

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Specifications for particular types of winding wires –
Part 17: Polyvinyl acetal enamelled rectangular copper wire, class 105

Spécifications pour types particuliers de fils de bobinage –
Partie 17: Fil de section rectangulaire en cuivre émaillé avec acétal de
polyvinyle, classe 105



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATIONS FOR PARTICULAR
TYPES OF WINDING WIRES –****Part 17: Polyvinyl acetal enamelled rectangular
copper wire, class 105**

FOREWORD

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

This third edition of IEC 60317-17 cancels and replaces the second edition issued in 1990, its Amendment 1 (1997) and its Amendment 2 (2005). This edition constitutes a technical revision.

The main change with respect to the previous edition is listed below:

- Clause 20: reference to the transformer oil resistance test method in IEC 60851-4.

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

FDIS	Report on voting
55/1180/FDIS	55/1191/RVD

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

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

This International Standard is to be read in conjunction with IEC 60317-0-2 (1997).

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability 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- withdrawn,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

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 and test methods (IEC 60851);
- 2) specifications for particular types of winding wire (IEC 60317);
- 3) packaging of winding wires (IEC 60264).

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SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

Part 17: Polyvinyl acetal enamelled rectangular copper wire, class 105

1 Scope

This part of IEC 60317 specifies the requirements of enamelled rectangular copper winding wire of class 105 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 105 is a thermal class that requires a minimum temperature index of 105 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

- width: min. 2,00 mm max. 16,00 mm;
- thickness: min. 0,80 mm max. 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 60317-0-2:1997, *Specifications for particular types of winding wires – Part 0-2: General requirements – Enamelled rectangular copper wire*
Amendment 1 (1999)
Amendment 2 (2005)

IEC 60851-4:1996, *Methods of test for winding wires – Part 4: Chemical properties*
Amendment 1 (1997)
Amendment 2 (2005)

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 60317-0-2.

In case of inconsistencies between IEC 60317-0-2 and this standard, IEC 60317-17 shall prevail.

3.2 General notes on methods of test

For general notes on methods of test, see 3.2 of IEC 60317-0-2. In case of inconsistencies between IEC 60317-0-2 and this standard, IEC 60317-17 shall prevail.

3.3 Appearance

See 3.3 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.

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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 1x 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 inappropriate.

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 105 °C.

14 Continuity of insulation

Test inappropriate. <https://standards.iteh.ai/catalog/standards/sist/6f98ae1f-1d7e-4f0d-bf23-fb82b6126140/iec-60317-17-2010>

15 Temperature index

See Clause 15 of IEC 60317-0-2, where the minimum temperature index shall be 105.

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 appropriate. Test requirements are under consideration.

21 Loss of mass

Test inappropriate.

23 Pin hole test

Test inappropriate.

30 Packaging

See Clause 30 of IEC 60317-0-2.

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