SLOVENSKI STANDARD
SIST EN 13348:2008

01-november-2008

Nadomešča:
SIST EN 13348:2002
SIST EN 13348:2002/A1:2005

Baker in bakrove zlitine - Nevarjene okrogle bakrene cevi za medicinske pline ali vakuumske sisteme

Copper and copper alloys - Seamless, round copper tubes for medical gases or vacuum

Kupfer und Kupferlegierungen - Nahtlose Rundrohre aus Kupfer für medizinische Gase oder Vakuum

Cuivre et alliages de cuivre - Tubes ronds sans soudure en cuivre pour gaz médicaux ou le vide

Ta slovenski standard je istoveten z: **EN 13348:2008**

ICS:

11.040.10	Anestezijska, respiratorna in reanimacijska oprema	Anaesthetic, respiratory and reanimation equipment
77.150.30	Bakreni izdelki	Copper products

SIST EN 13348:2008 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13348

August 2008

ICS 23.040.15

Supersedes EN 13348:2001

English Version

Copper and copper alloys - Seamless, round copper tubes for medical gases or vacuum

Cuivre et alliages de cuivre - Tubes ronds sans soudure en cuivre pour gaz médicaux ou le vide

Kupfer und Kupferlegierungen - Nahtlose Rundrohre aus Kupfer für medizinische Gase oder Vakuum

This European Standard was approved by CEN on 30 May 2008.

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 CEN 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

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Ref. No. EN 13348:2008: E

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Foreword

This document (EN 13348:2008) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, 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 February 2009, and conflicting national standards shall be withdrawn at the latest by February 2009.

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 13348:2001 and EN 13348:2001/A1:2005.

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 the EU Pressure Equipment Directive (PED) 97/23/EC.

For relationship with EU Directive 97/23/EC, see informative Annex ZA, which is an integral part of this document.

Relationship with EU Directive MDD 93/42/EEC: Copper tubes according to EN 13348 cannot be considered as medical devices according EU Directive MDD 93/42/EEC.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3 "Copper tubes (installation and industrial)" to revise EN 13348:2001:

EN 13348, *Copper and copper alloys — Seamless, round copper tubes for medical gases or vacuum*

In comparison with the first edition of EN 13348:2001, the following significant technical changes were made:

a) The size range has been increased (6 mm to 133 mm);

b) EN 10232 replaced by EN ISO 8491;

c) EN 10234 replaced by EN ISO 8493.

This is one of a series of European Standards for copper and copper alloy tubes. Other products are specified as follows:

EN 1057, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 12449, *Copper and copper alloys — Seamless, round tubes for general purposes*

EN 12450, *Copper and copper alloys — Seamless, round copper capillary tubes*

EN 12451, *Copper and copper alloys — Seamless, round tubes for heat exchangers*

EN 12452, *Copper and copper alloys — Rolled, finned, seamless tubes for heat exchangers*

EN 12735-1, *Copper and copper alloys — Seamless, round copper tubes for air conditioning and refrigeration — Part 1: Tubes for piping systems*

EN 12735-2, *Copper and copper alloys — Seamless, round copper tubes for air conditioning and refrigeration — Part 2: Tubes for equipment*

EN 13349, *Copper and copper alloys — Pre-insulated copper tubes with solid covering*

EN 13600, *Copper and copper alloys — Seamless copper tubes for electrical purposes*.

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.

Introduction

It is recommended that tubes manufactured to this standard are certified as conforming to the requirements of this standard based on continuing surveillance which should be coupled with an assessment of a supplier's quality management system against EN ISO 9001.

Tubes to this European Standard are suitable for capillary soldering, brazing or assembling by mechanical compression or collared fittings.

NOTE Appropriate precautions should be taken if applying insulating material because it could be detrimental to the copper tube.

1 Scope

This European Standard specifies the requirements, sampling, test methods and conditions of delivery for copper tubes.

It is applicable to seamless round copper tubes having an outside diameter from 6 mm up to and including 133 mm for pipeline systems under vacuum or for distributing the following medical gases intended to be used at operating pressures up to 2 000 kPa:

— oxygen, nitrous oxide, nitrogen, helium, carbon dioxide, xenon;

— medical air;

— specific mixtures of these above mentioned gases;

— air for driving surgical tools;

— anaesthetic gases and vapours.

