

Weldable structural steels for fixed offshore structures - Technical delivery conditions

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 10225:2009 sisaldab Euroopa standardi EN 10225:2009 ingliskeelset teksti.

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English Version

Weldable structural steels for fixed offshore structures - Technical delivery conditions

Aciers de construction soudables destinés à la fabrication
de structures marines fixes - Conditions techniques de
livraison

Schweißgeeignete Baustähle für feststehende Offshore-
Konstruktionen - Technische Lieferbedingungen

This European Standard was approved by CEN on 5 June 2009.

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Foreword

This document (EN 10225:2009) has been prepared by Technical Committee ECISS/TC 10 “Structural steels - Grades and qualities”, 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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

This document supersedes EN 10225:2001.

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

1 Scope

This European Standard specifies requirements for weldable structural steels to be used in the fabrication of fixed offshore structures in the form of plates up to and including 150 mm thick. It also specifies sections up to 63 mm thick except for sections delivered in the as-rolled condition which are permitted up to 25 mm thick only. Seamless hollow sections up to and including 40 mm thick and high frequency electric resistance welded hollow sections up to and including 20 mm thick are specified. Greater thicknesses for sections and hollow sections may be agreed, provided the technical requirements of this European Standard are maintained.

For plates the thickness limitations are:

S355G2+N, S355G5+M, - up to and including 20 mm

S355G3+N, S355G6+M - up to and including 40 mm

S355G7+N, S355G8+N, S355G9+N, S355G10+N - up to and including 150 mm

S355G7+M, S355G8+M, S355G9+M, S355G10+M - up to and including 100 mm

S420G1+QT, S420G1+M, S420G2+QT, S420G2+M - up to and including 100 mm

S460G1+QT, S460G1+M, S460G2+QT, S460G2+M - up to and including 100 mm

The 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. temperature.

In the case of hollow sections formed from plate with the seam fusion welded, this European standard covers only the requirements of the plate material.

Minimum yield strengths up to 460 MPa are specified together with low temperature impact properties at temperatures down to -40 °C.

This European standard applies to material supplied ex-mill or from merchant's stock.

2 Normative references

The following referenced documents are indispensable for the application 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 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

EN 571-1, *Non-destructive testing — Penetrant testing — Part 1: General principles*

EN 895, *Destructive tests on welds in metallic materials — Transverse tensile tests*

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

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature*

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

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

- EN 10024, *Hot rolled taper flange I sections — Tolerances on shape and dimensions*
- EN 10025-1, *Hot rolled products of structural steels — Part 1: General technical delivery conditions*
- EN 10025-3, *Hot rolled products of structural steels — Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels*
- EN 10025-4, *Hot rolled products of structural steels — Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels*
- EN 10025-6, *Hot rolled products of structural steels — Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition*
- EN 10027-1, *Designation systems for steels — Part 1: Steel names*
- EN 10027-2, *Designation systems for steels — Part 2: Numerical system*
- EN 10029, *Hot rolled steel plates 3 mm thick or above — Tolerances on dimensions, shape and mass*
- EN 10034, *Structural steel I and H sections — Tolerances on shape and dimensions*
- EN 10045-1, *Metallic materials — Charpy impact test — Part 1: Test method*
- EN 10052:1993, *Vocabulary of heat treatment terms for ferrous products*
- EN 10055, *Hot rolled steel equal flange tees with radiused root and toes — Dimensions and tolerances on shape and dimensions*
- EN 10056-2, *Structural steel equal and unequal leg angles — Part 2: Tolerances on shape and dimensions*
- EN 10067, *Hot rolled bulb flats — Dimensions and tolerances on shape, dimensions and mass*
- EN 10079:2007, *Definition of steel products*
- EN 10160, *Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)*
- EN 10163-2, *Delivery requirements for surface conditions of hot-rolled steel plates, wide flats and sections — Part 2: Plates and wide flats*
- EN 10163-3, *Delivery requirements for surface conditions of hot-rolled steel plates, wide flats and sections — Part 3: Sections*
- EN 10164, *Steel products with improved deformation properties perpendicular to the surface of the product — Technical delivery conditions*
- EN 10204, *Metallic products — Types of inspection documents*
- EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain steels — Part 1: Technical delivery conditions*
- EN 10210-2, *Hot finished structural hollow sections of non-alloy and fine grain steels — Part 2: Tolerances, dimensions and sectional properties*
- EN 10246-3, *Non-destructive testing of steel tubes — Part 3: Automatic eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections*

EN 10246-5, *Non-destructive testing of steel tubes — Part 5: Automatic full peripheral magnetic transducer/flux leakage testing of seamless and welded (except submerged arc welded) ferromagnetic steel tubes for the detection of longitudinal imperfections*

EN 10246-7, *Non-destructive testing of steel tubes — Part 7: Automatic full peripheral ultrasonic testing of seamless and welded (except submerged arc welded) steel tubes for the detection of longitudinal imperfections*

EN 10246-8, *Non-destructive testing of steel tubes — Part 8: Automatic ultrasonic testing of the weld seam of electric welded steel tubes for the detection of longitudinal imperfections*

EN 10246-12, *Non-destructive testing of steel tubes — Part 12: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections*

EN 10246-14, *Non-destructive testing of steel tubes — Part 14: Automatic ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of laminar imperfections*

EN 10246-15, *Non-destructive testing of steel tubes — Part 15: Automatic ultrasonic testing of strip/plate used in the manufacture of welded steel tubes for the detection of laminar imperfections*

EN 10256, *Non-destructive testing of steel tubes — Qualification and competence of level 1 and 2 non-destructive testing personnel*

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

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

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

EN ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:1998)*

EN ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1:2005)*

EN ISO 6947, *Welds — Working positions — Definitions of angles of slope and rotation (ISO 6947:1993)*

EN ISO 8492, *Metallic materials — Tube — Flattening test (ISO 8492:1998)*

EN ISO 9934-1, *Non-destructive testing — Magnetic particle testing — Part 1: General principles (ISO 9934-1:2001)*

EN ISO 12737, *Metallic materials — Determination of plane-strain fracture toughness (ISO 12737:2005)*

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

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 15614-1:2004+A1:2008)*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions and those given in EN 10020:2000, EN 10021:2006, EN 10052:1993, EN 10079:2007 and EN ISO 14284:2002 apply: