IEC 60317-18

Edition 3.1 2010-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Specifications for particular types of winding wires – Part 18: Polyvinyl acetal enamelled rectangular copper wire, class 120

Spécifications pour types particuliers de fils de bobinage – Partie 18: Fil de section rectangulaire en cuivre émaillé avec acétal de polyvinyle, classe 120

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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.
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This consolidated version of IEC 60317-18 consists of the third edition (2004) [documents 55/909/FDIS and 55/915/RVD] and its amendment 1 (2009) [documents 55/1123/CDV and 55/1151/RVC]. It bears the edition number 3.1.

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 60317-18 has been prepared by IEC technical committee 55: Winding wires.

The main changes with respect to the previous edition are listed below:

– new requirements for appearance, Subclause 3.2, added;
– new pin hole test, Clause 23, added.

This International Standard is to be read in conjunction with IEC 60317-0-2.

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

The committee has decided that the contents of the base publication and its amendments 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.

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 publication using a colour printer.

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 18: Polyvinyl acetal enamelled rectangular copper wire, class 120

1 Scope

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

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 120 is a thermal class that requires a minimum temperature index of 120 and a heat shock temperature 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.

The range of nominal conductor dimensions covered by this standard is as follows:

– width: minimum 2,0 mm; maximum 16,0 mm;
– thickness: minimum 0,80 mm; maximum 5,60 mm.

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

The specified combinations of width and thickness as well as the specified ratio width/thickness are given in IEC 60317-0-2.

2 Normative references

The following referenced documents are indispensable for the application 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 60317-0-2, *Specifications for particular types of winding wires – Part 0: General requirements – Section 2: Enamelled rectangular copper wire*

IEC 60851-4:1996, *Methods of test for winding wires – Part 4: Chemical properties*

3 Definitions and general notes on methods of test and appearance

3.1 Definitions and general notes on methods of test

For definitions and general notes on methods of test, see Clause 3 of IEC 60317-0-2.

In case of inconsistencies between IEC 60317-0-2 and this standard, IEC 60317-18 shall prevail.

3.2 Appearance

See Clause 3 of IEC 60317-0-2.

4 Dimensions

See Clause 4 of IEC 60317-0-2.

5 Electrical resistance

See Clause 5 of IEC 60317-0-2.

6 Elongation

See Clause 6 of IEC 60317-0-2.

7 Springiness

See Clause 7 of IEC 60317-0-2.

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 × width
	Sizes over 10 mm	3 × width
Thickness	All dimensions	2 × thickness

8.2 Stretching test

The wire shall be stretched by 20 %.

The distance of loss of adhesion shall be less than 1 × width.

9 Heat shock

See Clause 9 of IEC 60317-0-2, where the minimum heat shock temperature shall be 155 °C.

10 Cut-through

Test requirements under consideration.

11 Resistance to abrasion

Test inappropriate.

12 Resistance to solvents

See Clause 12 of IEC 60317-0-2.

13 Breakdown voltage

See Clause 13 of IEC 60317-0-2, where the elevated temperature shall be 120 °C.

14 Continuity of insulation

Test inappropriate.

15 Temperature index

See Clause 15 of IEC 60317-0-2, where 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 requirement under consideration.~~ Test according to Clause 6 of IEC 60851-4 is appropriate. Test requirements are under consideration.

21 Loss of mass

Test inappropriate.