressure purposes - Part 6: Weldable fine grain steels, quenched and tempered  |
| EN 10048                         | Hot-rolled narrow steel strip - Tolerances on dimensions and shape  |
| EN 10079                         | Definitions 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   |
| EN 10088-2                       | Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip for general purposes   |
| EN 10111                         | Continuously hot-rolled low carbon steel sheet and strip for cold forming - Technical delivery conditions   |
| EN 10113-2                       | Hot-rolled products in weldable fine grain structural steels - Part 2: Delivery conditions for normalized/normalized rolled steels  |
| EN 10113-3                       | Hot-rolled products in weldable fine grain structural steels - Part 3: Delivery conditions for thermomechanical rolled steels   |
| EN 10120                         | Steel sheet and strip for welded gas cylinders  |
| EN 10137-2                       | Plates and wide flats made of high yield strength structural steels in the quenched and tempered or precipitation hardened conditions - Part 2: Delivery conditions for quenched and tempered steels  |
| EN 10137-3                       | Plates and wide flats made of high yield strength structural steels in the quenched and tempered or precipitation hardened conditions - Part 3: Delivery conditions for precipitation hardened steels |
| EN 10149-2                       | Hot-rolled flat products made of high yield strength steels for cold forming - Part 2: Delivery conditions for thermomechanically rolled steels   |
| EN 10149-3                       | Hot-rolled flat products made of high yield strength steels for cold forming - Part 3: Delivery conditions for normalized or normalized 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 10208-2                       | Steel pipes for pipelines for combustible fluids - Technical delivery conditions - Part 2: Pipes of requirement class B   |
| prEN 10028-7 <sup>1)</sup>       | Flat products made of steels for pressure purposes - Part 7: Stainless steels   |
| prEN 10084 <sup>1)</sup>         | Case hardening steels - Technical delivery conditions   |
| EURONORM 96 (1979) <sup>2)</sup> | Tool steels - Quality requirements  |

1) Draft is under discussion.

2) Until EURONORM 96 is transformed into a European Standard, it can either be implemented or reference made to the corresponding national standard, the list of which is given in Annex B of this European Standard.

### 3 Definitions

For the purpose of this European standard the following definitions apply:

- non-alloy and alloy steels, see EN 10020;
- wide strip and sheet/plate, see EN 10079.

### 4 Information to be supplied by the purchaser

#### 4.1 General

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

- a) description of the product (strip, sheet/plate);
- b) number of this European standard (EN 10051);
- c) nominal thickness and width in mm;
- d) the letters GK if strip and sheet/plate with trimmed edges is ordered (see 6.2);  
See clause 10, option 1.
- e) nominal length in mm (for sheet and plate);
- f) width tolerances for products with thickness > 10 mm (see 7.3);
- g) tolerances on flatness for products of category D (see table 7);
- h) flatness requirements for wide strip and strip < 600 mm wide slit from strip (see 8.4);
- i) edge camber requirements for strip < 600 mm wide slit from wide strip (see 8.5).

Where no specific choice is made by the purchaser concerning point f, g, h and i the supplier shall refer back to the purchaser.

#### 4.2 Options

A number of options are specified in clause 10. 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 (see 6.2).

### 5 Designation

The designation of products in accordance with 4.1 shall also include the exact designation of the ordered steel grade.

Examples of designation:

- a) sheet according to this European standard with nominal thickness of 2,0 mm, nominal width 1200 mm, with trimmed edges (GK), nominal length 2500 mm of steel 34Cr4 as specified in EN 10083-1:

sheet EN 10051 - 2,0 × 1200GK × 2500  
steel EN 10083-1 - 34Cr4



b) strip according to this European standard with nominal thickness of 4,5 mm, nominal width 1500 mm, with mill edges of steel S235JR, as specified in EN 10025:

strip EN 10051 - 4,5 × 1500  
steel EN 10025 - S235JR

## 6 Form of supply

6.1 Sheet/plate and strip shall be supplied with mill edges or with trimmed edges (GK), as agreed at the time of enquiry and order.

6.2 In the absence of information on the form of supply, sheet/plate and strip shall be supplied with mill edges.

6.3 The possibility of delivering coils with welding seams can be agreed at the time of enquiry and order. The indication of the location of the weld can be agreed at the same time.

See clause 10, option 2.

