IEC 60317-68

Edition 1.2 2024-06
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

colour inside

Specifications for particular types of winding wires – Part 68: Polyvinyl acetal enamelled rectangular aluminium wire, class 120

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CONTENTS

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In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60317-68 has been prepared by IEC technical committee 55: Winding wires.

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

This International Standard is to be read in conjunction with IEC 60317-0-9:2015 and its Amendment 1:2024.

A list of all parts in the IEC 60317, 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 and its amendments will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- revised.

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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. The series has three groups describing:

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 68: Polyvinyl acetal enamelled rectangular aluminium wire, class 120

1 Scope

This part of IEC 60317 specifies the requirements of enamelled rectangular aluminium winding wire of class 120 with a sole coating based on polyvinyl acetal or polyvinyl formal resin, which may be modified providing it retains the chemical identity of the original resin and meets all specified wire requirements.

NOTE 1 A modified resin is a resin that has undergone a chemical change, or contains one or more additives to enhance certain performance of application characteristics.

NOTE 2 Polyvinyl acetal is a general name for a family of thermoplastic vinyl resins produced by the condensation of polyvinyl alcohol with an aldehyde. Examples are polyvinyl acetal, polyvinyl formal and polyvinyl butyral.

The range of nominal conductor dimensions covered by this standard is

	Minimum	Maximum
Width	2,0 mm	16,0 mm
Thickness	0,80 mm	5,60 mm

Wires of grade 1 and grade 2 are included in this part of IEC 60317 and apply to the complete range of conductors.

The specified combinations of width and thickness as well as the specific ratio width/thickness are given in IEC 60317-0-9.

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 60317-0-9:2015, *Specifications for particular types of winding wires – Part 0-9: General requirements – Enamelled rectangular aluminium wire*.
IEC 60317-0-9:2015/AMD1:*2024*

IEC 60851-4:2016, *Winding wires – Test methods – Part 4: Chemical properties*

3 Terms, definitions, general notes and appearance

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60317-0-9~~:2015~~ 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

3.2.1 Methods of test

Subclause 3.2.1 of IEC 60317-0-9:2015 and IEC 60317-0-9:2015/AMD1:2024 applies.

In case of inconsistencies between IEC 60317-0-9 and this ~~part of IEC 60317~~ document, ~~the latter~~ IEC 60317-68 shall prevail.

3.2.2 Winding wire

Class 120 is a thermal class that requires a minimum temperature index of 120 and a heat shock resistance of at least 155 °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

See 3.3 of IEC 60317-0-9:2015.

4 Dimensions

Clause 4 of IEC 60317-0-9:2015 applies.

5 Electrical resistance

Clause 5 of IEC 60317-0-9:2015 and IEC 60317-0-9:2015/AMD1:2024applies.

6 Elongation

Clause 6 of IEC 60317-0-9:2015 applies.

7 Springiness

~~Test appropriate but no requirements specified.~~

Test inappropriate.

8 Flexibility and adherence

8.1 Mandrel winding test

The coating shall show no crack after the wire has been bent flatwise and edgewise on a mandrel with a diameter as specified in Table 1.

Table 1 – Mandrel winding

Wire bent on		Mandrel diameter
Width	**Sizes up to and including 10 mm**	2 x width
	Sizes over 10 mm	3 x width
Thickness	**All sizes**	2 x thickness

8.2 Adherence test

The wire shall be stretched by 15 %. The distance of loss of adhesion shall be less than 1 x width.

9 Heat shock

Clause 9 of IEC 60317-0-9:2015 applies. The minimum heat shock temperature shall be 155 °C.

10 Cut-through

Test inappropriate

11 Resistance to abrasion

Test inappropriate

12 Resistance to solvents

Clause 12 of IEC 60317-0-9:2015 applies.

13 Breakdown voltage

Clause 13 of IEC 60317-0-9:2015 applies. The elevated temperature shall be 120 °C.

14 Continuity of insulation

Test inappropriate

15 Temperature index

Clause 15 of IEC 60317-0-9:2015 applies. The minimum temperature index shall be 120.

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 transformer oil

Test according to Clause 6 of IEC 60851-4:2016 appropriate. Test requirements are under consideration.

21 Loss of mass

Test inappropriate

23 Pin hole test

Test inappropriate

22 Packaging

Clause 30 of IEC 60317-0-9:2015 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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