UDC 669.14-122.4-41 : 621.753.14 : 620.1

October 1991

# Hot rolled steel plate 3 mm thick or above

Tolerances on dimensions, shape and mass

English version of DIN EN 10 029

DIN EN 10029

Warmgewalztes Stahlblech von 3 mm Dicke an; Grenzabmaße, Formtoleranzen, zulässige Gewichtsabweichungen

Supersedes DIN 1543, October 1981 edition.

European Standard EN 10 029 : 1991 has the status of a DIN Standard.

*A comma is used as the decimal marker.*

## National foreword

This standard has been prepared by ECISS/TC 12.

The responsible German body involved in the preparation of this standard was the *Normenausschuß Eisen und Stahl* (Steel and Iron Standards Committee), Technical Committee 20/1 *Maßnormen für warmgewalzte Flacherzeugnisse*.

The content of this standard was previouly issued for public comment in July 1989 in the form of a draft Standard to which the following principal amendments have been made.

1 The number of classes for the tolerance on thickness has been increased to four (cf. subclause 7.1.1 and table 1). This requires the class to be given when ordering.

2 The special flatness tolerances (cf. table 5) have been differentiated according to plate width.

The DIN Standards corresponding to the European Standards referred to in clause 2 of the EN are as follows:

| European Standard | DIN Standard |
|---|---|
| EN 10 079 | DIN EN 10 079 |
| EN 10 163 | DIN EN 10 163 Parts 1 to 3 |

## Standards referred to

(and not included in **Normative references**)

| | |
|---|---|
| DIN EN 10 079 | Definition and classification of steel products by shape and dimensions |
| DIN EN 10 163 Part 1 | Technical delivery conditions for the surface finish of hot rolled steel products; general requirements |
| DIN EN 10 163 Part 2 | Technical delivery conditions for the surface finish of hot rolled steel products; plate and wide flats |
| DIN EN 10 163 Part 3 | Technical delivery conditions for the surface finish of hot rolled steel products; sections |
| DIN 59 200 | Hot rolled wide steel flats; dimensions and tolerances on size, form and mass |

## Previous editions

DIN 1542: 09.24, 08.29, 12.33, 04.59; DIN 1620: 09.24, 03.58; DIN 1543: 09.24, 07.29, 07.59, 10.81.

## Amendments

In comparison with DIN 1543, October 1981 edition, the following amendments have been made.

a) The scope of the standard has been extended to cover plate thicknesses up to 250 mm.

b) Two new thickness tolerance classes, C and D, have been introduced.

c) Special tolerances on flatness have been introduced (cf. table 5).

d) Limits have been specified for the permissible excess mass (cf. clause 9).

## International Patent Classification

G 01 B 21/00

B 21 B 1/00

Continued overleaf.

EN comprises 8 pages.

## Editor's note

*This standard reproduces the official text of the English version of EN 10 029 as issued by CEN. In its preparation for publication as DIN EN 10 029 (English version), certain points have been noted which we consider to be in need of correction. These have been marked +). The suggested amendments are given below and will be forwarded to the responsible CEN Secretariat for its consideration.*

*In presentation, orthography, punctuation and hyphenation, the aim has been to implement the PNE Rules consistently. Obvious errors (e.g. redundancies and omissions) have been rectified without further reference.*

Suggested amendments

1 *In the title and text of the standard, 'steel plates' should preferably read 'steel plate' in those cases where reference is made to the semi-finished product.*

2 *In table 6, third column, the heading should read either 'thickness tolerances' or 'tolerances on thickness'.*

3 *In subclause 10.5, u is the out-of-squareness (and not 'out-of square') value.*

4 *To facilitate comprehension, in clause 11, item 3, 'class S' should preferably be set in brackets.*

# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

EN 10029

April 1991

UDC 669.14-122.4-41 : 621.753.14 : 620.1

Descriptors: Iron and steel products, hot rolled products, metal plate, unalloyed steels, stainless steels, designation, dimensional tolerances, form tolerances, weight tolerances.

**English version**

## Hot rolled steel plates[+]) 3 mm thick or above
### Tolerances on dimensions, shape and mass

Tôles en acier laminées à chaud, d'épaisseur égale ou supérieure à 3 mm; tolérances sur les dimensions, la forme et la masse

Warmgewalztes Stahlblech von 3 mm Dicke an; Grenzabmaße, Formtoleranzen, zulässige Gewichtsabweichungen

This European Standard was approved by CEN on 1991-04-17. 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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# 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 draft European Standard has been drawn up by ECISS/TC 12 'Structural steel and steels for pressure purposes, flat products – Dimensions and tolerances' whose Secretariat is held by NNI.

