



SLOVENSKI STANDARD
SIST EN 12165:1999
01-november-1999

Baker in bakrove zlitine - Polizdelki (negneteni in gneteni) za izkovke

Copper and copper alloys - Wrought and unwrought forging stock

Kupfer und Kupferlegierungen - Vormaterial für Schmiedestücke

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

Ta slovenski standard je istoveten z: EN 12165:1998

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ICS:

77.150.30 Bakreni izdelki Copper products

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12165

January 1998

ICS 77.150.30

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

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 26 December 1997.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard 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 July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/ WG 4 "Rod/bar, wire, profiles" to prepare the following standard:

EN 12165 Copper and copper alloys - Wrought and unwrought forging stock

This is one of a series of European Standards for copper and copper alloy products in the form of 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 rectangular bar for general purposes

EN 12168 Copper and copper alloys - Hollow rod for free machining purposes

prEN 12420 Copper and copper alloys - Forgings

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the composition, property requirements and dimensional tolerances for copper and copper alloy round rod supplied in straight lengths, specifically intended for forging. This standard is also applicable to regular polygonal rod, hollow rod, rectangular bar and profiles intended for forging.

The sampling procedures, the methods of test for verification of conformity to the requirements of this standard, and the delivery conditions are also specified.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1655	Copper and copper alloys - Declarations of conformity
prEN 1976	Copper and copper alloys - Cast unwrought copper products
EN 10003-1	Metallic materials - Brinell hardness test - Part 1: Test method
EN 10204	Metallic products - Types of inspection documents
EN ISO 6509: 1995	Corrosion of metals and alloys - Determination of dezincification resistance of brass (ISO 6509 : 1981)
ISO 1811-2	Copper and copper alloys - Selection and preparation of samples for chemical analysis - Part 2: Sampling of wrought products and castings
ISO 6507-1	Metallic materials - Hardness test - Vickers test - Part 1: HV 5 to HV 100

NOTE: Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 forging

Shape produced by hammering or pressing between open or closed dies, including hammering between flat surfaces, normally when hot.

NOTE. The term 'forging' includes the processes of forging, drop forging, hot stamping and hot pressing; the term 'forgings' includes the products resulting from any of these processes of manufacture.

3.2 forging stock

Extruded, rolled, drawn or cast material in the form of rod, hollow rod, rectangular bar or profiles, intended for the production of forgings.

3.3 circularity (round rod)

Difference between the maximum and the minimum diameters measured at any one cross-section of a round rod.

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4 Designations

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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;
- H... Material condition designated by the minimum value of hardness requirement for the product with mandatory hardness requirements.

NOTE: Products in the H... condition may be specified to Brinell or Vickers hardness. The material condition designation H... is the same for both hardness test methods.

Material condition is designated by only one of the above designations.

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.

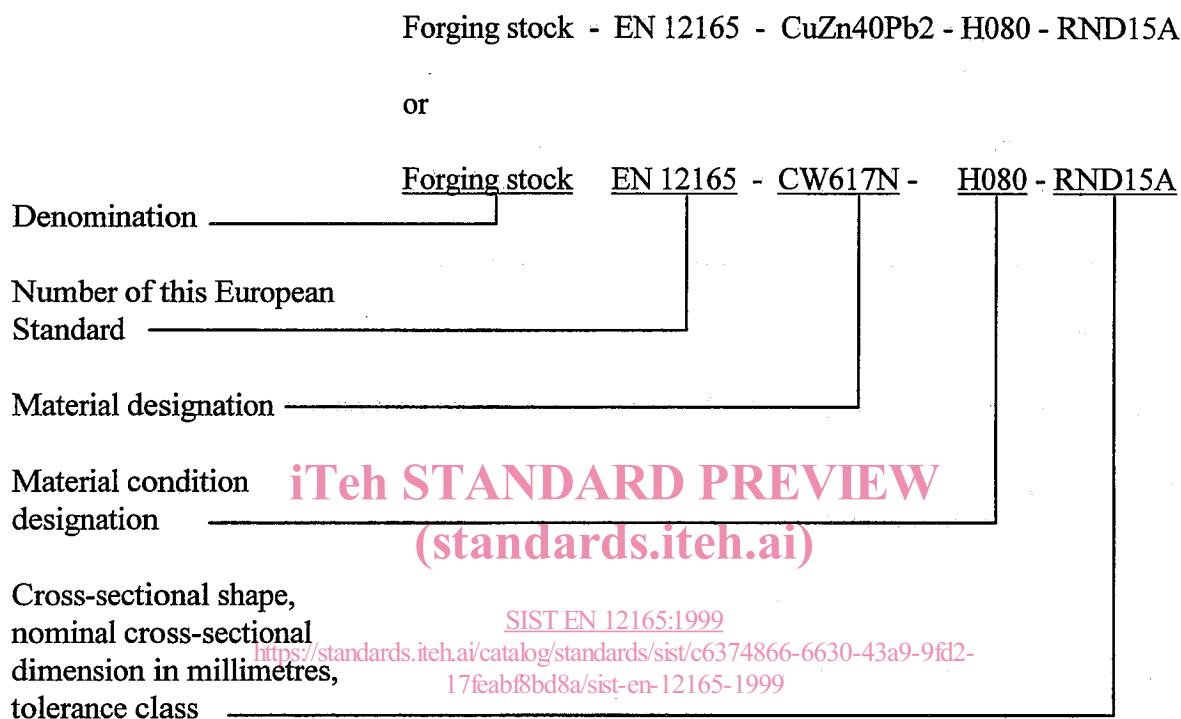
The product designation for products to this standard shall consist of:

