

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Specifications for particular types of winding wires –
Part 42: Polyester-amide-imide enamelled round copper wire, class 200**

**Spécifications pour types particuliers de fils de bobinage –
Partie 42: Fil de section circulaire en cuivre émaillé avec polyester-amide-imide,
classe 200**

IEC 60317-42:1997

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SPECIFICATIONS FOR PARTICULAR TYPES
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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 60317-42 has been prepared by IEC technical committee 55: Winding wires.

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INTRODUCTION

This part of IEC 60317 forms an element of a series which deals with insulated wires used for windings in electrical equipment. The series has three groups describing:

- 1) methods of test (IEC 60851);
- 2) specifications (IEC 60317);
- 3) packaging (IEC 60264).

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SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

Part 42: Polyester-amide-imide enamelled round copper wire, class 200

1 Scope

This part of IEC 60317 specifies the requirements of enamelled round copper winding wire of class 200 with a sole coating based on polyester-amide-imide 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 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 part is:

- Grade 1: 0,018 mm up to and including 1,600 mm,
- Grade 2: 0,025 mm up to and including 5,000 mm.

The nominal conductor diameters are specified in clause 4 of IEC 60317-0-1.

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 317-0-1: 1990, Specifications for particular types of winding wires – Part 0: General requirements – Section 1: Enamelled round copper wire~~

IEC 60317-0-1:2008, Specifications for particular types of winding wires – Part 0-1: General requirements – Enamelled round copper wire

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 60317-0-1.

In case of inconsistencies between IEC 60317-0-1 and this standard, IEC 60317-42 shall prevail.

3.2 Appearance

See Subclause 3.3 of IEC 60317-0-1.

4 Dimensions

See clause 4 of IEC 60317-0-1.

5 Electrical resistance

See clause 5 of IEC 60317-0-1.

6 Elongation

See clause 6 of IEC 60317-0-1.

7 Springiness

See clause 7 of IEC 60317-0-1.

8 Flexibility and adherence

See clause 8 of IEC 60317-0-1, where the constant K used for the calculation of the number of revolutions for the peel test shall be 110 mm.

9 Heat shock

See clause 9 of IEC 60317-0-1, where the minimum heat shock temperature shall be 220 °C.

10 Cut-through

No failure shall occur within 2 min at 300 °C.

11 Resistance to abrasion (nominal conductor diameters from 0,250 mm up to and including 2,500 mm)

The wire shall meet the requirements given in table 1.

Table 1 – Resistance to abrasion

| Nominal conductor diameter mm | Grade 1 | | Grade 2 | |
|----------------------------------|---------------------------------------|---|---------------------------------------|---|
| | Minimum average force to failure N | Minimum force to failure of each measurement N | Minimum average force to failure N | Minimum force to failure of each measurement N |
| 0,250 | 3,00 | 2,55 | 4,90 | 4,15 |
| 0,280 | 3,25 | 2,75 | 5,25 | 4,45 |
| 0,315 | 3,50 | 2,95 | 5,65 | 4,80 |
| 0,355 | 3,75 | 3,20 | 6,05 | 5,15 |
| 0,400 | 4,05 | 3,45 | 6,50 | 5,50 |
| 0,450 | 4,35 | 3,70 | 7,00 | 5,90 |
| 0,500 | 4,65 | 3,95 | 7,50 | 6,35 |
| 0,560 | 5,00 | 4,25 | 8,00 | 6,80 |
| 0,630 | 5,35 | 4,55 | 8,60 | 7,30 |
| 0,710 | 5,70 | 4,85 | 9,20 | 7,80 |
| 0,800 | 6,10 | 5,15 | 9,90 | 8,40 |
| 0,900 | 6,55 | 5,55 | 10,6 | 9,00 |
| 1,000 | 7,05 | 5,95 | 11,3 | 9,60 |
| 1,120 | 7,60 | 6,45 | 12,1 | 10,2 |
| 1,250 | 8,20 | 6,05 | 12,9 | 11,0 |
| 1,400 | 8,80 | 7,45 | 13,9 | 11,8 |
| 1,600 | 9,45 | 8,00 | 14,9 | 12,6 |
| 1,800 | – | – | 16,0 | 13,5 |
| 2,000 | – | – | 17,1 | 14,4 |
| 2,240 | – | – | 18,2 | 15,4 |
| 2,500 | – | – | 19,4 | 16,4 |

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

IEC 60317-42:1997

<https://standards.iteh.ai/standards/iec/60317-42:1997>**12 Resistance to solvents**

See clause 12 of IEC 60317-0-1.

13 Breakdown voltage

See clause 13 of IEC 60317-0-1, where the elevated temperature shall be 200 °C.

14 Continuity of insulation

See clause 14 of IEC 60317-0-1.

15 Temperature index

See clause 15 of IEC 60317-0-1, where the minimum temperature index shall be 200.

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 inappropriate.

21 Loss of mass

Test inappropriate.

~~**22 High temperature failure**~~

~~Test appropriate but no requirements specified.~~

23 Pin hole test

See Clause 23 of IEC 60317-0-1.

30 Packaging

See clause 30 of IEC 60317-0-1.



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