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.

prEN 723, *Copper and copper alloys — Combustion method for determination of the carbon content on the inner surface of copper tubes or fittings*

EN 1057:2006, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1173, *Copper and copper alloys — Material condition designation*

EN 1971, *Copper and copper alloys — Eddy current test for tubes*

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

EN 10204:2004, *Metallic products — Types of inspection documents*

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

EN ISO 8491, *Metallic materials — Tube (in full section) — Bend test (ISO 8491:1998)*

EN ISO 8493, *Metallic materials — Tube — Drift expanding test (ISO 8493:1998)*

ISO 857-2:2005, *Welding and allied processes — Vocabulary — Part 2: Soldering and brazing processes and related terms*

ISO 1553, *Unalloyed copper containing not less than 99,90 % of copper — Determination of copper content — Electrolytic method*

ISO 4741, *Copper and copper alloys — Determination of phosphorus content — Molybdovanadate spectrometric method*

3 Terms and definitions

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

3.1
seamless round copper tube
hollow semi-finished product, circular in cross-section, made of copper, having a uniform wall thickness, which at all stages of production has a continuous periphery

[EN 1057:2006]

3.2
brazing
joining process using filler metal with a liquidus temperature above 450 °C

[ISO 857-2:2005]

3.3
mean diameter
arithmetical mean of the maximum and minimum outside diameters through the same cross-section of the tube

[EN 1057:2006]

3.4
deviation from circular form
difference between the maximum and minimum outside diameters measured at any one cross-section of the tube

[EN 1057:2006]

3.5
deviation from concentricity
half of the difference between the maximum and minimum wall thicknesses at the same cross-section of the tube

[EN 1057:2006]

3.6
production batch
definite quantity of products of the same form, the same material condition and the same cross-sectional dimensions manufactured during the same production sequence under uniform conditions

[EN 1057:2006]

3.7
permanently marked
marked in such a way that the marking will remain readable up to the end of the life of the installation

EXAMPLE Stamping, etching or engraving.

[EN 1057:2006]

3.8
durably marked
marked in such a way that the marking will remain readable up to the time of commissioning of the installation

EXAMPLE Ink marking.

[EN 1057:2006]

4 Designations

4.1 Material

4.1.1 General

The material is designated either by symbol or number (see 6.1).

4.1.2 Symbol

The material symbol designation is based on the designation system given in ISO 1190-1.

4.1.3 Number

The material number designation is in accordance with the system given in EN 1412.

4.2 Material condition

For the purposes of this European Standard, the following designation, which is in accordance with the system given in EN 1173, applies for the material condition (see Table 1):

R... Material condition designated by the minimum value of tensile strength requirement for the product with mandatory tensile strength and elongation requirements.

4.3 Product

The product designation provides a standardized pattern of designation from which a rapid and unequivocal description of a product is conveyed in communication. It provides mutual comprehension at the international level with regard to products which meet the requirements of the relevant European Standard.

The product designation is no substitute for the full content of the standard.

The product designation for products to this European Standard shall consist of:

— denomination (Copper tube);

— number of this European Standard (EN 13348);

— material condition designation (see Table 1);

— nominal cross-sectional dimensions in millimetres: Outside diameter × wall thickness.

The derivation of a product designation is shown in the following example.

EXAMPLE Copper tube conforming to this European Standard, in material condition R290 (hard), nominal outside diameter 12 mm, nominal wall thickness 1,0 mm, shall be designated as follows:

Copper tube EN 13348 — R290 — 12 × 1,0

Denomination

Number of this European Standard

Material condition designation

Nominal cross-sectional dimensions in millimetres

5 Ordering information

In order to facilitate the enquiry, order and confirmation of order procedures between the purchaser and the supplier, the purchaser shall state on his enquiry and order the following information:

a) quantity of product required (in metres);

b) denomination (Copper tube);

c) number of this European Standard (EN 13348);

d) material condition designation (see 4.2 and Table 1);

e) nominal cross-sectional dimensions in millimetres: outside diameter × wall thickness (see Table 3);

f) nominal length (see 10.2);

g) form of delivery (see 10.2).

In addition, the purchaser shall also state on the enquiry and order the following, if required:

h) whether an inspection document is required, and if so, which type (see Clause 9).

NOTE It is recommended that the product designation, as described in 4.3, is used for items b) to e).

EXAMPLE Ordering details for 500 m copper tube conforming to EN 13348, in material condition R290 (hard), nominal outside diameter 12 mm, nominal wall thickness 1,0 mm, nominal length 5 m, straight lengths:

500 m Copper tube EN 13348 — R290 — 12 × 1,0
— 5 m straight lengths

6 Requirements

6.1 Composition

The composition shall conform to the following requirements:

Cu + Ag: min. 99,90 %;

0,015 % ≤ P ≤ 0,040 %.

This copper grade is designated either Cu-DHP or CW024A.