SLOVENSKI STANDARD
SIST EN 10207:2018

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Nadomešča:
SIST EN 10207:2005

Jekla za enostavne tlačne posode - Tehnični dobavni pogoji za pločevine, trakove in palice

Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars

Stähle für einfache Druckbehälter - Technische Lieferbedingungen für Blech, Band und Stabstahl

Aciers pour appareils à pression simples - Conditions techniques de livraison des tôles, bandes et barres

Ta slovenski standard je istoveten z: **EN 10207:2017**

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77.140.30	Jekla za uporabo pod tlakom	Steels for pressure purposes
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

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Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars

Aciers pour appareils à pression simples - Conditions techniques de livraison des tôles, bandes et barres

Stähle für einfache Druckbehälter - Technische Lieferbedingungen für Blech, Band und Stabstahl

This European Standard was approved by CEN on 28 August 2017.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 10207:2017) has been prepared by Technical Committee ECISS/TC 107 “Steels for pressure purposes”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10207:2005.

A list of the main changes between this document and EN 10207:2005 can be found in Annex B.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2014/29/EU.

For relationship with EU Directive 2014/29/EU, see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the technical delivery requirements for plates, strips and bars made of steel in accordance with the specifications for pressurized parts in simple pressure vessels as defined in the Directive 2014/29/EU (see Annex A) and standardized in EN 286-1 to EN 286-3.

NOTE Once this European Standard is published in the EU Official Journal (OJEU) under Directive 2014/29/EU, presumption of conformity to the Essential Safety Requirements (ESRs) of Directive 2014/29/EU is limited to technical data of materials in this European Standard and does not presume adequacy of the material to a specific item of equipment. Consequently, the assessment of the technical data stated in this material standard against the design requirements of this specific item of equipment to verify that the ESRs of Directive 2014/29/EU are satisfied, needs to be done.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10020:2000, *Definition and classification of grades of steel*

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10027-1:2016, *Designation systems for steels - Part 1: Steel names*

EN 10027-2:2015, *Designation systems for steels - Part 2: Numerical system*

EN 10029:2010, *Hot-rolled steel plates 3 mm thick or above - Tolerances on dimensions and shape*

EN 10048:1996, *Hot rolled narrow steel strip - Tolerances on dimensions and shape*

EN 10051:2010, *Continuously hot-rolled strip and plate/sheet cut from wide strip of non-alloy and alloy steels - Tolerances on dimensions and shape*

EN 10058:2003, *Hot rolled flat steel bars for general purposes - Dimensions and tolerances on shape and dimensions*

EN 10059:2003, *Hot rolled square steel bars for general purposes - Dimensions and tolerances on shape and dimensions*

EN 10060:2003, *Hot rolled round steel bars for general purposes - Dimensions and tolerances on shape and dimensions*

EN 10061:2003, *Hot rolled hexagon steel bars for general purposes - Dimensions and tolerances on shape and dimensions*

EN 10079:2007, *Definition of steel products*

EN 10160:1999, *Ultrasonic testing of steel flat product of thickness equal or greater than 6 mm (reflection method)*

EN 10163-2:2004, *Delivery requirements for surface condition of hot-rolled steel plates, wide flats and sections - Part 2: Plate and wide flats*

EN 10168:2004, *Steel products - Inspection documents - List of information and description*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 10221:1995, *Surface quality classes for hot-rolled bars and rods - Technical delivery conditions*

EN 10308:2001, *Non destructive testing - Ultrasonic testing of steel bars*

EN ISO 148-1:2016, *Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1:2016)*

EN ISO 377:2017, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing (ISO 377:2017)*

EN ISO 2566-1:1999, *Steel - Conversion of elongation values - Part 1: Carbon and low alloy steels (ISO 2566-1:1984)*

EN ISO 6892-1:2016, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2016)*

EN ISO 6892-2:2011, *Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature (ISO 6892-2:2011)*

EN ISO 14284:2002, *Steel and iron - Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

CEN/TR 10261:2013, *Iron and steel - European standards for the determination of chemical composition*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020:2000, EN 10021:2006, EN 10079:2007and EN 10204:2004 and the following apply.

3.1
normalizing rolling
rolling process in which the final deformation process is carried out in a certain temperature range leading to a material condition equivalent to that obtained after normalizing so that the specified mechanical properties are still met even after subsequent normalizing

4 Classification and designation

4.1 Classification

In accordance with the classification system in EN 10020, the steel grades P235S and P265S are non-alloy quality steels and the steel grade P275SL is a non-alloy special steel.

4.2 Designation

The steel grades are designated with steel names and steel numbers. The steel names are allocated in accordance with EN 10027-1. The steel numbers are allocated in accordance with EN 10027-2.

