

**Vask ja vasesulamid. Õõnesvardad kergeks
mehaaniliseks töötluks**

Copper and copper alloys - Hollow rod for free machining
purposes

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 12168:2011 sisaldab Euroopa standardi EN 12168:2011 ingliskeelset teksti.

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Võtmesõnad: deformeeritavad tooted, keemiline koostis, mehaanilised omadused, mehaanilised teimid, metall-latid, mõõde, müügidokumendid, proovivõtmine, tellimused, tähistus, vabalõikamine, vasesulamid, vask, õõnesprofiilid

Inglisekeelsed võtmesõnad: chemical composition, conformity tests, copper, copper alloys, corrosion resistance, designation, dimension, dimensional tolerances, free cutting, hollow profiles, mechanical properties, mechanical tests, metal bars, orders, sales documents, sampling, wrought products

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English Version

**Copper and copper alloys - Hollow rod for free machining
purposes**

Cuivre et alliages de cuivre - Barres creuses pour
décolletage

Kupfer und Kupferlegierungen - Hohlstangen für die
spanende Bearbeitung

This European Standard was approved by CEN on 14 April 2011.

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

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Foreword

This document (EN 12168:2011) 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

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 12168:1998.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 4 "Extruded and drawn products, forgings and scrap" to revise the following standard:

— EN 12168, *Copper and copper alloys — Hollow rod for free machining purposes.*

This is one of a series of European Standards for the copper and copper alloy products rod, wire and profile. Other products are specified as follows:

- EN 12163, *Copper and copper alloys — Rod for general purposes;*
- EN 12164, *Copper and copper alloys — Rod for free machining purposes;*
- EN 12165, *Copper and copper alloys — Wrought and unwrought forging stock;*
- EN 12166, *Copper and copper alloys — Wire for general purposes;*
- EN 12167, *Copper and copper alloys — Profiles and bars for general purposes;*
- EN 13347, *Copper and copper alloys — Rod and wire for welding and braze welding;*
- EN 13601, *Copper and copper alloys — Copper rod, bar and wire for general electrical purposes;*
- EN 13602, *Copper and copper alloys — Drawn round copper wire for the manufacture of electrical conductors;*
- EN 13605, *Copper and copper alloys — Copper profiles and profiled wire for electrical purposes.*

In comparison with EN 12168:1998, the following significant technical changes were made:

a) Removal of four materials:

- 1) CuZn38Pb4 (CW609N) and CuZn37Pb1 (CW605N);
- 2) CuZn36Pb2Sn1 (CW711R) and CuZn37Pb1Sn1 (CW714R);

b) Addition of five new materials:

- 1) CuZn40 (CW509L), CuZn42 (CW510L) and CuZn38As (CW511L) due to market requirements on restriction of lead;

- 2) CuZn32Pb2AsFeSi (CW709R);
- 3) CuZn21Si3P (CW724R) due to market requirements on restriction of lead;
- c) Revision of the mechanical properties (Tables 5 to 8) to reflect market needs; in particular the tensile strength, the 0,2 % proof strength and the elongation that were previously informative are now mandatory since these are important figures for design purposes;
- d) Modification of the sampling rate (Table 17).

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, 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

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 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 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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1 Scope

This European Standard specifies the composition, property requirements and dimensional tolerances for copper alloy hollow rod, finally produced by drawing or extruding, specifically intended for free machining purposes.

NOTE Hollow products having an outside diameter greater than 80 mm and/or a wall thickness less than 2 mm are specified in EN 12449.

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

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.

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

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

EN 1655, *Copper and copper alloys — Declarations of conformity*

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

EN 14977, *Copper and copper alloys — Detection of tensile stress — 5 % ammonia test*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1:2005)*

EN ISO 6509:1995, *Corrosion of metals and alloys — Determination of dezincification resistance of brass (ISO 6509:1981)*

EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2009)*

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

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

hollow rod

straight product, of uniform cross-section along its whole length with an enclosed void for which the longitudinal axes of its external contour and its internal contour, which is the boundary with the enclosed void, are coincidental

NOTE The external and internal contours of the rod, at any cross-section, can be that of a circle, square, rectangle, hexagon, or octagon, or with slight modification of those basic shapes by inclusion of detail(s) of relatively small size to the remainder of the cross-section. Examples of hollow rod cross-sections are shown in Figure 1.