



SLOVENSKI STANDARD
SIST EN 10305-3:2024

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Jeklene cevi za precizno uporabo - Tehnični dobavni pogoji - 3. del: Varjene hladno oblikovane cevi

Steel tubes for precision applications - Technical delivery conditions - Part 3: Welded cold sized tubes

Präzisionsstahlrohre - Technische Lieferbedingungen - Teil 3: Geschweißte maßgewalzte Rohre

Tubes de précision en acier - Conditions techniques de livraison - Partie 3 : Tubes soudés calibrés à froid

Ta slovenski standard je istoveten z: EN 10305-3:2023

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ICS:

77.140.75	Jeklene cevi in cevni profili za posebne namene	Steel pipes and tubes for specific use
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Steel tubes for precision applications - Technical delivery conditions - Part 3: Welded cold sized tubes

Tubes de précision en acier - Conditions techniques de livraison - Partie 3 : Tubes soudés calibrés à froid

Präzisionsstahlrohre - Technische Lieferbedingungen - Teil 3: Geschweißte maßgewalzte Rohre

This European Standard was approved by CEN on 8 October 2023.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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EN 10305-3:2023 (E)**European foreword**

This document (EN 10305-3:2023) has been prepared by Technical Committee CEN/TC 459/SC 10 “Steel tubes, and iron and steel fittings”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by June 2024, and conflicting national standards shall be withdrawn at the latest by June 2024.

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 supersedes EN 10305-3:2016 and EN 10305-5:2016.

In comparison with the previous edition EN 10305-3:2016 and EN 10305-5:2016, the following technical changes have been made:

- a) parts 3 and 5 have been merged so as to cover welded cold sized tubes of all shapes;
- b) the dimensions, thickness ranges and tolerances have been aligned;
- c) additional steel grades have been added;
- d) editorial updates.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

Introduction

The European Organization for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents applied to two new steel grades described in the informative Annex B of this document. CEN takes no position concerning the evidence, validity and scope of these patent rights.

The holder of these patent rights has ensured CEN that they are willing to negotiate licenses, under reasonable and non-discriminatory terms and conditions, with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with CEN.

Information may be obtained from:

Grade HXT800NT and HXT1000NT

Tata Steel Nederland Tubes B.V.

4903RH Oosterhout, the Netherlands

EN 10305, Steel tubes for precision applications - Technical delivery conditions consists of the following parts:

- Part 1: Seamless cold drawn tubes
- Part 2: Welded cold drawn tubes
- Part 3: Welded cold sized tubes
- Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems
- Part 6: Welded cold drawn tubes for hydraulic and pneumatic power systems

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EN 10305-3:2023 (E)**1 Scope**

This document specifies the technical delivery conditions for welded cold sized steel tubes of circular cross section with specified outside diameter $D \leq 193,7$ mm and of square and of rectangular cross section for precision applications.

This document can also be applied to welded cold sized tube with other cross section shapes.

Tubes according to this document are characterized by having precisely defined tolerances on dimensions and a specified maximum surface roughness. Typical fields of application are in the automotive, furniture and general engineering industries.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 10021:2006, *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 10168, *Steel products — Inspection documents — List of information and description*

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

EN 10266:2003, *Steel tubes, fittings and structural hollow sections — Symbols and definitions of terms for use in product standards*

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

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

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

EN ISO 4885:2018, *Ferrous materials — Heat treatments — Vocabulary (ISO 4885:2018)*

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

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

EN ISO 8493, *Metallic materials — Tube — Drift-expanding test (ISO 8493)*

EN ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712)*

EN ISO 10893-1, *Non-destructive testing of steel tubes — Part 1: Automated electromagnetic testing of seamless and welded (except submerged arc-welded) steel tubes for the verification of hydraulic leaktightness (ISO 10893-1)*

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 10893-10, *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, *Zinc coatings — Guidelines and recommendations for the protection against corrosion of iron and steel in structures — Part 2: Hot dip galvanizing (ISO 14713-2)*

EN ISO 21920-2, *Geometrical product specifications (GPS) — Surface texture Profile — Part 2: Terms, definitions and surface texture parameters (ISO 21920-2)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020:2000, EN 10021:2006, EN 10266:2003, EN ISO 4885:2018 and the following apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp/>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1

employer

organization for which a person works on a regular basis

Note 1 to entry: The employer may be either the tube manufacturer or a third party organization providing services, such as non-destructive testing (NDT).

3.2

manufacturer

party to produce and to deliver tubes in accordance with this document

Note 1 to entry: Where tubes are delivered through an intermediary, see EN 10021:2006, Clause 6.

3.3

imperfection

discontinuity in the wall or on the tube surfaces detectable by methods described in this document

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Note 1 to entry: Imperfections with a size complying with the acceptance criteria specified in this document are considered to have no practical implication on the intended use of the product.

3.4**defect**

imperfection of a size not complying with the acceptance criteria specified in this document

Note 1 to entry: Defects are considered to adversely affect or limit the intended use of the product.

3.5**parent coil**

coil originating from the hot rolling process prior to any subsequent operation (pickling, slitting, cold rolling or coating)

4 Symbols

For the purposes of this document, the symbols in EN 10266:2003 apply.

5 Classification and designation**5.1 Classification**

In accordance with the classification system in EN 10020 the steel grades given in Table 2 are non-alloy quality steels except steel grades E700, HXT450XT, HXT490XT, HXT590XT, HXT780XT, HXT980XT, HXT590CT, HXT780CT and HXT980CT, which are alloy quality steels.