This document was originally drawn up as an EURONORM under the European Coal and Steel Community. With the formation of ECISS and the establishment of the ECISS work programme, TC 12 was asked to prepare this document for eventual publication as a European Standard.

This European Standard replaces:

EURONORM 29-81 Hot-rolled plates 3 mm thick or above – Tolerances on dimensions, shape and mass

ECISS/TC 12 met in February 1990 in Brussels and agreed on the text for circulation for formal vote within CEN. The following countries were represented in that meeting: Austria, Belgium, France, Germany, Italy, Netherlands and UK.

The Coordinating Commission (COCOR) of ECISS agreed on 1990-12-04/05 to submit this draft European Standard to the CEN Formal Vote.

According to the Common CEN/CENELEC Rules, 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 United Kingdom.

## 1 Scope

This European Standard specifies requirements for tolerances for hot rolled non-alloy and alloy steel plates +) including stainless steels with the following characteristics:

a) nominal thickness: $\geq$ 3 mm $\leq$ 250 mm;

b) nominal width: $\geq$ 600 mm;

c) specified minimum yield strength: < 700 N/mm$^2$.

Tolerances for products of width $\leq$ 600 mm cut or slit from plate should be agreed between manufacturer and purchaser at the time of enquiry and order.

This European Standard does not apply to round plates +), sketch plates +), chequer or raised-droplet pattern floor plates +) and wide flats for which other EURONORMs exist or European Standards dealing with tolerances on products of steel are being prepared:

– Tolerances on dimensions, shape and mass for hot-rolled wide flats of steel (see EURONORM 91) [1].

[1]) Until this EURONORM 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 A to this European Standard.

## 2 Normative references

| | |
|---|---|
| EN 10 079 | Definition of steel products |
| EN 10 163-1/3 | Delivery requirements for surface condition of hot-rolled plates, wide flats and sections of steel; |

## 3 Definition

For the purposes of this European Standard, the following definition applies:

**plate**: see EN 10 079.

## 4 Information to be supplied by the purchaser

### 4.1 General

The following information shall be supplied by the purchaser at the time of ordering:

a) description of the product (plate);

b) number of this European Standard (EN 10 029);

c) nominal thickness, in millimetres;

d) the tolerance class required (A, B, C or D) (see 6.2 and 7.1);

e) nominal width, in millimetres;

f) the letters NK if plate with mill edges is required (see 7.2.2);

Option 1.

g) nominal length, in millimetres;

h) the letter G if plate with limited edge camber and out-of-squareness is required (see 8.1);

Option 2.

i) the letter S if plate with special flatness tolerances is required (see 8.2).

Option 3.

Where no specific choice is made by the purchaser concerning points c, d, e and g, the supplier shall refer back to the purchaser.

### 4.2 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 (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) Plate according to this European Standard with a nominal thickness of 20 mm, class A thickness tolerance, a nominal width of 2000 mm, with trimmed edges, a nominal length of 4500 mm, with normal flatness tolerances, of steel Fe 360 B, as specified in EN 10 025:

Plate EN 10 029 - 20A × 2000 × 4500
Steel EN 10 025 - Fe 360 B

b) Plate according to this European Standard with a nominal thickness of 4,5 mm, class B thickness tolerance, a nominal width of 1500 mm, with mill edges (NK), a nominal length of 2800 mm, with special flatness tolerances (S) and an edge camber limited to 0,2 % of the actual length and an out-of-squareness limited to 1 % of the actual width (G), of steel X 10 CrNi 18 9, as specified in EURONORM 88:

Plate EN 10 029 - 4,5B × 1500 NK × 2800 S G
Steel EURONORM 88 - X 10 CrNi 18 9

## 6 Form of supply

**6.1** Plate shall be supplied:

a) with thickness tolerances of class A, B, C or D (see 7.1.1);

b) with trimmed edges or with mill edges (NK) (see 7.2.2);

c) with normal (N) or with special (S) flatness tolerances (see 8.2).

**6.2** In the absence of information in the order or of code letters for the supply, plate shall be supplied as follows:

- sheared or flame cut edges;
- normal tolerances for flatness, class N (see table 4).

