

Specifications for particular types of winding wires —

Part 0-4: General requirements — Glass-fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire

The European Standard EN 60317-0-4:1998, with the incorporation of amendments A1:2000 and A2:2005, has the status of a British Standard

ICS 29.060.10

National foreword

This British Standard is the English language version of EN 60317-0-4:1998 including amendments A1:2000 and A2:2005. It is identical with IEC 60317-0-4:1997 including amendments 1:1999 and 2:2005. It supersedes BS EN 60317-0-4:1996 which is withdrawn.

The start and finish of text introduced or altered by IEC amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted to Technical Committee GEL/55, Winding wires, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 21 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments
10909	May 2001	See national foreword
16168	March 2006	See national foreword

Specifications for particular types of winding wires — Part 0-4: General requirements — Glass-fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire

(includes amendments A1:2000 and A2:2005)
(IEC 60317-0-4:1997 +A1:1999 +A2:2005)

Spécifications pour types particuliers de fils de
bobinage

Partie 0: Prescriptions générales

Section 4: Fil de section rectangulaire en cuivre
nu ou émaillé de fibres de verre imprégnées de
vernis ou de résine

(inclut les amendements A1:2000 et A2:2005)
(CEI 60317-0-4:1997 +A1:1999 +A2:2005)

Technische Lieferbedingungen für bestimmte
Typen von Wickeldrähten

Teil 0: Allgemeine Anforderungen

Hauptabschnitt 4: Flachdrähte aus Kupfer,
blank oder lackisoliert und umhüllt mit
Glasgewebe, imprägniert mit Harz oder Lack
(enthält Änderungen A1:2000 und A2:2005)
(IEC 60317-0-4:1997 +A1:1999 +A2:2005)

This European Standard was approved by CENELEC on 1998-01-01. Amendment A1 was approved by CENELEC on 2000-01-01. Amendment A2 was approved by CENELEC on 2005-11-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization

Comité Européen de Normalisation Electrotechnique

Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The texts of documents 55/560/FDIS, 55/591/FDIS and 55/610/FDIS, future amendments to IEC 60317-0-4:1990, prepared by IEC TC 55, Winding wires, were submitted to the IEC-CENELEC parallel vote.

These texts, together with those of IEC 60317-0-4:1990 and its amendments 1:1992 and 2:1993, were published by IEC as the second edition of IEC 60317-0-4 and were approved by CENELEC as EN 60317-0-4 on 1998-01-01.

This European Standard supersedes EN 60317-0-4:1994 and its amendment A2:1994.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-10-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, Annex ZA normative is and Annex A and Annex B are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60317-0-4:1997 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 55/691/FDIS, future amendment 1 to IEC 60317-0-4, prepared by IEC TC 55, Winding wires, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60317-0-4:1998 on 2000-01-01

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-10-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2003-01-01

Endorsement notice

The text of amendment 1:1999 to the International Standard IEC 60317-0-4:1997 was approved by CENELEC as an amendment to the European Standard without any modification.

Foreword to amendment A2

This amendment has been prepared by IEC technical committee 55: Winding wires.

The text of this amendment is based on the following documents:

FDIS	Report on voting
55/968/FDIS	55/979/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under “http://webstore.iec.ch” in the data related to the specific publication. At this date, the publication will be

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

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Introduction

A2 This part of IEC 60317 is one of a series that deals with insulated wires used for windings in electrical equipment. The series has three groups describing:

- 1) Winding wires — Test methods (IEC 60851);
- 2) Specifications for particular types of winding wires (IEC 60317);
- 3) Packaging of winding wires (IEC 60264). **A2**

1 Scope

A2 This part of IEC 60317 specifies general requirements of glass-fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire. **A2**

The range of nominal conductor dimensions is given in the relevant specification sheet.

