

Hot finished steel structural hollow sections - Part 3:
Technical delivery conditions for high strength and
weather resistant steels

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 10210-3:2020 sisaldab Euroopa standardi EN 10210-3:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 10210-3:2020 consists of the English text of the European standard EN 10210-3:2020.
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English Version

Hot finished steel structural hollow sections - Part 3: Technical delivery conditions for high strength and weather resistant steels

Profils creux de construction finis à chaud en aciers -
Partie 3 : Conditions techniques de livraison des aciers
à haute limite élastique et des aciers à résistance
améliorée à la corrosion atmosphérique

Warmgefertigte Hohlprofile für den Stahlbau - Teil 3:
Technische Lieferbedingungen für höher- und
wetterfeste Stähle

This European Standard was approved by CEN on 10 August 2020.

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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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European foreword

This document (EN 10210-3:2020) has been prepared by Technical Committee CEN/TC 459/SC 3 “Structural steels other than reinforcements”, 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of an identical text or by endorsement, at the latest by March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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.

EN 10210 consists of the following parts:

- EN 10210-1, Hot finished steel structural hollow sections - Part 1: Technical delivery conditions
- EN 10210-2, Hot finished steel structural hollow sections - Part 2: Tolerances, dimensions and sectional properties
- EN 10210-3, Hot finished steel structural hollow sections - Part 3: Technical delivery conditions for high strength and weather resistant steels

It forms part of a series of standards on hollow sections together with EN 10219-1 to EN 10219-3.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies technical delivery conditions for high strength and weather resistant hot-finished seamless, electric welded and submerged arc welded steel structural hollow sections of circular, square, rectangular or elliptical forms.

It applies to hollow sections formed hot, with or without subsequent heat treatment, or formed cold with subsequent heat treatment above 580 °C to obtain equivalent mechanical properties to those obtained in the hot formed product.

NOTE 1 The requirements for tolerances, dimensions and sectional properties are specified in EN 10210-2.

NOTE 2 The attention of users is drawn to the fact that whilst cold formed grades in EN 10219-3 can have equivalent mechanical properties to hot-finished grades in this document the sectional properties of square and rectangular hollow sections in EN 10210-2 and EN 10219-2 are not equivalent.

NOTE 3 A range of material grades is specified in this document and the user can select the grade most appropriate to the intended use and service conditions. The grades and mechanical properties of the finished hollow sections are generally comparable with those in EN 10025-4, EN 10025-5 and EN 10025-6.

NOTE 4 The requirements for seamless and welded steel structural hollow sections for use in offshore structures are covered in the EN 10225 series.

NOTE 5 Spiral welded hollow sections are expected to be used with caution in applications involving dynamic behaviour (fatigue stress) as, up to now, there is insufficient data regarding their performance.

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

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

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

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

EN 10210-2, *Hot finished steel structural hollow sections - Part 2: Tolerances, dimensions and sectional properties*

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

EN 10266, *Steel tubes, fittings and structural hollow sections - Symbols and definitions of terms for use in product standards*

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 4885, *Ferrous materials - Heat treatments - Vocabulary (ISO 4885)*

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

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

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 10893-6, *Non-destructive testing of steel tubes - Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-6)*

EN ISO 10893-7, *Non-destructive testing of steel tubes - Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-7)*

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 14713-2:2009, *Zinc coatings - Guidelines and recommendations for the protection against corrosion of iron and steel in structures - Part 2: Hot dip galvanizing (ISO 14713-2:2009)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO 15609-1)*

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*

SNT TC-1A, *Personnel Qualification and Certification in Nondestructive Testing*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 10020, EN 10021, EN 10266 and EN ISO 4885 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 <https://www.iso.org/obp>

3.1.1

hot finished

hollow sections formed hot, with or without subsequent heat treatment, or formed cold with subsequent heat treatment above 580 °C to obtain equivalent metallurgical conditions to those obtained in the hot formed product

3.1.2

cold forming

process where the forming to final shape of the welded hollow section is carried out at ambient temperature

Note 1 to entry: Circular hollow sections produced from normalized strip with a normalized weld seam and with a cold forming ratio of $D/T \geq 20$ may be classified as hot-finished hollow sections.

3.1.3

thermomechanical forming

simultaneously performed forming process and heat treatment in which the final deformation from round to rectangular/square/elliptical hollow sections is carried out in a certain temperature range above 580 °C leading to a material condition with certain properties which cannot be achieved or repeated by heat treatment alone