## 7 Tolerances on dimensions

### 7.1 Thickness

**7.1.1** Tolerances on thickness are given in table 1. Plates +) may be supplied with either:

- class A: for minus thickness tolerances depending on the nominal thickness;
- class B: for a fixed minus tolerance of 0,3 mm;
- class C: for all plus tolerances depending on the nominal thickness;
- class D: for symmetrical tolerances depending on the nominal thickness.

At the time of ordering, the purchaser shall indicate if class A, B, C or D tolerances are required (see 4.1).

Additionally and within the tolerance limits on nominal thickness, the tolerances between minimum and maximum thickness of an individual plate given in table 1 shall apply to class A, B, C and D tolerances.

**7.1.2** For permissible limits concerning surface imperfections and requirements for repair, EN 10 163 Parts 1 and 2 apply.

**Table 1: Tolerances on thickness**

Dimensions in mm

| Nominal thickness | Tolerances on the nominal thickness (see 7.1.1) [1] | | | | | | | | Maximum thickness difference within a plate<br>Nominal plate width | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Class A | | Class B | | Class C | | Class D | | | | | | | |
| | Lower | Upper | Lower | Upper | Lower | Upper | Lower | Upper | ≥ 600<br>< 2 000 | ≥ 2 000<br>< 2 500 | ≥ 2 500<br>< 3 000 | ≥ 3 000<br>< 3 500 | ≥ 3 500<br>< 4 000 | ≥ 4 000 |
| ≥ 3 < 5 | −0,4 | +0,8 | 0,3 | +0,9 | 0 | +1,2 | −0,6 | +0,6 | 0,8 | 0,9 | 0,9 | – | – | – |
| ≥ 5 < 8 | −0,4 | +1,1 | 0,3 | +1,2 | 0 | +1,5 | −0,75 | +0,75 | 0,9 | 0,9 | 1,0 | 1,0 | – | – |
| ≥ 8 < 15 | −0,5 | +1,2 | −0,3 | +1,4 | 0 | +1,7 | −0,85 | +0,85 | 0,9 | 1,0 | 1,0 | 1,1 | 1,1 | 1,2 |
| ≥ 15 < 25 | −0,6 | +1,3 | −0,3 | +1,6 | 0 | +1,9 | −0,95 | +0,95 | 1,0 | 1,1 | 1,2 | 1,2 | 1,3 | 1,4 |
| ≥ 25 < 40 | −0,8 | +1,4 | −0,3 | +1,9 | 0 | +2,2 | −1,1 | +1,1 | 1,1 | 1,2 | 1,2 | 1,3 | 1,3 | 1,4 |
| ≥ 40 < 80 | −1,0 | +1,8 | −0,3 | +2,5 | 0 | +2,8 | −1,4 | +1,4 | 1,2 | 1,3 | 1,4 | 1,4 | 1,5 | 1,6 |
| ≥ 80 < 150 | −1,0 | +2,2 | −0,3 | +2,9 | 0 | +3,2 | −1,6 | +1,6 | 1,3 | 1,4 | 1,5 | 1,5 | 1,6 | 1,7 |
| ≥ 150 ≤ 250 | −1,2 | +2,4 | −0,3 | +3,3 | 0 | +3,6 | −1,8 | +1,8 | 1,4 | 1,5 | 1,6 | 1,6 | 1,7 | – |

[1] These thickness tolerances apply outside ground areas (see 7.1.2).

### 7.2 Width

7.2.1 Tolerances on width are given in table 2.

**Table 2: Tolerances on width**

Dimensions in mm

| Nominal width | Tolerances | |
|---|---|---|
| | Lower | Upper |
| ≥ 600 < 2 000 | 0 | +20 |
| ≥ 2 000 < 3 000 | 0 | +25 |
| ≥ 3 000 | 0 | +30 |

7.2.2 Tolerances on width for plates +) with untrimmed edges (NK) shall be the subject of agreement between the manufacturer and purchaser at the time of ordering.

Option 1.

### 7.3 Length

Tolerances on length are given in table 3.

