SLOVENSKI STANDARD
oSIST prEN 10025-5:2018

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Vroče valjani izdelki iz konstrukcijskih jekel - 5. del: Tehnični dobavni pogoji za konstrukcijska jekla z izboljšano odpornostjo proti atmosferski koroziji

Hot rolled products of structural steels - Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

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Warmgewalzte Erzeugnisse aus Baustählen - Teil 5: Technische Lieferbedingungen für wetterfeste Baustähle

Produits laminés à chaud en aciers de construction - Partie 5 : Conditions techniques de livraison pour les aciers de construction à résistance améliorée à la corrosion atmosphérique

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Ta slovenski standard je istoveten z: **prEN 10025-5**

ICS:

77.140.10	Jekla za toplotno obdelavo	Heat-treatable steels
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

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EUROPEAN STANDARD

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DRAFT
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ICS 77.140.10; 77.140.50

Will supersede EN 10025-5:2004

English Version

Hot rolled products of structural steels - Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

Produits laminés à chaud en aciers de construction - Partie 5 : Conditions techniques de livraison pour les aciers de construction à résistance améliorée à la corrosion atmosphérique

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This draft European Standard is submitted to CEN members for second enquiry. It has been drawn up by the Technical Committee ECISS/TC 103.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 10025-5:2018) has been prepared by Technical Committee ECISS/TC 103 "Structural steels other than reinforcements", the secretariat of which is held by DIN.

This document is currently submitted to the second CEN Enquiry.

This document will supersede EN 10025-5:2004.

This European Standard consists of the following parts, under the general title *Hot rolled products of structural steels:*

Part 1: General

Part 2: Technical delivery conditions for non-alloy structural steels

Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels

Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels

Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition

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For a short transition period there will be a coexistence of EN 10025-1:2004 with EN 10025-2:2008 to - EN 10025-6:2018, since the new EN 10025-1 has to fulfil the requirements of the CPR and will therefore be published later. For this short transition period up-to-the publication of the next edition of part 1 the following has to be taken into account for EN 10025-1:2004:

a) all dated and undated references to EN 10025-1:2004 to EN 10025-6:2004 are unchanged to this version with following exception: In 9.2.2.1 the reference must be 8.3.1 and 8.3.2 instead of 8.4.1 and 8.4.2;

b) Clauses 5, 12 and 13 of EN 10025-1:2004 are no longer relevant.

The main changes with respect to the previous edition are listed below:

a) part 5 is now a stand-alone standard for technical delivery conditions including the preparation of samples and test pieces, the test methods, the marking, labelling and packaging and the drawings;

b) for construction purposes this standard and part 1 must be used together;

c) requirements for elements not definded were added to 7.2.1 and 7.2.2;

d) Option 33 were added, Options 9 and 21 were deleted;

e) key to Figure A.1 was updated;

f) steel grades S355J4, S420J0W, S420J2W, S420J4W, S460J0W, S460J2W and S460J4W were added to Tables 1 to 5;

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g) Annex B deleted;

h) references were updated and document editorial revised.

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1 Scope

This document specifies technical delivery conditions for flat and long products of hot rolled steels with improved atmospheric corrosion resistance in the grades and qualities given in Tables 2 and 3 (chemical composition) and Tables 4 and 5 (mechanical properties) in the usual delivery conditions as given in 6.3.

The thicknesses in which products of the steel grades and qualities specified in this document may be supplied are given in Table 1.

Table 1 — Product forms for the different steel grades with improved atmospheric corrosion resistance depending on their thickness

Designation		Flat products		Long products		
		Nominal thickness		Sections	Bars	Rods
		mm		Nominal thickness or diameter mm		
Steel name	Steel number	≤ 12	≤ 150	≤ 63	≤ 150	≤ 60
S235J0W	1.8958		x	x	x	x
S235J2W	1.8961		x	x	x	x
S355J0WP	1.8945	x				
S355J2WP	1.8946	x				
S355J0W	1.8959		x	x	x	x
S355J2W	1.8965		x	x	x	x
S355K2W	1.8967		x	x	x	x
S355J4W	1.8913		x	x	x	x
S355J5W	1.8991		x			
S420J0W	1.8943		x	x		
S420J2W	1.8949		x	x		
S420K2W	1.8997		x	x		
S420J4W	1.8954		x			
S420J5W	1.8992		x			
S460J0W	1.8966		x	x		
S460J2W	1.8980		x	x		
S460K2W	1.8990		x	x		
S460J4W	1.8981		x			
S460J5W	1.8993		x			

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The steels specified in this document are not intended to be heat treated except products delivered in the delivery condition +N. Stress relieving is permitted. Products delivered in +N condition can be hot formed and/or normalized after delivery (see Clause 3).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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2.1 General standards

EN 1011-2, *Welding — Recommendations for welding of metallic materials — Part 2: Arc welding of ferritic steels*

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

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

EN 10025-1:2004, *Hot rolled products of structural steels — Part 1: General technical delivery conditions*

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

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

EN 10079, *Definition of steel products*

EN 10163-1, *Delivery requirements for surface condition of hot-rolled steel plates, wide flats and sections — Part 1: General requirements*

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

EN 10163-3, *Delivery requirements for surface condition of hot-rolled steel plates, wide flats and sections — Part 3: Sections*

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EN 10164, *Steel products with improved deformation properties perpendicular to the surface of the product — Technical delivery conditions*

