IEC 60317-25

Edition 4.0 2020-06
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

Specifications for particular types of winding wires –
Part 25: Polyester or polyesterimide overcoated with polyamide-imide enamelled round aluminium wire, class 200

IEC 60317-25:2020-06 RLV(en)

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FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

International Standard IEC 60317-25 has been prepared by IEC technical committee 55: Winding wires.

This fourth edition cancels and replaces the third edition published in 2010. This edition constitutes a technical revision.

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

a) new 3.2.2 containing general notes on winding wire, formerly a part of the Scope;
b) revision to Clause 11 to take into account intermediate nominal conductor diameters;
c) revision to Clause 7 to indicate that the springiness test is inappropriate.
d) revision to Clause 16 to specify only the percentage of extractable matter and the minimum retained dielectric breakdown voltage.

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

FDIS	Report on voting
55/1840/FDIS	55/1857/RVD

Full information on the voting for the approval of this document 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.

This International Standard is to be used in conjunction with IEC 60317-0-3:2008, Amendment 1:2013 and Amendment 2:2019.

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

The numbering of clauses in this standard is not continuous from Clauses 21 through 30 in order to reserve space for possible future wire requirements prior to those for wire packaging.

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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This Part of IEC 60317 forms an element of a series of standards which deals with insulated wires used for windings in electrical equipment. It is composed of the following series:

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

SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

Part 25: Polyester or polyesterimide overcoated with polyamide-imide enamelled round aluminium wire, class 200

1 Scope

This part of IEC 60317 specifies the requirements of enamelled round aluminium winding wires of class 200 with a dual coating. The underlying coating is based on polyester or polyesterimide resin, which ~~may~~ can be modified provided it retains the chemical identity of the original resin and meets all specified wire requirements. The superimposed coating is based on polyamide-imide resin.

NOTE A modified resin is a resin that has undergone a chemical change, or contains one or more additives to enhance certain performance or application characteristics.

~~Class 200 is a thermal class that requires a minimum temperature index of 200 and a heat shock temperature of at least 220 °C.~~

~~The temperature in degrees Celsius corresponding to the temperature index is not necessarily that at which it is recommended that the wire be operated and this will depend on many factors, including the type of equipment involved.~~

The range of nominal conductor diameters covered by this document is:

– Grade 1: ~~0,400~~ 0, 250 mm up to and including 3,150 mm;
– Grade 2: ~~0,400~~ 0,250 mm up to and including 5,000 mm.

The nominal conductor diameters are specified in Clause 4 of IEC 60317-0-3:2008 and IEC 60317-0-3:2008/AMD1:2013.

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 60317-0-3: 2008, *Specifications for particular types of winding wires – Part 0-3: General requirements – Enamelled round aluminium wire*
IEC 60317-0-3: 2008/AMD1:2013
IEC 60317-0-3: 2008/AMD2:2019

~~IEC 60851-4:1996, *Winding wires – Test methods – Part 4: Chemical properties*~~
~~Amendment 1 (1997)~~
~~Amendment 2 (1997)~~

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

3 Terms, definitions ~~and~~, general notes ~~on methods of test~~ and appearance

3.1 Terms and definitions

~~For terms and definitions, see 3.1 of IEC 60317-0-3.~~

~~In case of inconsistencies between IEC 60317-0-3 and this standard, IEC 60317-25 shall prevail.~~

For the purposes of this document, the terms and definitions given in IEC 60317-0-3 apply.

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

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

3.2 General notes ~~on methods of test~~

~~For general notes on methods of test, see 3.2 of IEC 60317-0-3. In case of inconsistencies between IEC 60317-0-3 and this standard, IEC 60317-25 shall prevail.~~

3.2.1 Methods of test

Subclause 3.2.1 of IEC 60317-0-3:2008, IEC 60317-0-3:2008/AMD1:2013 and IEC 60317-0-3:2008/AMD2:2019 applies. In case of inconsistencies between IEC 60317-0-3 and this document, IEC 60317-25 shall prevail.

3.2.2 Winding wire

Class 200 is a thermal class that requires a minimum temperature index of 200 and a heat shock temperature of at least 220 °C.

The temperature in degrees Celsius corresponding to the temperature index is not necessarily that at which it is recommended that the wire be operated and this will depend on many factors, including the type of equipment involved.

3.3 Appearance

Subclause 3.3 of IEC 60317-0-3:2008 applies.

4 Dimensions

Clause 4 of IEC 60317-0-3:2008 and IEC 60317-0-3:2008/AMD1:2013 applies.

5 Electrical resistance

Clause 5 of IEC 60317-0-3:2008 and IEC 60317-0-3:2008/AMD2:2019 applies.

6 Elongation

Clause 6 of IEC 60317-0-3:2008 applies.

7 Springiness

~~Test appropriate but no requirements specified.~~ Test inappropriate.

8 Flexibility and adherence

Clause 8 of IEC 60317-0-3:2008 applies.

9 Heat shock

Clause 9 of IEC 60317-0-3:2008 applies. The minimum heat shock temperature shall be 220 °C.

10 Cut-through

~~Test procedure and requirements under consideration.~~

No failure shall occur within 2 min at 320 °C.

11 Resistance to abrasion (nominal conductor diameters up to and including 2,500 mm)

The wire shall meet the requirements given in Table 1.

For intermediate nominal conductor diameters, the value of the next largest nominal conductor diameter shall be taken.

Table 1 – Resistance to abrasion

Nominal conductor diameter	Grade 1		Grade 2	
	Minimum average force to failure	Minimum force to failure of each measurement	Minimum average force to failure	Minimum force to failure of each measurement
mm	N	N	N	N
0,400	1,95	1,65	3,15	2,65
0,450	2,10	1,75	3,40	2,85
0,500	2,25	1,90	3,60	3,05
0,560	2,40	2,05	3,85	3,25
0,630	2,55	2,20	4,15	3,50
0,710	2,75	2,35	4,45	3,75
0,800	2,95	2,50	4,75	4,05
0,900	3,15	2,70	5,10	4,30
1,000	3,40	2,90	5,45	4,60
1,120	3,70	3,10	5,80	4,90
1,250	3,95	3,35	6,25	5,25
1,400	4,25	3,60	6,65	5,45
1,600	4,60	3,90	7,15	5,85
1,800	5,00	4,20	7,70	6,50
2,000	5,30	4,50	8,20	6,95
2,240	5,70	4,80	8,75	7,40
2,500	6,10	5,15	9,30	7,90
~~For intermediate nominal conductor diameters, the value of the next largest nominal conductor diameter shall be taken.~~				

12 Resistance to solvents

Clause 12 of IEC 60317-0-3:2008 applies.

13 Breakdown voltage

Clause 13 of IEC 60317-0-3:2008 and IEC 60317-0-3:2008/AMD1:2013 applies. The elevated temperature shall be 200 °C.

14 Continuity of insulation

Clause 14 of IEC 60317-0-3:2008 applies.

15 Temperature index

Clause 15 of IEC 60317-0-3:2008 and IEC 60317-0-3:2008/AMD1:2013 applies. The minimum temperature index shall be 200.