BS EN 13603:2013

BSI Standards Publication

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

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National foreword

This British Standard is the UK implementation of EN 13603:2013. It supersedes BS EN 13603:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/34/1, Wrought and unwrought copper and copper alloys.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2013.

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EN 13603

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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 25 April 2013.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 13603:2013) has been prepared by Technical Committee CEN/TC 133 “Copper and copper”, 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 13603:2002.

In comparison with EN 13603:2002, the following changes have been made:

— Editorial modifications.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 4 "Extruded and drawn products, forgings and scrap" to prepare the revision of the following standard:

EN 13603:2002, *Copper and copper alloys — Test methods for assessing protective tin coatings on drawn round copper wire for electrical purposes*

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

This European Standard 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.

WARNING — This European Standard can involve the use of hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with their use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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 610, *Tin and tin alloys — Ingot tin*

3 Terms and definitions

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

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

4 Thickness of the unalloyed tin coating

4.1 Principle

Anodic dissolution of a well-defined area of the unalloyed coating using a suitable electrolyte, followed by detection of the virtually complete dissolution of the unalloyed coating by a rapid change in cell voltage.