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Copper and copper alloys - Wire 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. 01/25

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English Version

Copper and copper alloys - Wire for general purposes

Cuivre et alliages de cuivre - Fils pour usages généraux

Kupfer und Kupferlegierungen - Drähte zur
allgemeinen Verwendung

This European Standard was approved by CEN on 5 August 2024.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 12166:2024 (E)**Contents**

European foreword	3
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Designation	7
4.1 Material	7
4.1.1 General	7
4.1.2 Symbol	7
4.1.3 Number	7
4.2 Material condition	7
4.3 Product	7
5 Ordering information	9
6 Requirements	11
6.1 Composition	11
6.2 Mechanical properties	11
6.3 Grain size	11
6.4 Dimensions and tolerances	11
6.4.1 Diameter or width across-flats	11
6.4.2 Shape tolerances	11
6.4.3 Corner and edge geometry (wire with square and rectangular cross-section only) ..	11
6.5 Joins	12
6.6 Surface quality	12
6.7 Internal inclusion	12
7 Sampling	13
7.1 General	13
7.2 Analysis	13
7.3 Tensile, hardness and grain size tests	13
8 Test methods	13
8.1 Analysis	13
8.2 Tensile test	13
8.3 Hardness test	14
8.4 Estimation of average grain size	14
8.5 Retests	14
8.6 Rounding of results	15
9 Certificate of compliance and inspection documentation	15
9.1 Certificate of compliance	15
9.2 Inspection documentation	15
10 Marking, packaging, labelling	15
Annex A (informative) Position of wire cross-section within a coil, reel, spool or drum	45
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2014/68/EU (Pressure equipment Directive) aimed to be covered	47
Bibliography	48

European foreword

This document (EN 12166:2024) 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 April 2025, and conflicting national standards shall be withdrawn at the latest by April 2025.

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 12166:2016.

In comparison with EN 12166:2016, the following significant technical changes were made:

- a) Modification of the definition of diameter or width across-flats in 6.4.1;
- b) Modification of 6.4.2 with the introduction of 6.4.2.1 Round wire and 6.4.2.2 Wire with square or regular cross-section;
- c) Introduction of eddy current test parameters in 6.6;
- d) Introduction of 6.7 Internal inclusion;
- e) Addition of CuPb1P (CW113C) in Table 1 and Table 7;
- f) Addition of CuSn5 (CW451K) in Table 3 and Table 9;
- g) Addition of a new alloy CuZn36Si1P (CW726R) in Table 6 and Table 12;
- h) Introduction in the chemical composition Tables of a footnote to explain the meaning of elements for which no upper and lower limits are specified;
- i) Modification of the chemical composition of CuZn39Pb3 (CW614N) and CuZn40Pb2 (CW617N) in Table 5;
- j) Addition of a new alloy CuZn40Pb1 (CW627N) in Table 5 and Table 11;
- k) Addition of Table 19;
- l) Addition of Annex ZA.

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 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 12167, *Copper and copper alloys — Profiles and bars for general purposes*;

EN 12166:2024 (E)

- 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*.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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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 CuZn36Si1P (CW726R) 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:

— For CuZn36Si1P (CW726R) information may be obtained from:

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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 (<https://www.cencenelec.eu/european-standardization/ipr-and-patents/patents/>).

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.

EN 12166:2024 (E)**1 Scope**

This document specifies the composition, property requirements and dimensional tolerances for copper alloy wire, finally produced by drawing, rolling or extruding, intended for general purposes, spring and fastener manufacturing applications.

The sampling procedures and the methods of test for verification of conformity to the requirements of this document are also specified.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 764-5:2014, *Pressure equipment — Part 5: Inspection documentation of metallic materials and compliance with the material specification*

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

EN 17263:2019, *Copper and copper alloys — Eddy current testing on the outer surface of rods, bars, hollow rods and wires for the detection of defects by encircling test coil*

EN ISO 2624:1995, *Copper and copper alloys — Estimation of average grain size (ISO 2624:1990)*

EN ISO 6507-1:2018, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1:2018)*

EN ISO 6892-1:2019, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2019)*

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