UDC 669.14-122.4-423 : 620.179.11 DEUTSCHE NORM October 1991

Technical delivery conditions for the surface condition of hot rolled steel plate, wide flats and sections

Sections

DIN EN 10 163 Part 3

Lieferbedingungen für die Oberflächenbeschaffenheit von warmgewalzten Stahlerzeugnissen (Blech, Breitflachstahl und Profile); Profile

European Standard EN 10 163-3 : 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 10.

The responsible German body involved in the preparation of this standard was the *Normenausschuß Eisen und Stahl* (Steel and Iron Standards Committee), Technical Committee 21/6 *Maßnormen für warmgewalzte Profile*.

This standard is the first German standard to deal with technical delivery conditions for the surface condition of hot rolled steel sections (wide flanged I beams, channels, tees and angles; cf. clause 2). It deals with the type, permissible depth and size of imperfections and discontinuities as well as grinding allowances and establishes surface quality classes.

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

EURONORM	DIN Standard
EURONORM 19	DIN 1025 Part 5
EURONORM 24	DIN 1025 Part 1 and DIN 1026
EURONORM 34	DIN 1025 Parts 2 to 4
EURONORM 44	DIN 1025 Part 5
EURONORM 53	DIN 1025 Parts 2 to 4
EURONORM 54	DIN 1026
EURONORM 55	DIN 1024
EURONORM 56	DIN 1028
EURONORM 57	DIN 1029

Continued overleaf.
EN comprises 3 pages.

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Standards referred to

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

DIN 1024	Steel bars; hot rolled round-edged T-bars; dimensions, mass, limit deviations and static values
DIN 1025 Part 1	Steel sections; hot rolled narrow flange I-beams (I series); dimensions, mass, limit deviations and static values
DIN 1025 Part 2	Steel sections; hot rolled wide flange I-beams (IPB and IB series); dimensions, mass, limit deviations and static values
DIN 1025 Part 3	Steel sections; hot rolled wide flange I-beams, light duty (IPBl series); dimensions, mass, limit deviations and static values
DIN 1025 Part 4	Steel sections; hot rolled wide flange I-beams, heavy duty (IPBv series); dimensions, mass, limit deviations and static values
DIN 1025 Part 5	Steel sections; hot rolled I-beams of medium flange width (IPE series); dimensions, mass, limit deviations and static values
DIN 1026	Steel bars and sections; hot rolled round-edged U steel; dimensions, mass, limit deviations and static values
DIN 1028	Steel bars; hot rolled round-edged equal angles; dimensions, mass, limit deviations and static values
DIN 1029	Steel sections; hot rolled round-edged unequal angles; dimensions, mass, limit deviations and static values

Other relevant standards

DIN EN 10 163 Part 1	Technical delivery conditions for the surface condition of hot rolled steel; plate, wide flats and sections; general requirements
DIN EN 10 163 Part 2	Technical delivery conditions for the surface condition of hot rolled steel; plate, wide flats and sections; plate and wide flats

International Patent Classification

C 21 D 1/00
C 22 C 38/00
G 01 B 21/30

Editor's note

This standard reproduces the official text of the English version of EN 10 163-3 as issued by CEN. In its preparation for publication as DIN EN 10 163 Part 3 (English version), some 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 of the standard, 'steel plates' should preferably read 'steel plate' since here reference is made to the semi-finished product.*

2 *The first paragraph of subclauses 4.2.1 and 4.3.1 should preferably read 'Owing to the nature of the manufacturing process, the occurrence of discontinuities cannot be avoided. All such discontinuities are to be deemed acceptable provided that they do not exceed the depth specified in table 1 (and table 2, respectively)'.*

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 10163-3

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Descriptors: Iron and steel products, hot rolled products, steels, metal sections, delivery condition, surface condition, quality classes, defects.

English version

Delivery requirements for surface condition of hot rolled steel plates+), wide flats and sections

Part 3: Sections

Conditions de livraison relatives à l'état de surface des tôles, larges plats et profilés en acier laminés à chaud. Partie 3: Profilés

Lieferbedingungen für die Oberflächenbeschaffenheit von warmgewalzten Stahlerzeugnissen (Blech, Breitflachstahl und Profile). Teil 3: Profile

This European Standard was approved by CEN on 1991-08-21. 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.

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

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 10 'Structural steel; quality standards' whose Secretariat is held by NNI.

Parts 1 and 2 of this document were originally drawn up as EURONORM 163 under the European Coal and Steel Community. With the formation of ECISS and the establishment of the ECISS work programme, TC 10 was asked to prepare this document for eventual publication as a European Standard.

ECISS/TC 10 met 26 and 27 February, 1991 in Brussels and agreed on the text for publication as a European Standard. The following countries were represented at that meeting: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden and United Kingdom.

This European Standard EN 10 163-3 was approved by CEN on 1991-03-27.

According to the CEN/CENELEC Internal Regulations, 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 Part 3, in addition to Part 1, specifies the general delivery requirements for the surface condition of sections to which the EURONORMs mentioned in clause 2 apply and applies to all surfaces excluding edges.