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

EN 10204, *Metallic products — Types of inspection documents*

CEN/TR 10347, *Guidance for forming of structural steels in processing*

FprEN ISO 9443:2018, *Surface quality classes for hot-rolled bars and wire rod (ISO/FDIS 9443:2018)*

2.2 Standards on tolerances on dimensions and shape

EN 10017, *Steel rod for drawing and/or cold rolling — Dimensions and tolerances*

EN 10024, *Hot rolled taper flange I sections — Tolerances on shape and dimensions*

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

EN 10034, *Structural steel I and H sections — Tolerances on shape and dimensions*

EN 10048, *Hot rolled narrow steel strip — Tolerances on dimensions and shape*

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

EN 10055, *Hot rolled steel equal flange tees with radiused root and toes — Dimensions and tolerances on shape and dimensions*

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EN 10056-1, *Structural steel equal and unequal leg angles — Part 1: Dimensions*

EN 10056-2, *Structural steel equal and unequal leg angles — Part 2: Tolerances on shape and dimensions*

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

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

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

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

EN 10067, *Hot rolled bulb flats — Dimensions and tolerances on shape, dimensions and mass*

EN 10279, *Hot rolled steel channels — Tolerances on shape, dimensions and mass*

EN 10363, *Continuously hot-rolled patterned steel strip and plate/sheet cut from wide strip — Tolerances on dimensions and shape*

EN 10365, *Hot rolled steel channels, I and H sections — Dimensions and masses*

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2.3 Standards on testing

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

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EN 10306, *Iron and steel — Ultrasonic testing of H beams with parallel flanges and IPE beams*

EN 10308, *Non destructive testing — Ultrasonic testing of steel bars*

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

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

EN ISO 643, *Steels — Micrographic determination of the apparent grain size (ISO 643:2012)*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10079 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

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— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
normalized rolled
rolling process in which the final deformation is carried out in a certain temperature range leading to a material condition equivalent to that obtained after normalizing so that the specified values of the mechanical properties are retained even after normalizing

Note 1 to entry: The abbreviated form of this delivery condition is +N.

Note 2 to entry: In international publications for both the normalizing rolling, as well as the thermomechanical rolling, the expression "controlled rolling" may be found. However in view of the different applicability of the products a distinction of the terms is necessary.

3.2
as-rolled
conventional hot rolling without any normalized rolling or thermomechanical rolling and/or heat treatment condition like normalizing or quenching

Note 1 to entry: The abbreviated form of this delivery condition is +AR.

3.3
thermomechanical rolling
rolling process in which the final deformation is carried out in a certain temperature range leading to a material condition with certain properties which cannot be achieved or repeated by heat treatment alone

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Note 1 to entry: The abbreviated form of this delivery condition is +M.

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Note 2 to entry: Thermomechanical rolling leading to the delivery condition +M can include processes with an increasing cooling rate with or without tempering including self-tempering but excluding direct quenching and quenching and tempering.

Note 3 to entry: In some publications the word TMCP (Thermomechanical Control Process) is also used.

3.4
normalizing
heat treatment consisting of austenitizing followed by air cooling

Note 1 to entry: The abbreviated form of this delivery condition is +N.

3.5
steel with improved atmospheric corrosion resistance
steel in which a certain number of alloying elements, such as P, Cu, Cr, Ni, Mo, has been added in order to increase its resistance to atmospheric corrosion, by forming an auto-protective oxide layer on the base metal under the influence of weather conditions

Note 1 to entry: Steel with improved atmospheric corrosion resistance is often called weathering steel.

Note 2 to entry: Additional information for the use of steel with improved atmospheric corrosion resistance is given in Annex B.

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4 Classification and designation

4.1 Classification

4.1.1 Main quality classes

The steel grades specified in this document shall be classified as alloy special steels according to EN 10020.

4.1.2 Grades and qualities

This document specifies four steel grades S235, S355, S420 and S460.

The steel grades may be supplied in different qualities. The qualities differ in specified impact energy requirements (see Table 5).

Grade S355 is subdivided into the classes W and WP, which differ mainly in their carbon and phosphorus contents (see Tables 2 and 3) and availability (see Table 1).

4.2 Designation

4.2.1 For the steel grades covered by this document the steel names shall be allocated in accordance with EN 10027-1; the steel numbers shall be allocated in accordance with EN 10027-2.

4.2.2 The designation shall consist of:

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— number of this document (EN 10025-5);

— steel name or the steel number; the steel name consisting of:

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  — symbol S (for structural steel);

  — indication of the minimum specified yield strength for thickness ≤ 16 mm expressed in MPa;

  — quality designation (see 4.1.2) in respect of specified impact energy values;

  — letter W indicating that the steel has an improved atmospheric corrosion resistance;

  — if applicable, the letter P for the class with a greater phosphorus content (only in the case of grade S355);

— the indication “+N”, “+AR” or “+M”, when the products are ordered and delivered in the condition +N, +AR or +M (see 3.1, 3.2, 3.3, 3.4 and 6.3). The indication “+N”, “+AR” or “+M” shall be added to the steel name or steel number.

EXAMPLE Structural steel (S) with improved atmospheric corrosion resistance (W), with a specified minimum yield strength at room temperature of 355 MPa with a minimum impact energy of 27 J at 0 °C (J0), delivery condition +N:

EN 10025-5 - S355J0W+N
or
EN 10025-5 - 1.8959+N