BS EN 60317-50:2012

BSI Standards Publication

# Specifications for particular types of winding wires

## Part 50: Glass-fibre wound silicone resin or varnish impregnated, bare or enamelled round copper wire, temperature index 200



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## National foreword

This British Standard is the UK implementation of EN 60317-50:2012. It is identical to IEC 60317-50:2012. It supersedes BS EN 60317-50:2000 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/55, Winding wires.

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.**

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EUROPEAN STANDARD

NORME EUROPÉENNE

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# EN 60317-50

October 2012

ICS 29.060.10

Supersedes EN 60317-50:2000

English version

# Specifications for particular types of winding wires - Part 50: Glass-fibre wound silicone resin or varnish impregnated, bare or enamelled round copper wire, temperature index 200

(IEC 60317-50:2012)

Spécifications pour types particuliers de fils de bobinage - Partie 50: Fil de section circulaire en cuivre nu ou émaillé, recouvert d'un guipage de fibres de verre imprégnées de résine de silicone ou de vernis, indice de température 200 (CEI 60317-50:2012)

Technische Lieferbedingungen für bestimmte Typen von Wickeldrähten - Teil 50: Runddrähte aus Kupfer, blank oder lackisoliert, umhüllt mit Glasgewebe und imprägniert, Klasse 200 (IEC 60317-50:2012)



CENELEC

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

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

## Foreword

The text of document 55/1328/FDIS, future edition 2 of IEC 60317-50, prepared by IEC/TC 55 "Winding wires" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60317-50:2012.

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) | 2013-05-13 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2015-08-13 |

This document supersedes EN 60317-50:2000.

EN 60317-50:2012 includes the following significant technical changes with respect to EN 60317-50:2000:

- addition of requirements for appearance, new Subclause 3.3;
- addition of pin hole test requirements, Clause 23: Pin hole test.

This standard is to be read in conjunction with EN 60317-0-6:2001 + A1:2006.

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

## Endorsement notice

The text of the International Standard IEC 60317-50:2012 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

| | | |
|---|---|---|
| IEC 60264 Series | NOTE | Harmonised as EN 60264 Series (not modified). |
| IEC 60317 Series | NOTE | Harmonised as EN 60317 Series (not modified). |
| IEC 60851 Series | NOTE | Harmonised as EN 60851 Series (not modified). |

# Annex ZA
(normative)

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

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60317-0-6<br>+ A1 | 2001<br>2006 | Specifications for particular types of winding wires -<br>Part 0-6: General requirements -<br>Glass-fibre wound resin or varnish impregnated, bare or enamelled round copper wire | EN 60317-0-6<br>+ A1 | 2001<br>2006 |
| IEC 60317-13 | - | Specifications for particular types of winding wires -<br>Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200 | EN 60317-13 | - |
| IEC 60317-46 | - | Specifications for particular types of winding wires -<br>Part 46: Aromatic polyimide enamelled round copper wire, class 240 | EN 60317-46 | - |

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# INTRODUCTION

This part of IEC 60317 is one of a series which 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).

# SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

# Part 50: Glass-fibre wound silicone resin or varnish impregnated, bare or enamelled round copper wire, temperature index 200

## 1 Scope

This part of IEC 60317 specifies the requirements of glass-fibre wound resin or varnish impregnated, bare, grade 1 or grade 2 enamelled round copper winding wire, temperature index 200. The impregnating agent is silicone resin based.

NOTE For this type of wire, the heat shock test is inappropriate and therefore a heat shock temperature cannot be established. Consequently, a class based on the requirements for temperature index and heat shock temperature cannot be 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.

IEC 60317-0-6:2001, *Specifications for particular types of winding wires – Part 0-6: General requirements – Glass-fibre wound resin or varnish impregnated, bare or enamelled round copper wire*
Amendment 1:2006

IEC 60317-13, *Specifications for particular types of winding wires – Part 13: Polyester or polyesterimide overcoated with polyamide-imide, enamelled round copper wire, class 200*

IEC 60317-46, *Specifications for particular types of winding wires – Part 46: Aromatic polyimide enamelled round copper wire, class 240*

## 3 Terms and definitions, general notes and appearance

### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in 3.1 of IEC 60317-0-6:2001 apply.

### 3.2 General notes

#### 3.2.1 Methods of test

Subclause 3.2 of IEC 60317-0-6:2001 applies.

In case of inconsistency between IEC 60317-0-6 and this standard, IEC 60317-50 shall prevail.

#### 3.2.2 Winding wire

The enamelled wire should be based on one of the following standards and should be agreed between purchaser and supplier: IEC 60317-13 or IEC 60317-46.

The temperature index of the wire is dependent upon the type of impregnating agent used. The impregnating agent applied to the glass fibre should have a minimum temperature index of 200.

The glass-fibre covering may be

a) a single layer of glass fibre,
b) a double layer of glass fibre, with one layer applied in the direction opposite to that of the other layer.

The range of nominal conductor diameters covered by this standard is

– for bare covered wires (grade GL2): 0,500 mm up to and including 5,000 mm;
– for grade 1 enamelled wires (grades 1GL1 and 1GL2): 0,500 mm up to and including 1,600 mm;
– for grade 2 enamelled wires (grades 2GL1 and 2GL2): 0,500 mm up to and including 5,000 mm.

The nominal conductor diameters are specified in Clause 4 of IEC 60317-0-6:2001.

### 3.3 Appearance

Subclause 3.3 of IEC 60317-0-6:2001, Amendment 1:2006 applies.

## 4 Dimensions

Clause 4 of IEC 60317-0-6:2001 applies.

## 5 Electrical resistance

Clause 5 of IEC 60317-0-6:2011 applies.

## 6 Elongation

Clause 6 of IEC 60317-0-6:2001 applies, except for wires impregnated with silicone resins where the minimum elongation with glass-fibre covering shall not be less than the values given in Table 1.

**Table 1 – Elongation for wires impregnated with silicone resins**

| **Nominal conductor diameter** mm | | **With glass-fibre covering** % |
|---|---|---|
| Over | Up to and including | |
| 0,50 | 1,250 | 10 |
| 1,250 | 2,800 | 15 |
| 2,800 | 5,000 | 20 |

## 7 Springiness

Clause 7 of IEC 60317-0-6:2001 applies.

## 8 Flexibility and adherence

Clause 8 of IEC 60317-0-6:2001 applies.

## 9 Heat shock

Test inappropriate.

## 10 Cut-through

Test inappropriate.

## 11 Resistance to abrasion

Test inappropriate.

## 12 Resistance to solvents

Test inappropriate.

## 13 Breakdown voltage

Clause 13 of IEC 60317-0-6:2001 applies.

## 14 Continuity of insulation

Test inappropriate.

## 15 Temperature index

Clause 15 of IEC 60317-0-6:2001 applies.

## 16 Resistance to refrigerants

Test inappropriate.

## 17 Solderability

Test inappropriate.

## 18 Heat or solvent bonding

Test inappropriate.

## 19 Dielectric dissipation factor

Test inappropriate.

## 20 Resistance to hydrolysis and to transformer oil

Test inappropriate.

## 21 Loss of mass

Test inappropriate.

## 23 Pin hole test

Test inappropriate.

## 30 Packaging

Clause 30 of IEC 60317-0-6:2001 applies.

## Bibliography

IEC 60264 (all parts), *Packaging of winding wires*

IEC 60317 (all parts), *Specifications for particular types of winding wires*

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

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