
**Hot-finished structural hollow sections of
non-alloy and fine grain steels —**

**Part 1:
Technical delivery conditions**

Profils creux de construction finis à chaud, en acier non allié ou à grains fins —

Partie 1: Conditions techniques de livraison



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 12633-1 was prepared by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*, Subcommittee SC 1, *Steel tubes*.

This first edition cancels and replaces ISO 630-2:2000, of which it constitutes a minor revision. In particular, better grouping of several documents by subject area and minor editorial improvements have been carried out. In addition, reference number ISO 630-2 has been utilized for a new subject: technical delivery conditions for structural steels for general purposes.

ISO 12633 consists of the following parts, under the general title *Hot-finished structural hollow sections of non-alloy and fine grain steels*:

- *Part 1: Technical delivery conditions*
- *Part 2: Dimensions and sectional properties*

Hot-finished structural hollow sections of non-alloy and fine grain steels —

Part 1: Technical delivery conditions

1 Scope

This part of ISO 12633 specifies the technical delivery requirements for hot-finished hollow sections of circular, square or rectangular form. It is applicable to hollow sections formed hot with or without subsequent heat treatment or formed cold with subsequent heat treatment to obtain equivalent metallurgical conditions to those obtained in the hot-formed product. Fine grain steels are generally delivered in the normalized condition.

The grades, chemical composition and mechanical properties for non-alloy steels and fine grain steels are given in Annexes A and B, respectively.

NOTE 1 For the requirements for tolerances, dimensions and sectional properties, see ISO 12633-2.

NOTE 2 For the technical delivery requirements of hot-rolled structural steels in other product forms, e.g. plates, wide strip, flats, bars and other structural sections, see ISO 630-1 and ISO 630-2.

NOTE 3 For cold-formed structural hollow sections, see ISO 10799-1 and ISO 10799-2.

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.

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

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

ISO 404, *Steel and steel products — General technical delivery requirements*

ISO 643, *Steels — Micrographic determination of the apparent grain size*

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

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

ISO 6892-2, *Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature*

ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels*

ISO 10474:1991, *Steel and steel products — Inspection documents*

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 10893-3, *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 10893-6, *Non-destructive testing of steel tubes — Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections*

ISO 10893-11, *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 12633-2, *Hot-finished structural hollow sections of non-alloy and fine grain steels — Part 2: Dimensions and sectional properties*

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

ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules*

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

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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 tube

hollow long product open at both ends of any cross-sectional shape

3.2 structural hollow section

tube intended to be used for structural purposes

3.3 normalizing rolling

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

4 Classification and designation

4.1 Classification

4.1.1 Within the steel grades of the non-alloy steels given in Annex A, three qualities JR, J0, and J2 are specified. These qualities differ with respect to specified impact requirements, method of deoxidation, and limits on values of various elements, with particular reference to sulfur and phosphorus, and inspection and testing requirements.

4.1.2 Within the steel grades of the fine grain steels given in Annex B, two qualities, N and NL, are specified. These differ in respect of the carbon, sulfur and phosphorus content and low-temperature impact properties.