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## 7 Tolerances for sheet and plate

### 7.1 Thickness SIST EN 10051:1998 <https://standards.iteh.ai/catalog/standards/sist/2356fa3a-5d42-4151-9e7b-5ea87c4fed00/sist-en-10051-1998>

7.1.1 The tolerances on thickness for continuously hot-rolled low carbon steel sheet/plate for cold forming according to EN 10111 are given in table 2.

Table 2: Tolerances on thickness for continuously hot-rolled low carbon steel sheet/plate for cold forming

Dimensions in mm

| Nominal thickness | Tolerances for a nominal width |                  |                  |        |
|-------------------|--------------------------------|------------------|------------------|--------|
|                   | ≤ 1200                         | > 1200<br>≤ 1500 | > 1500<br>≤ 1800 | > 1800 |
| ≤ 2,00            | ± 0,13                         | ± 0,14           | ± 0,16           | -      |
| > 2,00 ≤ 2,50     | ± 0,14                         | ± 0,16           | ± 0,17           | ± 0,19 |
| > 2,50 ≤ 3,00     | ± 0,15                         | ± 0,17           | ± 0,18           | ± 0,20 |
| > 3,00 ≤ 4,00     | ± 0,17                         | ± 0,18           | ± 0,20           | ± 0,20 |
| > 4,00 ≤ 5,00     | ± 0,18                         | ± 0,20           | ± 0,21           | ± 0,22 |
| > 5,00 ≤ 6,00     | ± 0,20                         | ± 0,21           | ± 0,22           | ± 0,23 |
| > 6,00 ≤ 8,00     | ± 0,22                         | ± 0,23           | ± 0,23           | ± 0,26 |

7.1.2 The tolerances on thickness for steels with normal deformation resistance at elevated temperatures are given in table 3. These tolerances are indicated as category A.

7.1.3 For steels exhibiting a high deformation resistance at elevated temperatures the values of table 3 shall be increased by the amounts specified in table 4.  
This results in the following categories and increments:

- for steels of category B of table 4 the values in table 3 shall be increased by 15 %;
- for steels of category C of table 4 the values in table 3 shall be increased by 30 %;
- for steels of category D of table 4 the values in table 3 shall be increased by 40 %.

Table 3: Tolerances on thickness for sheet/plate made of steels with a normal deformation resistance at elevated temperatures (category A)

Dimensions in mm

| Nominal thickness | Tolerances for a nominal width |                  |                  |        |
|-------------------|--------------------------------|------------------|------------------|--------|
|                   | ≤ 1200                         | > 1200<br>≤ 1500 | > 1500<br>≤ 1800 | > 1800 |
| ≤ 2,00            | ± 0,17                         | ± 0,19           | ± 0,21           | -      |
| > 2,00 ≤ 2,50     | ± 0,18                         | ± 0,21           | ± 0,23           | ± 0,25 |
| > 2,50 ≤ 3,00     | ± 0,20                         | ± 0,22           | ± 0,24           | ± 0,26 |
| > 3,00 ≤ 4,00     | ± 0,22                         | ± 0,24           | ± 0,26           | ± 0,27 |
| > 4,00 ≤ 5,00     | ± 0,24                         | ± 0,26           | ± 0,28           | ± 0,29 |
| > 5,00 ≤ 6,00     | ± 0,26                         | ± 0,28           | ± 0,29           | ± 0,31 |
| > 6,00 ≤ 8,00     | ± 0,29                         | ± 0,30           | ± 0,31           | ± 0,35 |
| > 8,00 ≤ 10,00    | ± 0,32                         | ± 0,33           | ± 0,34           | ± 0,40 |
| > 10,00 ≤ 12,50   | ± 0,35                         | ± 0,36           | ± 0,37           | ± 0,43 |
| > 12,50 ≤ 15,00   | ± 0,37                         | ± 0,38           | ± 0,40           | ± 0,46 |
| > 15,00 ≤ 25,00   | ± 0,40                         | ± 0,42           | ± 0,45           | ± 0,50 |

