

STN	Meď a zliatiny medi. Tyče na všeobecné použitie.	STN EN 12163 42 8309
------------	---	--

Copper and copper alloys - Rod for general purposes

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/16

Obsahuje: EN 12163:2016

Oznámením tejto normy sa ruší
STN EN 12163 (42 8309) z decembra 2011

123866

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2017
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

EN 12163

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2016

ICS 77.150.30

Supersedes EN 12163:2011

English Version

Copper and copper alloys - Rod for general purposes

Cuiivre et alliages de cuivre - Barres pour usages
générauxKupfer und Kupferlegierungen - Stangen zur
allgemeinen Verwendung

This European Standard was approved by CEN on 9 April 2016.

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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

Contents

Page

European foreword.....	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Designations.....	8
4.1 Material.....	8
4.1.1 General.....	8
4.1.2 Symbol.....	8
4.1.3 Number	8
4.2 Material condition	8
4.3 Product.....	8
5 Ordering information	10
6 Requirements	11
6.1 Composition	11
6.2 Mechanical properties.....	11
6.3 Resistance to dezincification	11
6.4 Residual stress level.....	12
6.5 Dimensions and tolerances	12
6.5.1 Diameter or width across-flats.....	12
6.5.2 Shape tolerances	12
6.5.3 Straightness.....	12
6.5.4 Length.....	12
6.5.5 Corner radii.....	12
6.5.6 Twist of polygonal rod.....	13
6.6 Surface quality.....	13
7 Sampling.....	13
7.1 General.....	13
7.2 Analysis.....	13
7.3 Mechanical tests	14
7.4 Dezincification resistance and stress corrosion resistance test.....	14
8 Test methods	14
8.1 Analysis.....	14
8.2 Tensile test	14
8.2.1 General.....	14
8.2.2 Location of test pieces	14
8.2.3 Shape and size of test pieces	15
8.2.4 Procedure for testing.....	15
8.2.5 Determination of results	15
8.3 Hardness test.....	15
8.4 Dezincification resistance test	15
8.5 Stress corrosion resistance test.....	15

8.6	Determination of the electrical conductivity	16
8.7	Retests	16
8.7.1	Analysis, tensile, hardness and dezincification resistance tests and determination of the electrical conductivity	16
8.7.2	Stress corrosion resistance test	16
8.8	Rounding of results.....	16
9	Declaration of conformity and inspection documentation	17
9.1	Declaration of conformity	17
9.2	Inspection documentation	17
10	Marking, packaging, labelling	17
	Bibliography	45

Figures

Figure 1	— Measurement of twist of polygonal rod	13
----------	---	----

Tables

Table 1	— Composition of low alloyed copper alloys	18
Table 2	— Composition of copper-aluminium alloys.....	19
Table 3	— Composition of copper-nickel alloys	19
Table 4	— Composition of copper-nickel-zinc alloys.....	19
Table 5	— Composition of copper-tin alloys.....	20
Table 6	— Composition of copper-zinc alloys	20
Table 7	— Composition of complex copper-zinc alloys.....	22
Table 8	— Mechanical properties of rod of low alloyed copper alloys.....	23
Table 9	— Mechanical properties of rod of copper-aluminium alloys	27
Table 10	— Mechanical properties of rod of copper-nickel alloys	29
Table 11	— Mechanical properties of rod of copper-nickel-zinc alloys.....	30
Table 12	— Mechanical properties of rod of copper-tin alloys.....	32
Table 13	— Mechanical properties of rod of copper-zinc alloys	34
Table 14	— Mechanical properties of rod of complex copper-zinc alloys	39
Table 15	— Dimensional tolerances for rod	43
Table 16	— Tolerances on straightness of rod.....	43
Table 17	— Corner radii for square and polygonal rod.....	43
Table 18	— Maximum twist of square and polygonal rod	44
Table 19	— Sampling rate.....	44

European foreword

This document (EN 12163:2016) 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 January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12163:2011.

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 12163:2011, *Copper and copper alloys — Rod for general purposes.*

This document 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 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 12168, *Copper and copper alloys — Hollow rod for free machining purposes;*

— 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 12163:2011, the following significant technical changes were made:

- a) introduction of an optional procedure how to refer to restrictions to the chemical composition imposed by the 4 MS Common Composition List for materials used for products accepted for contact with drinking water;
- b) requirements and test methods for resistance of dezincification modified;
- c) provisions for surface quality added;
- d) mechanical properties for CuZn21Si3P (CW724R) modified.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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

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 ensured the CEN that he is willing to negotiate licenses either free of charge or 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
GERMANY

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.

CEN and CENELEC maintain online lists of patents relevant to their standards. Users are encouraged to consult the lists for the most up to date information concerning patents (<ftp://ftp.cencenelec.eu/EN/IPR/Patents/IPRdeclaration.pdf>).

Due to developing legislation, the composition of a material may be restricted to the composition specified in this European Standard with respect to individual uses (e.g. for the use in contact with drinking water in some Member States of the European Union). These individual restrictions are not part of this European Standard. Nevertheless, for materials for which traditional and major uses are affected, these restrictions are indicated. The absence of an indication, however, does not imply that the material can be used in any application without any legal restriction.

1 Scope

This European Standard specifies the composition, property requirements and dimensional tolerances for copper alloy rod in the shape of circles, squares, hexagons or octagons, finally produced by drawing or extruding intended for general purposes.

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 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 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, *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)*

EN ISO 6509-1, *Corrosion of metals and alloys - Determination of dezincification resistance of copper alloys with zinc - Part 1: Test method (ISO 6509-1)*

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

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*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN