

Weldable structural steels for fixed offshore structures -
Technical delivery conditions - Part 3: Hot finished
hollow sections

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 10225-3:2019 sisaldab Euroopa standardi EN 10225-3:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 10225-3:2019 consists of the English text of the European standard EN 10225-3:2019.
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English Version

**Weldable structural steels for fixed offshore structures -
Technical delivery conditions - Part 3: Hot finished hollow
sections**

Aciers de construction soudables destinés à la
fabrication de structures marines fixes - Conditions
techniques de livraison - Partie 3 : Profils creux finis à
chaud

Schweißgeeignete Baustähle für feststehende Offshore-
Konstruktionen - Technische Lieferbedingungen - Teil
3: Warmgefertigte Hohlprofile

This European Standard was approved by CEN on 23 December 2018.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 10225-3:2019) has been prepared by Technical Committee CEN/TC 459 “ECISS - European Committee for Iron and Steel Standardization”¹, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

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, together with EN 10225-1:2019, EN 10225-2:2019, and EN 10225-4:2019, supersedes EN 10225:2009.

This European Standard consists of the following parts, under the general title ‘*Weldable structural steels for fixed offshore structures – Technical delivery conditions*’:

- Part 1: Plates
- Part 2: Sections
- Part 3: Hot finished hollow sections
- Part 4: Cold formed welded hollow sections

In comparison to the previous edition following technical changes were made:

- split of the standard in four parts;
- the steel names were adapted to EN 10027-1;
- former grades of group 3 are no longer listed, new options with the same enhanced properties have been introduced (*Options 2 and 3*);
- an informative Annex E was added for the prequalification of steels for fixed offshore structures in arctic areas.

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 Through its subcommittee SC 3 “Structural steels other than reinforcements” (secretariat: DIN)

1 Scope

This document specifies requirements for weldable structural steels made of hot finished seamless and high frequency welded hollow sections to be used in the fabrication of fixed offshore structures.

The following thickness limitations are given in this standard:

- for seamless hollow sections up to and including 65 mm;
- for HFW hollow sections up to and including 25,4 mm.

Greater thicknesses can be agreed, provided the technical requirements of this European Standard are maintained.

This European Standard is applicable to steels for offshore structures, designed to operate in the offshore sector but not to steels supplied for the fabrication of subsea pipelines, risers, process equipment, process piping and other utilities. It is primarily applicable to the North Sea Sector, but may also be applicable in other areas provided that due consideration is given to local conditions e.g. design temperature.

NOTE This document has an informative Annex E on the prequalification of steels for fixed offshore structures in arctic areas.

Minimum yield strengths up to 770 MPa are specified together with impact properties at temperatures down to -40 °C.

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.

EN 1011-1, *Welding — Recommendations for welding of metallic materials — Part 1: General guidance for arc welding*

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

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

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

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

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

EN 10210-2, *Hot finished structural hollow sections of non-alloy and fine grain steels — Part 2: Tolerances, dimensions and sectional properties*

- CEN/TR 10261, *Iron and steel — European standards for the determination of chemical composition*
- 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)*
- EN ISO 2566-1, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels (ISO 2566-1)*
- EN ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063)*
- EN ISO 4136, *Destructive tests on welds in metallic materials — Transverse tensile test (ISO 4136)*
- EN ISO 4885, *Ferrous materials — Heat treatments — Vocabulary (ISO 4885)*
- EN ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1)*
- EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1)*
- EN ISO 6947, *Welding and allied processes — Welding positions (ISO 6947)*
- EN ISO 8492, *Metallic materials — Tube — Flattening test (ISO 8492)*
- EN ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712)*
- EN ISO 10893-2, *Non-destructive testing of steel tubes — Part 2: Automated eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections (ISO 10893-2)*
- EN ISO 10893-3, *Non-destructive testing of steel tubes — Part 3: Automated full peripheral flux leakage testing of seamless and welded (except submerged arc-welded) ferromagnetic steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-3)*
- EN ISO 10893-5, *Non-destructive testing of steel tubes — Part 5: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections (ISO 10893-5)*
- EN ISO 10893-8, *Non-destructive testing of steel tubes — Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections (ISO 10893-8)*
- EN ISO 10893-9, *Non-destructive testing of steel tubes — Part 9: Automated ultrasonic testing for the detection of laminar imperfections in strip/plate used for the manufacture of welded steel tubes (ISO 10893-9)*
- EN ISO 10893-10, *Non-destructive testing of steel tubes — Part 10: Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-10)*

EN ISO 10893-11, *Non-destructive testing of steel tubes — Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-11)*

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

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

ISO 11484, *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*

ISO 12135, *Metallic materials — Unified method of test for the determination of quasistatic fracture toughness*

ISO 15653, *Metallic materials — Method of test for the determination of quasistatic fracture toughness of welds*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020, EN 10021, EN ISO 4885, EN 10079 and EN ISO 14284 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/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

continuous casting process route (concast)

steel produced by a continuous casting process route

3.2

fine grain steel

steels with fine grain structure with an equivalent index of ferritic grain size ≥ 6

Note 1 to entry: For the determination of grain sizes except for +QT steels see EN ISO 643.

3.3

high frequency welded hollow section (HFW)

hollow long product, open at both ends, of circular, elliptical, square or rectangular section, made by pressure welding in a continuous or non-continuous process, in which strip is formed cold into a hollow profile and the seam weld made by heating the adjacent edges through the resistance to the passage of a high frequency current and pressing the edges together

Note 1 to entry: The electric current may be applied by direct electrode contact or by induction or conduction. After welding, the hollow section is further hot finished (see 3.4).