

<b>STN</b>	<b>Špecifikácie jednotlivých typov vodičov na vinutia Časť 0-7: Všeobecné požiadavky Medené plne izolované vodiče (FIW) kruhového prierezu, bezchybne lakované</b>	<b>STN EN 60317-0-7</b>  34 7307
------------	--	--

Specifications for particular types of winding wires - Part 0-7: General requirements - Fully insulated (FIW) zero-defect enamelled round copper wire

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. 05/18

Obsahuje: EN 60317-0-7:2017, IEC 60317-0-7:2017

Oznámením tejto normy sa od 20.09.2020 ruší  
STN EN 60317-0-7 (34 7307) z decembra 2012

**126433**

EUROPEAN STANDARD

**EN 60317-0-7**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2017

ICS 29.060.10

Supersedes EN 60317-0-7:2012

English Version

Specifications for particular types of winding wires -  
Part 0-7: General requirements - Fully insulated (FIW) zero-  
defect enamelled round copper wire  
(IEC 60317-0-7:2017)

Spécifications pour types particuliers de fils de bobinage -  
Partie 0-7: Exigences générales - Fil de section circulaire,  
isolé en continu (FIW), en cuivre émaillé, sans défaut  
d'isolation électrique  
(IEC 60317-0-7:2017)

Technische Lieferbedingungen für bestimmte Typen von  
Wickeldrähten - Teil 0-7: Allgemeine Anforderungen -  
Isolationsfehlerfreie Runddrähte (FIW) aus Kupfer,  
lackisoliert  
(IEC 60317-0-7:2017)

This European Standard was approved by CENELEC on 2017-09-20. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**EN 60317-0-7:2017****European foreword**

The text of document 55/1619/FDIS, future edition 2 of IEC 60317-0-7, prepared by IEC/TC 55 "Winding wires" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60317-0-7:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-06-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-09-20

This document supersedes EN 60317-0-7:2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

**Endorsement notice**

The text of the International Standard IEC 60317-0-7:2017 was approved by CENELEC as a European Standard without any modification.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60172	-	Test procedure for the determination of the temperature index of enamelled and tape wrapped winding wires	EN 60172	-
IEC 60317-0-1	2013	Specifications for particular types of winding wires - Part 0-1: General requirements - Enamelled round copper wire	EN 60317-0-1	2014
IEC 60851	Series	Winding wires - Test methods	EN 60851	Series
IEC 60851-5	2008	Winding wires - Test methods - Part 5: Electrical properties	EN 60851-5	2008
+A1	2011		+A1	2011
ISO 3	-	Preferred numbers - Series of preferred numbers	-	-



IEC 60317-0-7

Edition 2.0 2017-08

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Specifications for particular types of winding wires –  
Part 0-7: General requirements – Fully insulated (FIW) zero-defect enamelled  
round copper wire**

**Spécifications pour types particuliers de fils de bobinage –  
Partie 0-7: Exigences générales – Fil de section circulaire, isolé en continu (FIW),  
en cuivre émaillé, sans défaut d'isolation électrique**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

#### IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Catalogue IEC - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

#### Recherche de publications IEC - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [csc@iec.ch](mailto:csc@iec.ch).



IEC 60317-0-7

Edition 2.0 2017-08

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

---

**Specifications for particular types of winding wires –  
Part 0-7: General requirements – Fully insulated (FIW) zero-defect enamelled round  
copper wire**

**Spécifications pour types particuliers de fils de bobinage –  
Partie 0-7: Exigences générales – Fil de section circulaire, isolé en continu (FIW),  
en cuivre émaillé, sans défaut d'isolation électrique**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 29.060.10

