

SVENSK STANDARD

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Koppar och kopparlegeringar – Sömlösa, runda rör för allmän användning

Copper and copper alloys – Seamless, round tubes for general purposes



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Europastandarden EN 12449:2016 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 12449:2016.

Denna standard ersätter SS-EN 12449:2012, utgåva 2.

The European Standard EN 12449:2016 has the status of a Swedish Standard. This document contains the official English version of EN 12449:2016.

This standard supersedes the Swedish Standard SS-EN 12449:2012, edition 2.

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Denna standard är framtagen av kommittén för Koppar, SIS/TK 132.

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EUROPEAN STANDARD

EN 12449

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2016

ICS 23.040.15

Supersedes EN 12449:2012

English Version

Copper and copper alloys - Seamless, round tubes for general purposes

Cuivre et alliages de cuivre - Tubes ronds sans soudure
pour usages généraux

Kupfer und Kupferlegierungen - Nahtlose Rundrohre
zur allgemeinen Verwendung

This European Standard was approved by CEN on 28 February 2016.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 12449:2016) 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 November 2016 and conflicting national standards shall be withdrawn at the latest by November 2016.

This document supersedes EN 12449:2012.

In comparison with EN 12449:2012, the following significant technical changes were made:

- a) Addition of the new material CuFe0,1Sn0,1P (CW125C);
- b) Modification of the elongation values for Cu-DHP (CW024A) in material condition R250 including new Table 16;
- c) Modification of iron and tin content for CuZn37Pb1 (CW605N) from 0,2 % to 0,3 % in Table 7;
- d) Replacement of the material number CW121C by CW124C for CuSi3Zn2P.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3 “Copper tubes (installation and industrial)” to revise the following standard:

- EN 12449:2012, *Copper and copper alloys — Seamless, round copper tubes for general purposes.*

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 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 tubes for air conditioning and refrigeration — Part 1: Tubes for piping systems;*
- EN 12735-2, *Copper and copper alloys — Seamless, round tubes for air conditioning and refrigeration — Part 2: Tubes for equipment;*
- EN 13348, *Copper and copper alloys — Seamless, round copper tubes for medical gases or vacuum;*
- 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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning the alloy CuSi3Zn2P (CW124C) and CuZn21Si3P (CW724R) given in 6.1.

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

The holder of this patent right has assured the CEN that he is willing to negotiate licenses under reasonable and not-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.

— For CuSi3Zn2P (CW124C) information may be obtained from:

VIEGA GmbH & Co. KG
Ennester Weg 9
57439 Attendorn
GERMANY

— For CuZn21Si3P (CW724R) information may be obtained from:

Wieland-Werke AG
Graf-Arco-Straße 36
89079 Ulm
GERMANY

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

CEN and CENELEC (<http://www.cenelec.eu/ipr/Patents/PatentDeclaration/Pages/default.aspx>) maintain on-line lists of patents relevant to their standards. Users are encouraged to consult the lists for the most up to date information concerning patents.

1 Scope

This European Standard specifies the composition, property requirements and tolerances on dimensions and form for seamless round drawn copper and copper alloy tubes for general purposes supplied in the size range from 3 mm up to and including 450 mm outside diameter and from 0,3 mm up to and including 20 mm wall thickness.

The sampling procedures and the methods of test for verification of conformity to the requirements of this European Standard are also specified.

NOTE Tubes having an outside diameter less than 80 mm and/or a wall thickness greater than 2 mm in certain alloys are most frequently used for free machining purposes which are specified in EN 12168.

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 1655, *Copper and copper alloys - Declarations of conformity*

EN 1971-1, *Copper and copper alloys - Eddy current test for measuring defects on seamless round copper and copper alloy tubes - Part 1: Test with an encircling test coil on the outer surface*

EN 1971-2, *Copper and copper alloys - Eddy current test for measuring defects on seamless round copper and copper alloy tubes - Part 2: Test with an internal probe on the inner surface*

EN 1976, *Copper and copper alloys - Cast unwrought copper products*

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

EN 16090, *Copper and copper alloys - Estimation of average grain size by ultrasound*

EN ISO 196, *Wrought copper and copper alloys - Detection of residual stress - Mercury(I) nitrate test (ISO 196)*

EN ISO 2624, *Copper and copper alloys - Estimation of average grain size (ISO 2624)*

EN ISO 6506-1, *Metallic materials - Brinell hardness test - Part 1: Test method (ISO 6506-1)*

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

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

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

ISO 6957, *Copper alloys - Ammonia test for stress corrosion resistance*

3 Terms and definitions

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

3.1

seamless round tube

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

3.2

mean diameter

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

[SOURCE: EN 1057:2006+A1:2010, 3.5]

3.3

deviation from circular form

difference between the maximum and minimum outside diameters measured at any one cross-section of the tube

[SOURCE: EN 1057:2006+A1:2010, 3.6]

4 Designations

4.1 Material

4.1.1 General

The material is designated either by symbol or number (see Tables 1 to 8).

4.1.2 Symbol

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

NOTE Although material symbol designations used in this standard might be the same as those in other standards using the designation system given in ISO 1190-1, the detailed composition requirements are not necessarily the same.

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 standard, the following designations, which are in accordance with the system given in EN 1173, apply for the material condition:

- M material condition for the product as manufactured without specified mechanical properties;
- R... material condition designated by the minimum value of tensile strength requirement for the product with mandatory tensile property requirements;
- H... material condition designated by the minimum value of hardness requirement for the product with mandatory hardness requirements.