**Table 3: Tolerances on length**

Dimensions in mm

| Nominal length | Tolerances | |
|---|---|---|
| | Lower | Upper |
| < 4 000 | 0 | + 20 |
| ≥ 4 000 < 6 000 | 0 | + 30 |
| ≥ 6 000 < 8 000 | 0 | + 40 |
| ≥ 8 000 < 10 000 | 0 | + 50 |
| ≥ 10 000 < 15 000 | 0 | + 75 |
| ≥ 15 000 ≤ 20 000 [1]) | 0 | +100 |

[1]) Tolerances for plates +) with a nominal length > 20 000 mm shall be agreed at the time of ordering.
Option 4.

## 8 Tolerances on shape

### 8.1 Edge camber and out-of-squareness

The edge camber and the out-of-squareness of a plate shall be limited so that it is possible to inscribe a rectangle with the dimensions of the ordered plate within the delivered size.

Additionally, if agreed at the time of ordering, edge camber shall be limited to 0,2 % of the actual length of the plate and out-of-squareness to 1 % of the actual width of the plate (G).

Option 2.

### 8.2 Flatness

8.2.1 Tolerances on flatness are given in table 4 for normal tolerances and in table 5 for special tolerances. Unless otherwise specified in the order, the plates shall be supplied with normal tolerances.

Option 3.

NOTE: It is pointed out that bad handling and storage can adversely affect the flatness of the product.

**Table 4: Normal tolerances for flatness, class N**

Dimensions in mm

| Nominal thickness | Steel type L [1]) | | Steel type H [1]) | |
|---|---|---|---|---|
| | Measuring length | | | |
| | 1 000 | 2 000 | 1 000 | 2 000 |
| ≥ 3 < 5 | 9 | 14 | 12 | 17 |
| ≥ 5 < 8 | 8 | 12 | 11 | 15 |
| ≥ 8 < 15 | 7 | 11 | 10 | 14 |
| ≥ 15 < 25 | 7 | 10 | 10 | 13 |
| ≥ 25 < 40 | 6 | 9 | 9 | 12 |
| ≥ 40 ≤ 250 | 5 | 8 | 8 | 11 |

[1]) See 8.2.2.

If the distance between the points of contact of the straightedge and the plate is < 1000 mm, the permissible deviation from flatness shall comply with the following requirements:

for steel type L, max. 1 % or for steel type H, max. 1,5 % of the distance between points of contact on the plate between 300 mm to 1000 mm, but not exceeding the values given in table 4.

**Table 5: Special tolerances for flatness (class S)**

Dimensions in mm

| Nominal thickness | Steel type L [1]), [2]) Plate width | | | | Steel type H [1]) | |
|---|---|---|---|---|---|---|
| | < 2 750 | | ≥ 2 750 | | | |
| | Measuring length | | | | | |
| | 1 000 | 2 000 | 1 000 | 2 000 | 1 000 | 2 000 |
| ≥ 3 < 8 | 4 | 8 | 5 | 10 | Shall be agreed at the time of ordering. Option 6 | |
| ≥ 8 ≤ 250 | 3 | 6 | 3 | 6 | | |

[1]) See 8.2.2.
[2]) Tighter tolerances shall be the subject of special agreement at the time of ordering.
Option 5.

If the distance between the points of contact of the straightedge and the plate is < 1000 mm, the permissible deviation from flatness shall comply with the following requirements:

max. 0,5 % of the distance between the points of contact, but not exceeding the values in table 5 and not < 2 mm.

8.2.2 The steel types according to tables 4 and 5 are defined as follows.

Steel type L: Products with a specified minimum yield strength ≤ 460 N/mm², neither quenched nor quenched and tempered.

Steel type H: Products with a specified minimum yield strength > 460 N/mm² and < 700 N/mm² and all grades of quenched and quenched and tempered products.

## 9 Excess mass

**9.1** The excess mass is the difference between the actual delivered mass and the theoretical mass, expressed as a percentage of the theoretical mass of the delivery. Unless otherwise specified in the appropriate quality standard, the theoretical mass shall be determined using a volumetric mass of 7,85 kg/dm$^3$ for carbon steels.

For stainless and alloy steels the values of the applicable quality standard apply.

**9.2** Upper limits for the excess mass corresponding to the thickness tolerance classes A, B, C and D (see 7.1.1) are given in table 6.

**9.3** The excess masses given in table 6 apply to deliveries with the same nominal dimensions and of the same quality, the mass of which is between 25 t and 75 t.

The modifications to the upper limits of the excess mass for deliveries of different masses are given in note 1 to table 6.

**9.4** Excess masses which exceed the limits of table 6 shall not be a reason for rejection, unless otherwise agreed at the time of ordering.