A1 When reference is made to a winding wire according to a standard of the IEC 60317 series mentioned under clause 2, the following information is given in the description:

- reference to IEC specification;
- nominal conductor dimensions in millimetres (width × thickness);
- grade of coating and glass covering.

EXAMPLE: IEC 60317-31– 4,00 × 1,00 Grade 2G1 **A1**

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

A2 IEC 60317-31, *Specifications for particular types of winding wires — Part 31: Glass fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire, temperature index 180*

IEC 60317-32, *Specifications for particular types of winding wires — Part 32: Glass fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire, temperature index 155*

IEC 60317-33, *Specifications for particular types of winding wires — Part 33: Glass fibre wound resin or varnish impregnated, bare or enamelled rectangular copper wire, temperature index 200*

IEC 60851, *Methods of test for winding wires*

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

3 Definitions and general notes on methods of test, and appearance **A2**

3.1 Definitions

coating

a material which is deposited on a conductor or wire by a suitable means and then dried and/or cured

conductor

the bare metal after removal of the insulation

covering

a material which is wound, wrapped or braided around a bare or insulated conductor

crack

an opening in the insulation which expose the conductor to view at the stated magnification

enamelled wire

a wire coated with an insulation of cured resin

grade

the range of thickness of the insulation of a wire

insulation

a coating or covering on the conductor with the specific function of withstanding voltage

nominal conductor dimension

the designation of the conductor size in accordance with IEC 60317

** normal vision**

20/20 vision, with corrective lenses, if necessary 

winding wire

a wire used for winding a coil to provide a magnetic field

wire

a conductor coated or covered with an insulation

3.2 General notes on methods of test

All methods of test to be used for this standard are given in IEC 60851.

The clause numbers used in this standard are identical with the respective test numbers of IEC 60851.

In case of inconsistencies between the publication on methods of test and this standard, IEC 60317-0-4 shall prevail.

Where no specific range of nominal conductor dimensions is given for a test, the test applies to all nominal conductor dimensions covered by the specification sheet.

Unless otherwise specified, all tests shall be carried out at a temperature from 15 °C to 35 °C and a relative humidity from 45 % to 75 %. Before measurements are made, the specimens shall be preconditioned under these atmospheric conditions for a time sufficient to allow the specimens to reach stability.

The wire to be tested shall be removed from the packaging in such a way that the wire will not be subjected to tension or unnecessary bends. Before each test, sufficient wire should be discarded to ensure that any damaged wire is not included in the test specimens.

** 3.3 Appearance**

The fibrous covering shall be essentially smooth and continuous, and free from physical damage and foreign material when examined with normal vision, as wound on the original spool or reel.

NOTE Evidence of physical damage includes gashes, broken fibre strands, and the like. 

4 Dimensions

4.1 Conductor dimensions

The dimensions for widths and thickness of conductors of winding wires with rectangular cross-section recommended in this standard are taken from the R 20 and R 40 series according to ISO 3.

 Preferred sizes are combinations of width and thickness both according to the R 20 and R 40 series. 

Intermediate sizes are combinations of width or thickness according to the R 20 series with the other dimension according to the R 40 series.

This standard covers:

- widths from 2,00 mm up to and including 16,00 mm;
- thicknesses from 0,80 mm up to and including 5,60 mm¹⁾.

The ratio width/thickness shall be greater than or equal to 1,4 : 1 and shall not exceed 8 : 1.

The actual values of dimensions are given in Table 1²⁾.

The nominal cross-sectional areas for preferred sizes are given in Table 1 and the nominal cross-sectional areas for intermediate sizes are given in Annex A.

¹⁾ For thickness over 5,60 mm up to and including 10 mm and for widths over 16 mm up to and including 25 mm where, for technical reasons additional sizes may be needed, the R 40 series shall be used. The ratio width/thickness shall be within the specified limits and combinations of R 40 and R 40 are not allowed in the case of additional sizes.

²⁾ Dimensions according to R 20 series are printed in larger type.