SLOVENSKI STANDARD
SIST EN 12168:1999

01-november-1999

Baker in bakrove zlitine - Votle palice različnih prerezov za obdelavo z odrezovanjem na avtomatih

Copper and copper alloys - Hollow rod for free machining purposes

Kupfer und Kupferlegierungen - Hohlstangen für die spanende Bearbeitung

Cuivre et alliages de cuivre - Barres creuses pour décolletage

Ta slovenski standard je istoveten z: **EN 12168:1998**

ICS:

77.150.30 Bakreni izdelki Copper products

SIST EN 12168:1999 **en**

EUROPEAN STANDARD
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EN 12168

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

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 2 January 1998.

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

Contents

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

This is one of a series of European Standards for copper and copper alloy products in rod, wire and profile form. 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 rectangular bar for general 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The materials specified in this standard are those which are especially suitable for free machining puposes and the hollow rod is therefore manufactured to tight dimensional tolerances.

Requirements are included in this standard for two alloys, namely CuZn39Pb2Sn (CW613N) and CuZn40Pb2Sn (CW619N), which, because of their higher permitted levels of tin, iron and aluminium have inferior machinability to CuZn39Pb2 (CW612N) and CuZn40Pb2 (CW617N) respectively. In view of this the alloys CuZn39Pb2Sn (CW613N) and CuZn40Pb2Sn (CW619N) will be deleted from the standard by 1 January 2000.

1 Scope

This European Standard specifies the composition, property requirements and dimensional tolerances for copper alloy hollow rod supplied in straight lengths, 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 prEN 12449.

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
EN 10003-1	Metallic materials - Brinell hardness test - Part 1: Test method
EN 10204	Metallic products - Types of inspection documents
EN ISO 196	Wrought copper and copper alloys - Detection of residual stress - Mercury (I) nitrate test (ISO 196 : 1978)
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

ISO 6957 Copper alloys - Ammonia test for stress corrosion resistance

NOTE: Informative references to documents used in the preparation of this standard, and cited at 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 hollow rod

Hollow wrought product, generally a round tube or hollow profile of regular cross-section, with an enclosed void along its length, supplied in straight lengths and specifically intended for free machining purposes.

NOTE: Examples of hollow rod cross-sections are shown in figure 1.

3.2 circularity (round hollow rod)

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

3.3 eccentricity

Difference between the maximum and the minimum wall thickness, measured in the same plane perpendicular to the axis of the hollow rod, expressed as a percentage of the sum of the maximum and minimum wall thicknesses. For polygons, wall thickness is measured perpendicular to the mid-points of the flat outside surfaces.

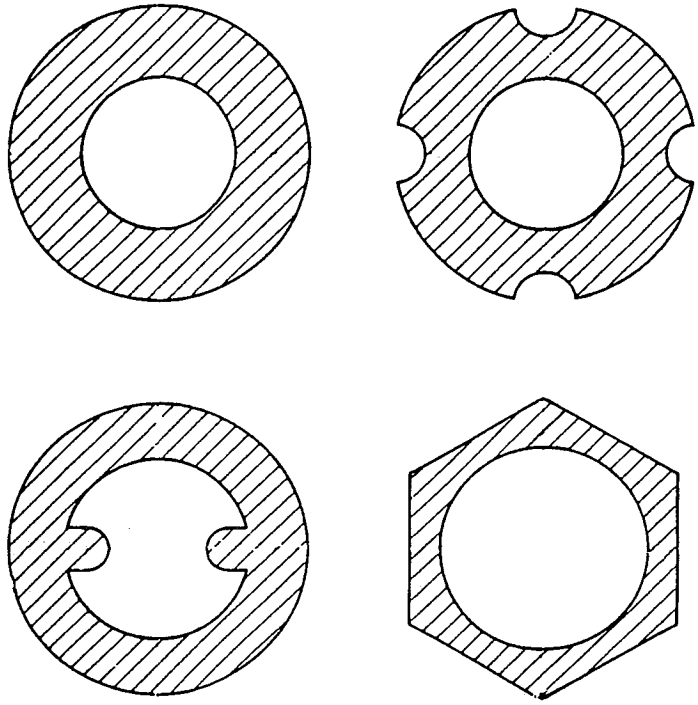

Figure 1: Examples of hollow rod cross-sections

4 Designations

4.1 Material

4.1.1 *General*

The material is designated either by symbol or number (see tables 1 to 3).

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 1: 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.

S (suffix) — Material condition for a product which is stress relieved.

NOTE 2: Products in the M or H... condition may be specially processed (i.e. mechanically or thermally stress relieved) in order to lower the residual stress level to improve the resistance to stress corrosion and the dimensional stability on machining [see 5.1), 5 m) and 8.4].

Except when the suffix S is used, 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 (Hollow rod);
- number of this European Standard (EN 12168);

– material designation, either symbol or number (see tables 1 to 3);

– material condition designation (see tables 4 to 6);

– external and/or internal cross-sectional shape (the following designations shall be used as appropriate: RND for round, SQR for square, RCT for rectangular, HEX for hexagonal, OCT for octagonal, PFL for profile);

– nominal cross-sectional dimensions (see note 1 to clause 5) or, for profiles, the number of the profile or a fully dimensioned and toleranced drawing, and:

tolerance class A, B or C added to the external dimension (see table 7); and/or

tolerance class A or B added to the wall thickness (the following designation shall be used for wall thickness: WT) (see table 8); and/or

tolerance class A or B added to the bore diameter (see table 9); and/or

tolerance class A or B for eccentricity (the following designations shall be used for eccentricity, as appropriate: ECCA for class A, ECCB for class B);

– for square, hexagonal or octagonal external shape, the corner type (the following designations shall be used as appropriate: SH for sharp, RD for rounded) (see table 13).

A typical product designation is shown in example 1, and the derivation of a product designation is shown in example 2.

EXAMPLE 1:

Hollow rod for free machining purposes conforming to this standard, in material designated either CuZn39Pb3 or CW614N, in material condition H090, round external shape and bore, nominal outside diameter 40 mm, tolerance class B, and nominal wall thickness 10 mm, tolerance class A, shall be designated as follows:

Hollow rod EN 12168 - CuZn39Pb3 - H090 - RND40B x WT10A

or

Hollow rod EN 12168 - CW614N - H090 - RND40B x WT10A