2 Normative references

EURONORM 19[1]	IPE-beams; parallel-flanged beams
EURONORM 24[1]	Standard beams and channel sections; tolerances
EURONORM 34[1],[2]	Hot-rolled wide-flanged beams with parallel faces; tolerances
EURONORM 44[1],[2]	Hot-rolled IPE-beams; tolerances
EURONORM 53[1]	Wide-flanged beams with parallel flanges
EURONORM 54[1]	Small hot-rolled steel channels
EURONORM 55[1]	Hot-rolled equal flange tees with radiused root and toes in steel
EURONORM 56[1]	Hot-rolled equal-leg angles (with radiused root and toes)
EURONORM 57[1]	Hot-rolled unequal angles (with radiused root and toes)

[1] Until these EURONORMs are transformed into European Standards, they can either be implemented or reference made to the corresponding national standards, the list of which is given in annex C to Part 1 of this European Standard.

[2] These EURONORMs are being transformed into European Standards.

3 General

3.1 The surface requirements and repair conditions are subdivided into 2 classes and each class is further subdivided into 3 subclasses.

Class C:
General applications

The surface condition shall comply with the requirements of 4.2 and clause 5.

Class D:
Special applications

The surface condition shall comply with the requirements of 4.3 and clause 5.

Subclass 1
Repair by chipping and/or grinding followed by welding is permitted in compliance with 5.2.1 and 5.2.2.

Subclass 2
Repair by welding is only permitted if agreed at the time of ordering and under agreed conditions (see 5.2.3).

Subclass 3
Repair by welding is not allowed.

The required class and subclass is specified in the appropriate material or product standard. If this is not the case, the class and subclass shall be class C and subclass 1 unless otherwise specified at the time of ordering.

4 Requirements

4.1 General

Sections may have surface discontinuities, which may be divided into categories depending on their nature, depth and number, as defined in 4.2 and 4.3.

4.2 Class C

4.2.1 Imperfections

Discontinuities with a depth not exceeding the limits of table 1 are regarded as being inherent of the manufacturing process and are permissible irrespective of their number.

A surface area with a remaining thickness under the discontinuities less than the minimum thickness as specified in the applicable EURONORMs (see clause 2) is permissible, with a maximum of 15 % of the inspected surface.

4.2.2 Defects

Discontinuities with a depth exceeding the limits of table 1 shall be repaired irrespective of their number.

Table 1. **Maximum permissible depth of discontinuities for class C**

Dimensions in mm

Nominal thickness of the product, e	Maximum permissible depth of discontinuities
$3 \leq e < 20$	1,2 or 25 % of e*)
$20 \leq e < 40$	1,7
$40 \leq e < 80$	2,5
$80 \leq e < 160$	3,0
*) The lesser value applies.	

4.3 Class D

4.3.1 Imperfections

Discontinuities not exceeding the limits of table 2 are regarded as being inherent of the manufacturing process and are permissible irrespective of their number.

A surface area with a remaining thickness under the discontinuities less than the minimum thickness as specified in the applicable EURONORMs (see clause 2) is permissible, with a maximum of 2 % of the inspected surface.

4.3.2 Defects

Discontinuities with a depth exceeding the limits of table 2 shall be repaired irrespective of their number.

Table 2. **Maximum permissible depth of discontinuities for class D**

Dimensions in mm

Nominal thickness of the product, e	Maximum permissible depth of discontinuities
$3 \leq e < 20$	0,5
$20 \leq e < 40$	0,7
$40 \leq e < 80$	1,0
$80 \leq e < 160$	1,5

5 Repair procedures

5.1 Grinding

The maximum permitted grinding allowance below the minimum thickness as specified in the European Standards or EURONORMs specifying tolerances is given in table 3. Furthermore, the following conditions apply.

For ground areas with a thickness under the minimum permissible thickness, as specified in the European Standards or EURONORMs specifying tolerances, the sum of all ground areas shall not exceed 15 % of the surface for class C and 2 % for class D.

Table 3. **Maximum permissible values below the minimum thickness**

Dimensions in mm

Nominal thickness of the product, e	Maximum permitted grinding allowance below minimum specified thickness
$3 \leq e < 20$	0,4
$20 \leq e < 40$	0,6
$40 \leq e < 80$	1,2
$80 \leq e < 160$	2,0

5.2 Welding

The following conditions apply for the repair by welding of defects which cannot be repaired by grinding as stated under 5.1.

5.2.1 Class C, subclass 1

The sum of the welded areas shall not exceed 15 % of the surface area under inspection.

5.2.2 Class D, subclass 1

The sum of the welded areas shall not exceed 2 % of the surface area under inspection.

5.2.3 Subclass 2

Repair by welding is only allowed if agreed at the time of ordering. In this case, requirements different from 5.2.1 and 5.2.2 can be specified.

5.2.4 Subclass 3

Repair by welding is not allowed.