ISBN 978-2-8322-4722-8

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms, definitions, general notes and appearance.....	7
3.1 Terms and definitions.....	7
3.2 General notes .....	9
3.2.1 Methods of test.....	9
3.2.2 Winding wire.....	9
3.3 Appearance .....	9
4 Dimensions.....	9
4.1 Conductor diameter .....	9
4.2 Out of roundness of conductor (for nominal diameters over 0,090 mm up to 0,900 mm) .....	10
4.3 Minimum overall diameter .....	10
4.4 Maximum overall diameter .....	10
5 Electrical resistance .....	11
6 Elongation .....	11
7 Springiness .....	11
8 Flexibility and adherence.....	12
8.1 Mandrel winding test (for nominal conductor diameters over 0,090 mm up to 0,900 mm) .....	12
8.2 Jerk test (for nominal diameters up to 0,900 mm).....	13
9 Heat shock .....	13
10 Cut through .....	14
11 Resistance to abrasion .....	14
12 Resistance to solvents.....	14
13 Breakdown voltage .....	14
14 Continuity of insulation (nominal conductor diameters over 0,090 mm up to 0,900 mm).....	15
14.1 Off-line high voltage continuity.....	15
14.2 In-line high voltage continuity.....	15
15 Temperature index .....	15
16 Resistance to refrigerants.....	15
17 Solderability .....	15
18 Heat or solvent bonding.....	15
19 Dielectric dissipation factor.....	16
20 Resistance to transformer oil .....	16
21 Loss of mass .....	16
23 Pin-hole test.....	16
30 Packaging .....	16
Annex A (normative) Supplemental requirements for FIW .....	17
A.1 Dimensions .....	17
A.2 Electrical resistance.....	18

A.3	Elongation .....	19
A.4	Springiness .....	20
A.5	Mandrel winding test .....	21
A.6	Heat shock .....	22
A.7	Breakdown voltage .....	24
Table 1	– Dimensions of enamelled wires (R 20) .....	10
Table 2	– Elongation at break .....	11
Table 3	– Springiness .....	12
Table 4	– Mandrel diameters for mandrel winding test .....	13
Table 5	– Heat shock .....	14
Table 6	– Breakdown voltage .....	15
Table A.1	– Dimensions of enamelled wires for grades FIW 3, 5, 7 and 9 .....	17
Table A.2	– Dimensions of enamelled wires up to and including 0,090 mm and over 0,900 mm (R 20) for grades FIW 4, 6 and 8 .....	18
Table A.3	– Electrical resistance .....	19
Table A.4	– Elongation at break .....	19
Table A.5	– Springiness for grades FIW 3, 5, 7 and 9 .....	20
Table A.6	– Springiness for grades FIW 4, 6 and 8 .....	21
Table A.7	– Mandrel diameters for mandrel winding test for grade FIW 3, 5, 7 and 9 .....	21
Table A.8	– Mandrel diameters for mandrel winding test for grade FIW 4, 6 and 8, nominal conductor diameters up to and including 0,090 mm and over 0,900 mm .....	22
Table A.9	– Heat shock for grades FIW 3, 5, 7 and 9 .....	23
Table A.10	– Heat shock for grades FIW 4, 6 and 8 .....	23
Table A.11	– Breakdown voltage .....	24

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

### Part 0-7: General requirements – Fully insulated (FIW) zero-defect enamelled round copper wire

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60317-0-7 has been prepared by IEC technical committee 55: Winding wires.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) reduction in the number of grades of FIW from 3 through 9 to 4, 6 and 8 only;
- b) reduction of the wire diameter range from (0,040 to 1,000) mm to (0,090 to 0,900) mm for several requirements;
- c) revision of Clause 5 to delete the Table 2 resistance requirements;

- d) revision of Clause 13 to clarify that breakdown is determined when a calculated minimum test voltage is reached, which can be less than 10 000 V;
- e) expansion of Annex A to include requirements for FIW 3, 5, 7 and 9 and for all grades, wire diameters below 0,090 mm and above 0,900 mm.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
55/1619/FDIS	55/1623/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60317 series, published under the general title *Specifications for particular type of winding wires*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

The IEC 60317 series is part of a group of International Standards which define insulated wires used for windings in electrical equipment:

- 1) IEC 60851 series, *Winding wires – Test methods*;
- 2) IEC 60317 series, *Specifications for particular types of winding wires*;
- 3) IEC 60264 series, *Packaging of winding wires*.

## SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

### Part 0-7: General requirements – Fully insulated (FIW) zero-defect enamelled round copper wire

#### 1 Scope

This part of IEC 60317 establishes general requirements for fully insulated (FIW) zero-defect enamelled round copper wires.

The nominal conductor diameter range is given in the relevant technical specification.

#### 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.

IEC 60172, *Test procedure for the determination of the temperature index of enamelled and tape wrapped winding wires*

IEC 60317-0-1:2013, *Specifications for particular types of winding wires – Part 0-1: General requirements – Enamelled round copper wire*

IEC 60851 (all parts), *Winding wires – Test methods*

IEC 60851-5:2008, *Winding wires – Test methods – Part 5: Electrical properties*  
IEC 60851-5:2008/AMD1:2011

ISO 3, *Preferred numbers – Series of preferred numbers*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**