- denomination (Forging stock);
- number of this European Standard (EN 12165);
- material designation, either symbol or number (see tables 1 to 8);
- material condition designation (see tables 9 to 16);
- cross-sectional shape (the following designations shall be used as appropriate: RND for round, SQR for square, HEX for hexagonal, OCT for octagonal, RCT for rectangular, PFL for profile);
- for round, regular polygonal or hollow rod or rectangular bar, the nominal cross-sectional dimension(s) (diameter, width across-flats, external dimension x internal dimension, width x thickness, as appropriate);
- for profiles, the number of the profile, or a fully dimensioned and toleranced drawing;
- for round rod, the tolerance class (see table 17).

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

EXAMPLE:

Forging stock conforming to this standard, in material designated either CuZn40Pb2 or CW617N, in material condition H080, round, nominal diameter 15 mm, tolerance class A, shall be designated as follows:



5 Ordering information

In order to facilitate the enquiry, order and confirmation of order procedures between the purchaser and the supplier, the purchaser shall state on his enquiry and order the following information:

- a) quantity of product required (mass);
- b) denomination (Forging stock);
- c) number of this European Standard (EN 12165);
- d) material designation (see tables 1 to 8);
- e) for round or regular polygonal rod, material condition designation (see 4.2 and tables 9 to 16), if it is other than M;

- f) cross-sectional shape;
- g) size required:
- for round rod, diameter and whether class A, B or C tolerance is required, unless the tolerance class is to be left to the discretion of the supplier (see table 17);
 - for regular polygonal or hollow rod, or rectangular bar, nominal dimension(s) and tolerance(s) required unless they are to be left to the discretion of the supplier;
 - for profiles, a fully dimensioned and toleranced drawing;
- h) the length of product required, unless the length is to be left to the discretion of the supplier;
- i) for forging stock in precipitation hardening alloys (i.e. those alloys in table 2), whether the test samples are to be prepared in accordance with a) or b) or 8.2.2.2., unless the choice is to be left to the discretion of the supplier.

NOTE: It is recommended that the product designation, as described in 4.3, is used for items b) to g).

In addition, the purchaser shall also state on the enquiry and order any of the following, if required:

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- j) whether for round or regular polygonal rod the test method to be used for the measurement of hardness is to be Brinell or Vickers (see 8.2), unless the test method is to be left to the discretion of the supplier;
- k) whether dezincification resistance testing of CuZn36Pb2As (CW602N) forging stock is required and whether the dezincification resistance acceptance criterion required is other than grade A (see 6.3);
- l) whether a declaration of conformity is required (see 9.1);
- m) whether an inspection document is required, and if so, which type (see 9.2);
- n) whether there are any special requirements for marking, labelling or packaging (see clause 10).

EXAMPLE:

Ordering details for 500 kg of forging stock conforming to EN 12165, in material designated either CuZn40Pb2 or CW617N, in material condition H080, round, nominal diameter 15 mm, tolerance class A, nominal length 2 500 mm, Vickers hardness test method:

500 kg Forging stock EN 12165 - CuZn40Pb2 - H080 - RND15A
 - nominal length 2 500 mm
 - Vickers hardness test method

or

500 kg Forging stock EN 12165 - CW617N - H080 - RND 15A
 - nominal length 2 500 mm
 - Vickers hardness test method

6 Requirements

6.1 Composition

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The composition shall conform to the requirements for the appropriate material given in tables 1 to 8.

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6.2 Hardness

The hardness properties of H... condition material shall conform to either the Brinell or the Vickers hardness requirements given for round or regular polygonal rod in tables 9 to 16. The test shall be carried out in accordance with 8.2. The test method to be used (Brinell or Vickers) shall be stated by the purchaser in the order [see 5 j)] unless the choice is to be left to the discretion of the supplier.

NOTE. No tensile requirements are specified in this standard. The tensile values given in tables 9 to 16 are approximate and are given for information only.

6.3 Resistance to dezincification

The depth of dezincification of CuZn36Pb2As (CW602N) products shall be:

- for grade A: maximum 200 μm ;
- for grade B: mean not to exceed 200 μm and maximum 400 μm [see 5 k)].