

Copper and copper alloys - Test methods for assessing protective tin coatings on drawn round copper wire for electrical purposes

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EUROPEAN STANDARD

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English Version

Copper and copper alloys - Test methods for assessing protective tin coatings on drawn round copper wire for electrical purposes

Cuivre et alliages de cuivre - Méthodes d'évaluation des revêtements en étain sur les fils ronds étirés en cuivre pour usages électriques

Kupfer und Kupferlegierungen - Prüfverfahren zur Beurteilung von Schutzüberzügen aus Zinn auf gezogenen Runddrähten aus Kupfer für die Anwendung in der Elektrotechnik

This European Standard was approved by CEN on 12 April 2021.

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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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COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Thickness of the unalloyed tin coating	5
4.1 General	5
4.2 Principle of the method based on the electrolytic dissolution of the tin coating	5
4.2.1 General	5
4.2.2 Reagents and materials	5
4.2.3 Apparatus	5
4.2.4 Preparation of the test piece	7
4.2.5 Procedure for determining the thickness of unalloyed tin coatings	7
4.2.6 Expression of results	10
4.3 Principle of the method based on XRF	11
4.3.1 General	11
4.3.2 Devices with measuring spots larger than the wire diameter — Overlap technique	11
4.3.3 Devices with measuring spots smaller than the wire diameter – Full-spot technique	12
4.3.4 Preparation of the test piece	12
4.3.5 Factors affecting the measuring accuracy	13
5 Continuity of the tin coating	17
5.1 Principle	17
5.2 Test solution	17
5.3 Reference solution	18
5.4 Preparation of the test piece	18
5.5 Cleaning of the test piece	18
5.6 Immersion for testing	18
5.7 Determination	19
5.7.1 General	19
5.7.2 Comparison by Nessler cylinders	19
5.7.3 Colorimetric method	19
6 Adherence of the tin coating	19
6.1 Principle	19
6.2 Stock solution	19
6.3 Test solution	19
6.4 Preparation of the test piece	19
6.5 Cleaning of the test piece	20
6.6 Immersion for testing	20
6.7 Examination	20
7 Test report	21
Bibliography	22

European foreword

This document (EN 13603:2021) 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 November 2021, and conflicting national standards shall be withdrawn at the latest by November 2021.

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 13603:2013.

In comparison with the previous edition, the following technical modifications have been made:

- included the X-ray fluorescence analysis (XRF) to measure the thickness of the tin layer.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies methods for assessing the tin coating on drawn round copper wire for the manufacture of electrical conductors, e.g. according to EN 13602.

This document includes test methods for the determination of the following characteristics:

- a) thickness of the unalloyed tin coating;
- b) continuity of the tin coating;
- c) adherence of the tin coating.

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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 610, *Tin and tin alloys - Ingot tin*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

unalloyed tin coating

layer of pure tin on the surface of tinned wire

3.2

alloyed tin coating

diffusion layer of copper and tin formed at the copper wire and tin coating interface during tinning and subsequent drawing and annealing processes

3.3

total tin coating

sum of the thicknesses of the unalloyed tin coating and the alloyed tin coating

3.4

measuring area

area of the surface over which a single measurement is made