Table 4: Thickness tolerance increments for steels exhibiting a high deformation resistance at elevated temperatures <sup>1) 2)</sup>

| Category B<br>(increment of 15 %)  |  | Category C<br>(increment of 30 %)   |   | Category D<br>(increment of 40 %)  |  |
|--|--|---|---|--|--|
| Designation  | Standardized in:   | Designation   | Standardized in:  | Designation  | Standardized in:   |
| E295; E335; E360<br>S355<br>S355<br>S355<br>S355<br>P295; P355   | EN 10025<br>EN 10025<br>EN 10155<br>EN 10149-2; -3<br>EN 10113-2; -3<br>EN 10028-2   | L360; L415; L445<br>S420; S460<br>S420; S460<br>P460<br>S460                          | EN 10208-2<br>EN 10113-2; -3<br>EN 10149-2; -3<br>EN 10028-3; -6<br>EN 10137-2                          | L480; L550<br>S500; S550;<br>S600; S650;<br>S700<br>S500; S550;<br>S620; S690;<br>S890; S960<br>P500; P550<br>P620; P690   | EN 10208-2<br>EN 10149-2<br><br><br><br>EN 10137-2<br><br><br>EN 10028-6   |
| C35<br>C35E<br>C 36<br>C45<br>C45E<br>C 46<br>C50<br>C50E  | EN 10083-2<br>EN 10083-1<br>EU 86-70<br>EN 10083-2<br>EN 10083-1<br>EU 86-70<br>EN 10083-2<br>EN 10083-1   | C 53<br>C55<br>C55E<br>1 CS 55<br>C60<br>C60E<br>1 CS 60<br>1 CS 67                   | EU 86-70<br>EN 10083-2<br>EN 10083-1<br>EU 132-79<br>EN 10083-2<br>EN 10083-1<br>EN 132-79<br>EN 132-79 | CT 70<br>1 CS 75<br>CT 80<br>2 CS 85<br>2 CS 100<br>CT 105<br>CT 120   | EU 96-79<br>EU 132-79<br>EU 96-79<br>EU 132-79<br>EU 132-79<br>EU 96-79<br>EU 96-79  |
| 16Mo3<br>20MnB5<br>30MnB5<br>38MnB5<br>28Mn6<br>27MnCrB5-2<br>33MnCrB5-2<br>39MnCrB6-2<br>38Cr2<br>46Cr2<br>34Cr4<br>41Cr4<br>45 Cr 2<br>38 Cr 4<br>16MnCr5<br>13CrMo4-5<br>10CrMo9-10 | EN 10028-2<br>EN 10083-3<br>EN 10083-3<br>EN 10083-3<br>EN 10083-1<br>EN 10083-3<br>EN 10083-3<br>EN 10083-3<br>EN 10083-1<br>EN 10083-1<br>EN 10083-1<br>EN 10083-1<br>EU 86-70<br>EU 86-70<br>prEN 10084<br>EN 10028-2<br>EN 10028-2 | 25CrMo4<br>34CrMo4<br>41 CrMo 4<br>42CrMo4<br>17CrNi6-6<br>20NiCrMo2-2<br>18CrNiMo7-6 | EN 10083-1<br>EN 10083-1<br>EU 86-70<br>EN 10083-1<br>prEN 10084<br>prEN 10084<br>prEN 10084            | 50CrMo4<br>36CrNiMo4<br>34CrNiMo6<br>30CrNiMo8<br>51CrV4<br>all grades<br>for instance<br>39 CrMoV 13<br>31 CrMo 12<br>34 CrAlMo 5<br>41 CrAlMo 7<br>all grades<br>for instance<br>50 CrV 4<br>67 SiCr 5<br>50 CrV 4 | EN 10083-1<br>EN 10083-1<br>EN 10083-1<br>EN 10083-1<br>EN 10083-1<br>EU 85-70<br>EU 85-70<br>EU 85-70<br>EU 85-70<br>EU 85-70<br>EU 89-70<br>EU 89-71<br>EU 132-79<br>EU 132-79 |
| All ferritic and<br>martensitic<br>stainless steels  | EN 10088-2   | All non-Mo-alloyed<br>austenitic stainless<br>steels                                  | EN 10088-2  | All Mo-alloyed<br>austenitic<br>stainless<br>steels  | EN 10088-2   |

1) A list of corresponding national designations and standards are given in Annex A, tables A.1 to A.3. In the event of a national standard having been recently replaced by a European standard, the old designation and corresponding standard are indicated in brackets.

2) In this table not all steel grades and quality classes covered by the present European Standards and EURONORMS are mentioned. Other grades, the designation of which is based on the same characteristic values (similar values or values of the same order) for the mechanical properties ( $R_e$ ,  $R_m$ , etc.) or for the chemical composition or intermediate grades shall be classified in the same categories as the comparable grades mentioned in this table.

EXAMPLES: Grades P460NH or P460NL1 (according to EN 10028-3): category C (as P460).  
Grade 2 CS 75 (EU 132-79): category D (as 1 CS 75).  
Grade 37Cr4 (EN 10083-1): category B (as 34Cr4 and 38Cr4).