



SLOVENSKI STANDARD SIST EN 12735-1:2020

01-maj-2020

Nadomešča:
SIST EN 12735-1:2016

**Baker in bakrove zlitine - Nevarjene okrogle cevi za hladilno in klimatsko tehniko -
1. del: Cevi za napeljave**

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

Kupfer und Kupferlegierungen - Nahtlose Rundrohre für die Kälte- und Klimatechnik -
Teil 1: Rohre für Leitungssysteme

Cuivre et alliages de cuivre - Tubes ronds sans soudure pour l'air conditionné et la
réfrigération - Partie 1 : Tubes pour canalisations

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Ta slovenski standard je istoveten z: EN 12735-1:2020

ICS:

23.040.15	Cevi iz neželeznih kovin	Non-ferrous metal pipes
77.150.30	Bakreni izdelki	Copper products

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EUROPEAN STANDARD
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EN 12735-1

March 2020

ICS 23.040.15

Supersedes EN 12735-1:2016

English Version

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

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This European Standard was approved by CEN on 13 January 2020.

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.

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

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EN 12735-1:2020 (E)**European foreword**

This document (EN 12735-1:2020) 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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 12735-1:2016.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Directive 2014/68/EU, Pressure Equipment Directive (PED).

For relationship with EU Directive 2014/68/EU, see informative Annex ZA, which is an integral part of this document.

In comparison with EN 12735-1:2016, the following changes were made:

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- a) Modification of the maximum outside diameter for Cu-DHP R220, in Table 3;
 - b) Removal of Note 3 from Table 3;
 - c) Requirements added in 10.2 concerning marking of tube coverings;
 - d) Amendment in 6.5;
 - e) Deletion of last sentence in 8.6;
 - f) Amendments in Annex ZA;
 - g) Update of Normative References;
 - h) Several editorial amendments.

EN 12735, *Copper and copper alloys — Seamless, round tubes for air conditioning and refrigeration* consists of two parts:

- *Part 1: Tubes for piping systems;*
- *Part 2: Tubes for equipment.*

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 12735-2, *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 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, Turkey and the United Kingdom.

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EN 12735-1:2020 (E)**Introduction**

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

It is advised to take appropriate precautions if applying insulating material because it could be detrimental to the tube.

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1 Scope

This document specifies the requirements, sampling, test methods and conditions of delivery for seamless round copper and copper alloy tubes used for refrigeration and air-conditioning piping systems (i.e. piping, connections and repairs).

It is applicable to tubes with an outside diameter from 3 mm up to and including 219 mm.

Tubes made of the copper-grade Cu-DHP are supplied in straight lengths in the material conditions hard or half-hard, or in coils in the annealed material condition.

Tubes made of the alloy CuFe2P are supplied in straight length in the material conditions hard or annealed.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 723:2009, *Copper and copper alloys — Combustion method for determination of the carbon content on the inner surface of copper tubes or fittings*

EN 1173:2008, *Copper and copper alloys — Material condition designation*

EN 1412:2016, *Copper and copper alloys — European numbering system*

EN 1971-1:2011, *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 1971-2:2011, *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 10204:2004, *Metallic products — Types of inspection documents*

EN 16117-1:2011, *Copper and copper alloys — Determination of copper content — Part 1: Electrolytic determination of copper in materials with copper content less than 99,85 %*

EN 16117-2:2012, *Copper and copper alloys — Determination of copper content — Part 2: Electrolytic determination of copper in materials with copper content higher than 99,80 %*

EN ISO 6507-1:2018, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1:2018)*

EN ISO 6892-1:2016, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2016)*

EN ISO 8493:2004, *Metallic materials — Tube — Drift-expanding test (ISO 8493:1998)*

EN ISO/IEC 17050-1:2010, *Conformity assessment — Supplier's declaration of conformity — Part 1: General requirements (ISO/IEC 17050-1:2004, corrected version 2007-06-15)*

EN ISO/IEC 17050-2:2004, *Conformity assessment — Supplier's declaration of conformity — Part 2: Supporting documentation (ISO/IEC 17050-2:2004)*

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ISO 1190-1:1982, *Copper and copper alloys — Code of designation — Part 1: Designation of materials*

ISO 4741:1984, *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.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

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
coil
winding in which the turns either are arranged into layers parallel to its axis such that successive turns in a given layer are next to one another (LWC – Level Wound Coil) or are spirally arranged (SWC – Spiral Wound Coil)

3.3
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, Definition 3.5]

3.4
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, Definition 3.6]

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

[SOURCE: EN 1057:2006+A1:2010, Definition 3.7]

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

[SOURCE: EN 1057:2006+A1:2010, Definition 3.8]

3.7**permanently marked**

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

EXAMPLE Stamping, etching or engraving.

[SOURCE: EN 1057:2006+A1:2010, Definition 3.9]

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.

[SOURCE: EN 1057:2006+A1:2010, Definition 3.10]

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 1190-1:1982.

4.1.3 Number

The material number designation is in accordance with the system given in EN 1412:2016.

4.2 Material condition

For the purposes of this document, the following designation, which is in accordance with the system given in EN 1173:2008, applies for the material condition (see Table 3):

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 (Tube);
- number of this European Standard (EN 12735-1);
- material designation, either symbol or number (see Table 1 and Table 2);
- material condition designation (see Table 3);