5.2 Designation

For the tubes covered by this document the steel designation shall consist of the number of this document (EN 10305-3) plus either:

- a) the steel name in accordance with EN 10027-1:2016, with the exceptions indicated below; or
- b) the steel number in accordance with EN 10027-2.

In this document three steel naming conventions are used:

Ennn	E - engineering steel nnn - specified minimum yield strength in MPa for the smallest thickness range
HXTnnnXT	H - tubes of high strength steel for cold forming XTnnn - product where the rolling condition is not specified followed by specified minimum tensile strength in MPa X - dual phase T - tubular product
HXTnnnCT	H - tubes of high strength steel for cold forming XTnnn - product where the rolling condition is not specified followed by specified minimum tensile strength in MPa C - complex phase T - tubular product

6 Information to be supplied by the purchaser

6.1 Mandatory information

The following information shall be supplied at the time of enquiry and order:

- a) the quantity (mass or total length or number of tubes);
- b) the term “Cold sized steel tube of circular shape, square shape, rectangular shape or other shape”;
- c) the dimensions (see 8.5) and, if applicable, the tolerances (see 8.5.2.4 and 8.5.3);
- d) the tube length and tolerance (see 8.5.4);
- e) the steel designation (see 5.2);
- f) the delivery condition and surface condition (see 7.2.2 and 7.2.3);
- g) type of inspection document (see 9.1).

6.2 Options

A number of options are specified in this document and these are listed below. In the event that the purchaser does not indicate a wish to implement any of these options at the time of enquiry and order, the tubes shall be supplied in accordance with the basic specification (see 6.1).

- Option 1: specification of a steel grade not specified in this document (see 8.2);
- Option 3: suitability for hot-dip galvanizing (see 8.2);
- Option 4: surface condition for further processing (see 8.4.1);
- Option 5: position of the weld line on square and rectangular tubes (see 8.4.2), and tubes of other shapes (see 8.5.3);
- Option 6: removal of internal weld bead or restriction of bead height (see 8.4.3);
- Option 8: measurement of surface roughness (see 8.4.5);
- Option 9: specific surface roughness (see 8.4.5);
- Option 11: NDT of the weld seam for the detection of longitudinal imperfections (see 8.4.8);
- Option 12: NDT of circular tubes for the detection of longitudinal imperfections (see 8.4.8);
- Option 13: NDT of circular tubes for verification of leak-tightness (see 8.4.8);
- Option 14: specification of a procedure to test transverse strip welds in coiled tubing for the detection of imperfections (see 8.4.9);
- Option 15: specification of a cross section other than circular, square or rectangular, including tolerances (see 8.5.3);
- Option 16: reduced diameter tolerances for circular tubes (see 8.5.1.2) or reduced side length tolerances for square or rectangular tubes (see 8.5.2.4);

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- Option 19: reduced wall thickness tolerance (see 8.5.1.3 or 8.5.2.5 or 8.5.3.2);
- Option 20: unilateral wall thickness tolerance (see 8.5.1.3 or 8.5.2.5 or 8.5.3.2);
- Option 21: another length and/or tolerance is specified (see 8.5.4);
- Option 22: reduced maximum deviation from straightness (see 8.5.5.1 or 8.5.5.2);
- Option 23: specified end finishing (see 8.5.6);
- Option 25: flattening or drift expanding test for circular tubes (see Table 10);
- Option 26: test unit with tubes from one cast only (see 10.1);
- Option 27: an alternative value for the flattening distance H is specified by the purchaser (see 11.3);
- Option 28: alternative marking (see Clause 12);
- Option 29: delivery without corrosion protection (see 13.1);
- Option 30: specified corrosion protection (see 13.1);
- Option 38: unbundled tubes or specific method of packaging (see 13.2);
- Option 39: a product analysis for the tubes shall be supplied (see 8.2);
- Option 40: alternative corner radius specified for square or rectangular tubes (see 8.5.2.6).

NOTE The numbering of the options is the same throughout the EN 10305 series. The options not listed in this document are not relevant for the products covered. See for information Annex A for all options of the EN 10305 series.

6.3 Examples of orders

a) Circular tube [iteh.ai/catalog/standards/sist/6b07c71e-bcff-4105-b724-7950c7f64f12/sist-en-10305-3-2024](https://standards.iteh.ai/catalog/standards/sist/6b07c71e-bcff-4105-b724-7950c7f64f12/sist-en-10305-3-2024)

12 000 m tube with an outside diameter of $D = 40$ mm and a wall thickness of $T = 1,5$ mm in standard lengths of 6 m with tolerance of $+50$ mm -0 mm in accordance with EN 10305-3, to be delivered made of steel grade E235 in the normalized condition, with surface condition S2, pickled, with a 3.1 inspection certificate in accordance with EN 10204:

12 000 m tubes – $D 40 \times T 1,5$ – standard length - EN 10305-3 – E235+N – S2 - inspection certificate 3.1

b) Rectangular tube

12 000 m tube, size $H = 50$ mm $\times B = 30$ mm with a wall thickness of $T = 3$ mm in standard lengths of 6 m with tolerance of $+50$ mm -0 mm in accordance with EN 10305-3, to be delivered made of steel grade E355 in the normalized condition with surface condition S2, pickled, with a 3.1 inspection certificate in accordance with EN 10204:

12 000 m tubes – $H 50 \times B 30 \times T 3$ – standard length - EN 10305-3 – E355+N – S2 - inspection certificate 3.1