Option 7.

## 10 Measurements

Measurements shall be carried out at ambient temperature.

### 10.1 Thickness

Thickness shall be measured at any point situated more than 25 mm from the transverse or longitudinal edges of the plate, other than locally ground areas (see 7.1.2).

For plates +) with untrimmed edges, the measuring points shall be agreed at the time of ordering.

Option 9.

### 10.2 Width

Width shall be measured perpendicular to the major axis of the plate.

### 10.3 Length

The length of the plate is the length of the largest rectangle contained within the plate.

### 10.4 Edge camber

The edge camber value, $q$, ist the maximum deviation between one longitudinal edge and the straight line joining the two ends of this edge. It is measured on the concave edges of the plate (see figure 1).

### 10.5 Out-of-squareness

The out-of-square +) value, $u$, is the orthogonal projection of one transverse edge on one longitudinal edge (see figure 1).

### 10.6 Flatness

To measure flatness, the plates +) shall be placed on a flat surface. Deviation from flatness shall be determined by measuring the deviation in distance between the plates +) and a straightedge 1000 mm or 2000 mm long (see tables 4 and 5) which may be placed in any direction. Only the part situated between two points of contact between the straightedge and the plate shall be taken into consideration. Deviations shall be measured at a point at least 25 mm from the longitudinal edges and at a distance at least 200 mm or 100 mm from the plate ends, depending on whether the normal tolerances or special tolerances apply respectively (see figure 1).

## 11 Options (see 4.2)

1 Whether mill edges are required (see 4.1 and 7.2.2).

2 Whether a limited edge camber and out-of-squareness is required (see 4.1 and 8.1).

3 Whether special flatness tolerances class S +) are required (see 4.1 and 8.2).

4 What tolerances on length for plates +) with a nominal length > 20 000 mm are required (see 7.3, table 3).

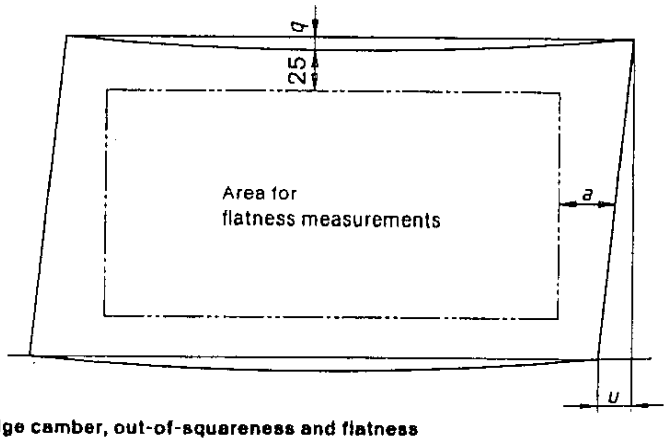
5 Whether tighter tolerances for flatness than class S for steel type L are required (see 8.2.1, table 5).

6 Whether special tolerances for flatness for steel type H are required (see 8.2.1, table 5).

7 Whether it is a reason for rejection when the excess masses exceed the limits of table 6 (see 9.4).

8 Which excess mass over 40% shall be used for single plates (see table 6).

9 Where for plates +) with untrimmed edges, the measuring points for the measurement of the thickness shall be chosen (see 10.1.).




Area for flatness measurements
$a$ = 200 mm for normal flatness tolerances
$a$ = 100 mm for special flatness tolerances
$q$ = edge camber
$u$ = out-of-squareness