5 Information to be supplied by the purchaser

5.1 Mandatory information

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

a) quantity (mass or total length or number);

b) product form (plate/sheet or strip or bar);

c) surface class for bars (see 7.4.2);

d) European Standard or document specifying the tolerances on dimensions, shape and mass and, if the relevant European Standard or document permits the purchaser certain options, e.g. regarding finishes or tolerance grades, specific information on these aspects (see 7.6);

e) nominal dimensions of the product to be delivered (see 7.6);

f) number of this document;

g) designation of the steel grade (steel name or steel number);

h) inspection document to be issued (see 8.1.1);

i) if working temperature is below −10°C for nominal thicknesses 5 mm < *t or b* < 6mm (only flat products or rectangular bars).

5.2 Options

A number of options are specified in this document and listed below. In the event that the purchaser does not indicate a wish to implement any of these options at the time of enquiry and order, the products shall be supplied in accordance with the basic specification (see 5.1):

1) steelmaking process (see 6.1.1);

2) internal soundness (see 7.5);

3) additional tests (see 8.2.2);

4) circular test pieces for the tensile test (see Table 6, footnote b);

5) test temperature for tensile test at elevated temperature (see 10.4).

6 Manufacturing process

6.1 Steelmaking

6.1.1 Unless a special steelmaking process has been agreed at the time of enquiry and order, the steelmaking process for steels in accordance with this document shall be at the discretion of the manufacturer.

6.1.2 The steels shall be fully killed and not susceptible to ageing.

NOTE For these steels covered in Table 1, requirements of the Directive 2014/29/EU were taken into account by the specification of a minimum total aluminium content of 0,020 %.

6.2 Delivery condition

The products shall be delivered in the normalized or in an equivalent condition obtained by normalizing rolling (see 3.1).

7 Requirements

7.1 General

The products shall conform to the requirements of this document.

In addition, the general technical delivery requirements specified in EN 10021 apply.

7.2 Chemical composition

7.2.1 The chemical composition determined from the cast analysis in accordance with 10.1 shall comply with the requirements in Table 1.

7.2.2 The product analysis may deviate from the specified limits for the cast analysis by the values given in Table 2.

Table 1 — Chemical composition (cast analysis)

Steel grade		% by mass						
Steel name	Steel number	C max.	Si max.	Mn	P max.	S max.	Al_{tot} min.[a]	N max.
P235S	1.0112	0,16	0,35	0,40 to 1,20	0,025	0,025	0,020	0,010
P265S	1.0130	0,20	0,40	0,50 to 1,50	0,025	0,025	0,020	0,010
P275SL	1.1100	0,16	0,40	0,50 to 1,50	0,025	0,020	0,020	0,010

[a] If sufficient other nitrogen binding elements are present, the minimum total aluminium content does not apply. If such nitrogen binding elements were added to the steel their content shall be given in the inspection document.

Table 2 — Permissible deviations of the product analysis from the values specified in Table 1 for the cast analysis

Element	Specified values for the cast analysis % by mass	Permissible deviation[a] of the product analysis % by mass
C	≤ 0,20	+ 0,02
Si	≤ 0,40	+ 0,05
Mn	≤ 1,00	– 0,05
	> 1,00 to ≤ 1,50	+ 0,10
P	≤ 0,025	+ 0,005
S	≤ 0,025	+ 0,005
N	≤ 0,010	+ 0,002
Al	≥ 0,020	– 0,005

[a] If several product analyses are carried out for one cast and if, in this case, values for an individual element are established which fall outside the permitted range for the chemical composition, then it is only permissible that the values either exceed the permissible maximum value or fall short of the permissible minimum value, but not both for one cast.

7.3 Mechanical properties

The requirements in Tables 3 and 4 apply for test pieces taken, prepared and tested in accordance with Clause 9 and 10.2 to 10.4. The values relate to the nominal thickness (thickness at ordering) of the products and apply to the delivery conditions specified in 6.2.

Table 3 — Mechanical properties

Steel grade		Minimum yield strength $R_{eH,min.}$ in MPa for nominal thickness t in mm			Tensile strength R_m in MPa	Minimum elongation $A_{long.,min.}$[a,b] in %				Minimum impact energy KV_2[c]	
						L_0 = 80 mm		$L_0 = 5{,}65\sqrt{S_0}$			
						for nominal thickness t in mm					
Steel name	Steel number	$t \le 16$	$16 < t \le 40$	$40 < t \le 60$		$2 < t \le 2{,}5$	$2{,}5 < t < 3$	$3 \le t \le 40$	$40 < t \le 60$	at °C	J
P235S	1.0112	235	225	215	360 to 480	20	21	26	25	– 20	28
P265S	1.0130	265	255	245	410 to 530	17	18	22	22	– 20	28
P275SL	1.1100	275	265	255	390 to 510	19	20	24	24	– 50	28

[a] Minimum elongation after fracture for longitudinal tensile test pieces (see Table 6, footnote a).

[b] If for flat products in rolled width of ≥ 600 mm transverse tensile test pieces are tested in accordance with Table 6, the minimum values for elongation after fracture are by 2 units lower than the minimum values specified above for longitudinal test pieces.

[c] Minimum impact energy for longitudinal Charpy-V-notch impact test pieces (see 10.3).