SLOVENSKI STANDARD

SIST EN 10312:2003

01-april-2003

Varjene jeklene cevi za transport vodnih tekoļ in vkljuļ no s pitno vodo - Tehniļ ni dobavni pogoji

Welded stainless steel tubes for the conveyance of aqueous liquids including water for human consumption - Technical delivery conditions

Geschweißte Rohre aus nichtrostenden Stählen für den Transport wässriger Flüssigkeiten einschließlich Trinkwasser - Technische Lieferbedingungen

Tubes soudés en acier inoxydable pour le transport des liquides aqueux, y compris l'eau destinée a la consommation humaine - Conditions techniques de livraison

Ta slovenski standard je istoveten z: EN 10312:2002

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23.040.10

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 10312

December 2002

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English version

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This European Standard was approved by CEN on 16 October 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Ref. No. EN 10312:2002 E

Contents

Foreword

This document EN 10312:2002 has been prepared by Technical Committee ECISS /TC 29 "Steel tubes and fittings for steel tubes", 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 2003, and conflicting national standards shall be withdrawn at the latest by September 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

Another European Standard covering tubes for the conveyance of aqueous liquids including water for human consumption is:

EN 10224, *Non-alloy steel tubes and fittings for the conveyance of aqueous liquids including water for human consumption — Technical delivery conditions*.

Annexes A and B are informative.

This document includes a Bibliography.

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

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard:

a) this standard provides no information as to whether the product may be used without restriction in any of the member states of the EU or EFTA;

b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

The European Committee for Standardisation (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning steel grade 1.4362 given in Table A1.

CEN takes no position concerning the evidence, validity and scope of this patent right.

The holder of this permit has assured CEN that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with CEN. Information may be obtained from

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those indicated above. CEN is not responsible for identifying any such patent rights.

1 Scope

This European Standard specifies the technical delivery conditions for light gauge welded stainless steel tubes, primarily for water application, including water intended for human consumption, supplied in straight lengths and suitable for use with compression fittings or press fittings or for adhesive bonding, silver brazing or inert gas welding of capillary fittings. The standard is applicable to the size range from 6 mm to 267 mm outside diameter made of stainless (except martensitic and precipitation hardening) steel grades taken from EN 10088-2.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

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

EN 10021, *General technical delivery requirements for steel and iron products.*

EN 10052, *Vocabulary of heat treatment terms for ferrous products.*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels.*

EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip for general purposes.*

prEN 10168[1)], *Iron and steel products — Inspection documents — List of information and description.*

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

EN 10233, *Metallic materials — Tube — Flattening test.*

EN 10234, *Metallic materials — Tube — Drift expanding test.*

EN 10246-1, *Non-destructive testing of steel tubes — Part 1: Automatic electromagnetic testing of seamless and welded (except submerged arc welded) ferromagnetic steel tubes for verification of hydraulic leak-tightness.*

EN 10246-2, *Non-destructive testing of steel tubes - Part 2: Automatic eddy current testing of seamless and welded (except submerged arc-welded) austenitic and austenitic-ferritic steel tubes for verification of hydraulic leak-tightness.*

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 10246-8, *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.*

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1) In preparation; until this document is published as a European Standard, a corresponding national standard should be agreed at the time of enquiry and order.

prEN 10266, *Steel tubes, fittings and structural hollow sections - Definitions and symbols for use in product standards.*

EN ISO 377, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing (ISO 377:1997).*

EN ISO 2566-2, *Steel - Conversion of elongation values - Part 2: Austenitic steels (ISO 2566-2:1984).*

EN ISO 3651-1, *Determination of resistance to intergranular corrosion of stainless steels - Part 1: Austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in nitric acid medium by measurement of loss in mass (Huey test) (ISO 3651-1:1998).*

EN ISO 3651-2, *Determination of resistance to intergranular corrosion of stainless steels - Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in media containing sulfuric acid (ISO 3651-2:1998).*

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 10020:2000, EN 10021, EN 10052, and prEN 10266 apply.

4 Symbols

See prEN 10266.

5 Classification and designation

5.1 Classification

The classification of the steels contained in this European Standard is given in EN 10088-1.

