SLOVENSKI STANDARD
SIST EN 13605:2013

01-september-2013

Nadomešča:
SIST EN 13605:2004
SIST EN 13605:2004/AC:2005

Baker in bakrove zlitine - Profili in profilirana žica iz bakra za uporabo v elektrotehniki

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

Ta slovenski standard je istoveten z: **EN 13605:2013**

ICS:

77.150.30	Bakreni izdelki	Copper products

SIST EN 13605:2013 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13605

June 2013

ICS 77.150.30

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.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Figures

Tables

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,

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

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.

3.3
circumscribing circle
smallest circle which completely encloses the contour of the cross-sections of the profile or profiled wire

4 Designations

4.1 Material

4.1.1 General

The material is designated either by symbol or by number (see Table 1 and Table 2).

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:

D Material condition for the product as drawn without specified mechanical properties;

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

R... Material condition designated by the minimum value of tensile strength requirement for the product with mandatory tensile strength, 0,2 % proof strength and elongation requirements.

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

Exact conversion between the material conditions designated H... and R... is not possible.

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

4.3 Product

The product designation provides a standardised pattern of designation from which a rapid and unequivocal description of a product can be 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:

a) denomination (profile or profiled wire);

b) number of this European Standard (EN 13605);

c) material designation, either symbol or number (see Table 1 and Table 2);

d) material condition designation (see Table 3);

e) for profiles or profiled wire, a number, or the number of a fully dimensioned and toleranced drawing;

f) for profiles, length, either as manufactured length (ML) or fixed length (FL);

g) for profiled wire, form of delivery: coil (Y) or spool (Z).

The derivation of a product designation is shown in Example 1 and another typical product designation is shown in Example 2.

EXAMPLE 1 Profile for electrical purposes conforming to this standard, in material designated either Cu-ETP or CW004A, in material condition H080, drawing number XY000, manufactured length 3 000 mm, will be designated as follows:

Profile — EN 13605 — Cu-ETP — H080 — XY000 — 3000ML

or

Profile — EN 13605 — CW004A — H080 — XY000 — 3000ML

Denomination

Number of this European Standard

Material designation

Material condition designation

Drawing number

Length in millimetres

EXAMPLE 2 Profiled wire for electrical purposes conforming to this standard, in material designated either CuAg0,10 or CW013A in material condition H035, drawing number BC000, in coils, will be designated as follows:

Profiled wire EN 13605 — CuAg0,10 — H035 — BC000 — Y

or

Profiled wire EN 13605 — CW013A — H035 — BC000 — Y

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, number of profiles or number of coils or spools);

b) denomination (profile or profiled wire);

c) number of this European Standard (EN 13605);

d) material designation (see Table 1 and Table 2);

e) material condition designation (see 4.2 and Table 3);

f) number of the profile or fully dimensioned and toleranced drawing;

g) for profiles, nominal length, either as manufactured length (ML) or fixed length (FL), see 6.6.4;

h) for profiled wire, form of delivery: pancake, traverse wound, bunched coils or on spools (see 6.7);

i) coil dimensions, mass or spool type;

j) for profiled wire, the direction of coiling to be indicated on the drawing (see 6.5);

k) whether Brinell or Vickers hardness test is mandatory;

It is recommended that the product designation as described in 4.3 is used for b) to h).

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

l) whether first articles are required (see 6.5);

m) for profiles, whether sawn or sheared ends are required (see 6.6.4);

n) whether special surface conditions are required (see 6.9);

o) for profiled wire, whether form tolerances are required;

p) for profiled wire, whether specific length is required;

q) whether a declaration of conformity is required (see 9.1);

r) whether an inspection document is required, and if so, which type (see 9.2);

s) whether there are any special requirements for marking, packaging or labelling (see Clause 10).

EXAMPLE 1 Ordering details for 1 000 pieces of profiles for electrical purposes conforming to EN 13605, in material designated either Cu-ETP or CW004A, in material condition H080, drawing number XY123, manufactured length 3 000 mm:

1 000 pieces Profile EN 13605 — Cu-ETP — H080 — XY123 — 3 000ML

or

1 000 pieces Profile EN 13605 — CW004A — H080 — XY123 — 3 000ML

EXAMPLE 2 Ordering details for 2 000 kg of profiled wire for electrical purposes conforming to EN 13605, in material designated either CuAg0,10 or CW013A, in material condition H035, drawing number BC123, in 250 kg coils:

2 000 kg Profiled wire EN 13605 — CuAg0,10 — H035 — BC123 — Y—250

or

2 000 kg Profiled wire EN 13605 — CW013A — H035 — BC123 — Y—250