SLOVENSKI STANDARD
SIST EN 12735-1:2016

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Nadomešča:
SIST EN 12735-1:2010

Baker in bakrove zlitine - Nevarjene okrogle bakrene 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 Leitungs-systeme

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

Ta slovenski standard je istoveten z: EN 12735-1:2016

ICS:

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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 28 February 2016.

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European foreword

This document (EN 12735-1:2016) 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of an identical text or by endorsement, at the latest by December 2016 and conflicting national standards shall be withdrawn at the latest by December 2016.

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 12735-1:2010.

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 Directive 2014/68/EU, Pressure Equipment Directive (PED).

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

In comparison with EN 12735-1:2010, the following significant technical changes were made:

a) The size range of the outside diameter has been increased from133 mm to 219 mm;

b) Nominal outside diameters have been added to Table 3;

c) The alloy CuFe2P (CW107C) has been included;

d) Sub-clause 8.6 has been revised and a new normative Annex B "Freedom from defects test" has been added.

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 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

It is recommended that tubes manufactured to this European 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 such as EN ISO 9001.

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

1 Scope

This European Standard 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, 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 723, *Copper and copper alloys - Combustion method for determination of the carbon content on the inner surface of copper tubes or fittings*

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

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 10204:2004, *Metallic products - Types of inspection documents*

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 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 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.

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 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);

— nominal cross-sectional dimensions in millimetres: outside diameter × wall thickness (see Table 4).

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