5.2 Designation

For tubes covered by this European Standard, the steel designation consists of the number of this European Standard (EN 10312) and either the steel name in accordance with EN 10027-1 and CR 10260 or the steel number in accordance with EN 10027-2.

6 Information to be supplied by the purchaser

6.1 Mandatory information

The following information shall be supplied by the purchaser at the time of enquiry and order.

a) the quantity (total length or number);

b) the term tube;

c) the tube series and the dimensions (outside diameter, wall thickness) (see Tables 1 and 2 and annex B);

d) the steel designation according to this European Standard (see 5.2);

e) the length (5 m or 6 m) (see 8.8.3).

6.2 Options

A number of options are specified in this European Standard 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.

1) annealed or solution annealed condition depending on grade (see 7.2);

2) intergranular corrosion test (see 8.4);

3) for use with capillary, compression or press fittings (see 8.5.1 and annex B);

4) lengths other than 5 m and 6 m (see 8.8.3);

5) removal of the internal weld bead (see 8.8.6);

6) specific inspection (see 9.1);

7) selection of leak tightness test method (see 11.4.1);

8) marking on a label (see clause 13);

9) end protection of the tubes or bundles of tubes (see clause 14).

6.3 Example of an order

EXAMPLE 1000 m of welded steel tube in accordance with EN 10312 series 1 with an external diameter of 76,1 mm, a wall thickness of 1,5 mm, in standard lengths of 6 m made of steel grade X5CrNi 18-10 and with marking on a label would have the following description:

1000 m tube — series1 76,1 × 1,5 — EN 10312 X5CrNi18-10 —6— option 8

7 Manufacturing process

7.1 Grades of steel for feedstock material

The grades of steel required shall be specified from EN 10088-2.

A list of preferred grades is given in annex A.

7.2 Tube manufacture and delivery conditions

Tube shall be manufactured from steel strip and longitudinally welded without the addition of filler material. Tubes shall not include welds used for joining lengths of strip.

Tube shall be supplied in the as-welded condition unless option 1 is specified.

Option 1: The tubes shall be supplied in the solution-annealed condition (austenitic or austenitic-ferritic steels) or the annealed condition (ferritic steels).

When tubes in the annealed condition are specified (see option 1), they shall meet a hardness requirement The hardness test method, test load and values to be achieved shall be agreed at the time of enquiry and order.

8 Requirements

8.1 General

The tubes, when supplied in a delivery condition given in 7.2 and inspected in accordance with clause 9 shall conform to the requirements of this European Standard.

In addition, the general technical delivery requirements specified in EN 10021 apply.

8.2 Chemical analysis

Chemical analysis shall be in accordance with EN 10088-2. The cast analysis reported by the steelmaker shall apply.

8.3 Mechanical properties

Mechanical properties shall be in accordance with EN 10088-2.

8.4 Corrosion resistance

In accordance with EN 10088-2 some steels have resistance to intergranular corrosion. When option 2 is specified, tubes shall be tested in accordance with 11.8.

Option 2: The tubes shall be subjected to an intergranular corrosion test (see 11.8).

8.5 Appearance and soundness

8.5.1 Appearance

The tubes shall be smooth and have a bright surface, free from all external and internal surface defects that can be detected by visual examination.

NOTE The welding conditions should be controlled so that the heat discoloration in the welded area is kept to a minimum, to ensure corrosion resistance is not reduced.

Surface imperfections, which encroach on the specified minimum wall thickness, shall be considered defects and tubes containing these shall be deemed not to conform to this European Standard.

The tubes are intended for general use unless option 3 is specified, then the outside surface including the weld area and tube ends shall be suitable for the type of fitting specified.

Option 3: Tubes shall be suitable for use for capillary, compression or press fittings, purchaser to specify which type at the time of enquiry and order.

NOTE A surface roughness value can be agreed at the time of enquiry and order.

8.5.2 Soundness

The tubes shall pass a leak tightness test in accordance with 11.4.2, 11.4.3 or 11.4.4. The full length of the weld seam shall be subjected to a non-destructive test in accordance with 11.5 for the detection of imperfections.