**Figure 1: Measuring of edge camber, out-of-squareness and flatness**

**Table 6: Excess mass (classes A, B, C and D)**

| Nominal thickness mm | Class | Tolerances thickness [4]) mm | | Excess mass %[1]), [2]) Nominal width mm | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Lower | Upper | ≥ 600 < 2 000 | ≥ 2 000 < 2 500 | ≥ 2 500 < 3 000 | ≥ 3 000 < 3 500 | ≥ 3 500 |
| ≥ 3 < 5 | A | −0,4 | +0,8 | 8,5 | 9,5 | 10,5 | – | – |
| | B | −0,3 | +0,9 | 11,0 | 12,0 | 13,5 | – | – |
| | C | −0 | +1,2 | 19,0 | 20,5 | 21,5 | – | – |
| | D | −0,6 | +0,6 | 3,5 | 4,5 | 5,5 | – | – |
| ≥ 5 < 8 | A | −0,4 | +1,1 | 7,0 | 7,5 | 8,5 | 9,0 | – |
| | B | −0,3 | +1,2 | 9,0 | 9,5 | 10,0 | 11,0 | – |
| | C | −0 | +1,5 | 19,0 | 20,5 | 21,5 | – | – |
| | D | −0,75 | +0,75 | 3,5 | 4,5 | 5,5 | – | – |
| ≥ 8 < 15 | A | −0,5 | +1,2 | 6,0 | 6,0 | 6,5 | 7,0 | 7,5 |
| | B | −0,3 | +1,4 | 7,5 | 8,0 | 8,5 | 9,0 | 9,5 |
| | C | −0 | +1,7 | 10,5 | 11,0 | 11,5 | 12,0 | 12,5 |
| | D | −0,85 | +0,85 | 3,0 | 3,0 | 3,5 | 4,0 | 4,5 |
| ≥ 15 < 25 | A | −0,6 | +1,3 | 4,5 | 4,5 | 5,0 | 5,0 | 5,5 |
| | B | −0,3 | +1,6 | 6,0 | 6,0 | 6,5 | 6,5 | 7,0 |
| | C | −0 | +1,9 | 7,5 | 8,0 | 8,0 | 8,5 | 8,5 |
| | D | −0,95 | +0,95 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 |
| ≥ 25 < 40 | A | −0,8 | +1,4 | 3,5 | 3,5 | 4,0 | 4,0 | 4,0 |
| | B | −0,3 | +1,9 | 5,0 | 5,0 | 5,5 | 5,5 | 5,5 |
| | C | −0 | +2,2 | 6,0 | 6,0 | 6,5 | 6,5 | 6,5 |
| | D | −1,1 | +1,1 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 |
| ≥ 40 < 80 | A | −1,0 | +1,8 | 3,5 | 3,5 | 4,0 | 4,0 | 4,0 |
| | B | −0,3 | +2,5 | 5,0 | 5,0 | 5,5 | 5,5 | 5,5 |
| | C | −0 | +2,8 | 5,0 | 5,5 | 5,5 | 5,5 | 5,5 |
| | D | −1,4 | +1,4 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 |
| ≥ 80 < 150 | A | −1,0 | +2,2 | 3,5 | 3,5 | 4,0 | 4,0 | 4,0 |
| | B | −0,3 | +2,9 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
| | C | −0 | +3,2 | 4,5 | 4,5 | 4,5 | 5,0 | 5,0 |
| | D | −1,6 | +1,6 | 3,0 | 3,0 | 3,0 | 3,5 | 3,5 |
| ≥ 150 < 250 | A | −1,2 | +2,4 | 3,5 | 3,5 | 3,5 | 3,5 | 3,5 |
| | B | −0,3 | +3,3 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 |
| | C | −0 | +3,6 | 4,0 | 4,0 | 4,0 | 4,0 | 4,0 |
| | D | −1,8 | +1,8 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |

[1]) See 9.3. The excess masses for all tolerance classes given in table 6 shall be adjusted in relation to the lot mass as detailed below. (MA is the specified value for class A.)

≥ 150 t: −0,2 × MA
≥ 75 < 150 t: −0,1 × MA
≥ 25 < 75 t: values in accordance with table 6
≥ 10 < 25 t: +0,2 × MA
< 10 t: +0,4 × MA

Single plates: more than +0,4 × MA, by special agreement with the customer.

Option 8.

Example: Lot mass 100 t, nominal dimension 20 × 2 500 × 4 500 mm, tolerance class D.
Correction value: −0,10 × 5,0 % = −0,5 %.
Excess mass: 3 % − 0,5 % = 2,5 %.

[2]) These excess mass values have taken account of tolerances on width and length.

## Annex A

(informative)

## List of national standards which correspond to EURONORM 91

Until EURONORM 91 is transformed into a European Standard, it may be either implemented or reference made to the corresponding national standard as listed in table 7.

**Table 7: EURONORM 91 with corresponding national standards**

| EURONORM | Corresponding national standard in | | | | | | |
|---|---|---|---|---|---|---|---|
| | Germany DIN | France NF | United Kingdom BS | Italy UNI | Belgium NBN | Sweden SS | Austria M |
| 91 | 59 200 | A 46-012 | 4360 : 1990 | EU 91 | A 43-301 | 21 21 50 | 32 31 |