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**BS EN 13605:2013**



BSI Standards Publication

# Copper and copper alloys — Copper profiles and profiled wire for electrical purposes

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This British Standard is the UK implementation of EN 13605:2013. It supersedes BS EN 13605:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/34, Copper and copper alloys.

A list of organizations represented on this committee can be obtained on request to its secretary.

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## EUROPÄISCHE NORM

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Supersedes EN 13605:2002

English Version

## Copper and copper alloys - Copper profiles and profiled wire for electrical purposes

Cuivre et alliages de cuivre - Profilés et fils profilés en cuivre pour usages électriques

Kupfer und Kupferlegierungen - Profile und profilierte Drähte aus Kupfer für die Anwendung in der Elektrotechnik

This European Standard was approved by CEN on 25 April 2013.

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.

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## Foreword

This document (EN 13605:2013) 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of an identical text or by endorsement, at the latest by December 2013 and conflicting national standards shall be withdrawn at the latest by December 2013.

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 13605:2002.

In comparison with EN 13605:2002, the following significant technical changes have been made:

- Cu-ETP1 (CW003A), Cu-OF1 (CW007A), Cu-OFE (CW009A) and Cu-PHCE (CW022A) have been added (Table 1).
- The impurity content (other materials) in the chemical composition of Cu-FRHC (CW005A) has been modified in accordance with EN 1976:2012 and EN 1977:2013.
- Mass tolerances have been changed.

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 13605:2002, *Copper and copper alloys — Copper profiles and profiled wire for electrical purposes.*

The products specified in this European Standard are those which are especially suitable for electrical purposes, i.e. with specified electrical properties. Profiles for general purposes are specified in EN 12167.

Annex A (informative) gives guidance on the characteristics of coppers for electrical purposes.

This is one of a series of European Standards for copper products for electrical purposes. Other copper products are specified as follows:

- EN 13599, *Copper and copper alloys — Copper plate, sheet and strip for electrical purposes*
- EN 13600, *Copper and copper alloys — Seamless copper tubes for electrical 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 13604, *Copper and copper alloys — Semiconductor devices, electronic and vacuum products made from high conductivity copper*

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,

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Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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## 1 Scope

This European Standard specifies the composition, property requirements including electrical properties, and tolerances on dimensions and form for copper profiles and profiled wire for electrical purposes, which would fit within a circumscribing circle of maximum 180 mm diameter.

The sampling procedures, the test methods for verification of conformity to the requirements of this standard, and the delivery conditions 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 1655, *Copper and copper alloys — Declarations of conformity*

EN 1976, *Copper and copper alloys — Cast unwrought copper products*

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

EN ISO 2626, *Copper — Hydrogen embrittlement test (ISO 2626)*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

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

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

EN ISO 7438, *Metallic materials — Bend test (ISO 7438)*

## 3 Terms and definitions

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

### 3.1 profile

wrought product of uniform cross-section along its whole length, supplied in straight lengths

Note 1 to entry: It may be solid or hollow:

- if solid, the contour of its cross-section is complex;
- if hollow, the external contour and/or the internal contour of its cross-section is (are) complex.

### 3.2 profiled wire

particular type of wire, i.e. a wrought product of uniform cross-section along its whole length, supplied in coiled form

Note 1 to entry: It may be solid or hollow:

- if solid, the contour of its cross-section is complex;
- if hollow the external contour and/or the internal contour of its cross-section is (are) complex.