

**Vask ja vasesulamid. Deformeeritavad ja  
mittedeformeeritavad sepisetoorikud**

Copper and copper alloys - Wrought and unwrought forging  
stock

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 12165:2011 sisaldab Euroopa standardi EN 12165:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.06.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.06.2011.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 12165:2011 consists of the English text of the European standard EN 12165:2011.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.06.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 01.06.2011.

The standard is available from Estonian standardisation organisation.

ICS 77.150.30

Võtmesõnad: deformeeritavad tooted, keemiline koostis, mehaanilised omadused, mehaanilised teimid, metall-latid, mõõtmed, müügidokumendid, proovivõtmine, stantsimisepised, tellimused, tähistus, vasesulamid, vask, ümarlatid

Inglisekeelsed võtmesõnad: chemical composition, conformity tests, copper, copper alloys, designation, die forgings, dimension tolerances, dimensions, marking, mechanical properties, mechanical tests, metal bars, orders, round bars, sales documents, sampling, wrought products

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English Version

## Copper and copper alloys - Wrought and unwrought forging stock

Cuivre et alliages de cuivre - Barres corroyées et brutes  
pour matriçage

Kupfer und Kupferlegierungen - Vormaterial für  
Schmiedestücke

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

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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## Foreword

This document (EN 12165:2011) 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 12165:1998.

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 12165:1998, *Copper and copper alloys — Wrought and unwrought forging stock.*

This is one of a series of European Standards for the copper and copper alloy products rod, wire, profile and forgings. 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 12166, *Copper and copper alloys — Wire for general purposes;*
- EN 12167, *Copper and copper alloys — Profiles and bars for general purposes;*
- EN 12168, *Copper and copper alloys — Hollow rod for free machining purposes;*
- EN 12420, *Copper and copper alloys — Forgings;*
- 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 wires for electrical purposes.*

In comparison with EN 12165:1998, the following significant technical changes were made:

- a) Removal of thirteen materials:
  - 1) CuCr1 (CW105C), CuNi2Be (CW110C) and CuNi3Si1 (CW112C);
  - 2) CuAl6Si2Fe (CW301G), CuAl7Si2 (CW302G) and CuAl9Ni3Fe2 (CW304G);
  - 3) CuNi10Zn42Pb2 (CW402J);
  - 4) CuZn39Pb3Sn (CW615N) and CuZn40Pb2Sn (CW619N);

- 5) CuZn25Al5Fe2Mn2Pb (CW705R), CuZn37Pb1Sn1 (CW714R), CuZn39Mn1AlPbSi (CW718R) and CuZn40Mn2Fe1 (CW723R);
- b) Addition of four materials:
- 1) CuZn38Pb1 (CW607N) due to the use for hot stamping applications;
  - 2) CuZn42 (CW510L) and CuZn38As (CW511L) due to the market requirements on restriction of lead;
  - 3) CuZn21Si3P (CW724R) due to the market requirements on restriction of lead;
- c) Revision of the mechanical properties (Tables 9 to 16) to reflect market needs; in particular the tensile strength, the 0,2 % proof strength and the elongation that were previously informative have been deleted;
- d) Modification of the sampling rate (Table 19).

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:

Wieland Werke AG  
Graf Arco Straße 36  
D-89079 Ulm

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.



## 1 Scope

This European Standard specifies the composition, property requirements and dimensional tolerances for forging stock of copper and copper alloys.

The sampling procedures and 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 1976, *Copper and copper alloys — Cast unwrought copper products*

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

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)*

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

## 3 Terms and definitions

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

### 3.1

#### **forging**

three-dimensional shaped product produced by a plastic forming process such as hammering or pressing between open or closed dies, including hammering between flat surfaces, normally when hot

NOTE Forging processes include, drop forging, hot stamping and hot pressing.

### 3.2

#### **forging stock**

extruded, rolled or drawn product such as rod, hollow rod, bar or profile or cast product, intended for the production of forgings

### 3.3

#### **deviation from circular form**

difference between the maximum and the minimum diameters measured at any one cross-section of a round product

[EN 12163:2011]