



BSI Standards Publication

Specifications for particular types of winding wires

Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200

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National foreword

This British Standard is the UK implementation of EN 60317-13:2010. It is identical to IEC 60317-13:2010. It supersedes BS EN 60317-13:1995 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/55, Winding wires.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Amendments issued since publication

Amd. No.	Date	Text affected
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60317-13

May 2010

ICS 29.060.10

Supersedes EN 60317-13:1994 + A1:1997 + A2:1998

English version

**Specifications for particular types of winding wires -
Part 13: Polyester or polyesterimide overcoated with polyamide-imide
enamelled round copper wire, class 200
(IEC 60317-13:2010)**

Spécifications pour types particuliers
de fils de bobinage -
Partie 13: Fil de section circulaire
en cuivre émaillé avec polyester
ou polyesterimide et avec surcouche
polyamide-imide, classe 200
(CEI 60317-13:2010)

Technische Lieferbedingungen
für bestimmte Typen von Wickeldrähten -
Teil 13: Runddrähte aus Kupfer,
lackisoliert mit Polyester
oder Polyesterimid und darüber
mit Polyamidimid, Klasse 200
(IEC 60317-13:2010)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 55/1179/FDIS, future edition 3 of IEC 60317-13, prepared by IEC TC 55, Winding wires, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60317-13 on 2010-05-01.

This European Standard supersedes EN 60317-13:1994 + A1:1997 + A2:1998.

The main changes with respect to EN 60317-13:1994 and its amendments are listed below:

- new requirements for appearance;
- reference to new resistance to refrigerants test in IEC 60851-4;
- deletion of high temperature failure requirement;
- new pin hole test requirements.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2011-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60317-13:2010 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60317-0-1	2008	Specifications for particular types of winding wires - Part 0-1: General requirements - Enamelled round copper wire	EN 60317-0-1	2008
IEC 60851-4	1996	Winding wires - Test methods -	EN 60851-4	1996
+ A1	1997	Part 4: Chemical properties	+ A1	1997
+ A2	2005		+ A2	2005

CONTENTS

INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms, definitions and general notes on methods of test and appearance	6
3.1 Terms and definitions	6
3.2 General notes on methods of test.....	7
3.3 Appearance	7
4 Dimensions	7
5 Electrical resistance	7
6 Elongation	7
7 Springiness	7
8 Flexibility and adherence.....	7
9 Heat shock	7
10 Cut-through	7
11 Resistance to abrasion (nominal conductor diameters from 0,250 mm up to and including 2,500 mm)	7
12 Resistance to solvents.....	8
13 Breakdown voltage	8
14 Continuity of insulation	8
15 Temperature index	8
16 Resistance to refrigerants.....	8
17 Solderability	9
18 Heat or solvent bonding.....	9
19 Dielectric dissipation factor.....	9
20 Resistance to transformer oil	9
21 Loss of mass	9
23 Pin hole test	9
30 Packaging	9
Table 1 – Resistance to abrasion.....	8

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 methods of test (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 13: Polyester or polyesterimide overcoated with polyamide-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 dual coating. The underlying coating is based on polyester or polyesterimide resin, which may be modified providing 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 a nominal conductor diameters covered by this standard is as follows:

- Grade 1: 0,050 mm up to and including 2,000 mm;
- Grade 2: 0,050 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 60317-0-1:2008, *Specifications for particular types of winding wires – Part 0-1: General requirements – Enamelled round copper wire*

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 60317-0-1. In case of inconsistencies between IEC 60317-0-1 and this standard, IEC 60317-13 shall prevail.

.....

3.2 General notes on methods of test

For general notes on methods of test, see 3.2 of IEC 60317-0-1. In case of inconsistencies between IEC 60317-0-1 and this standard, IEC 60317-13 shall prevail.

3.3 Appearance

See 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 320 °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	6,95	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	10,1	8,60	16,0	13,5
2,000	10,9	9,20	17,1	14,4
2,240	–	–	18,2	15,4
2,500	–	–	19,4	16,4

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

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

When tested according to IEC 60851-4, Clause 4, the percentage of extractable matter shall not exceed 0,5 %. The requirement for breakdown voltage shall be 75 % of the minimum specified value.

17 Solderability

Test inappropriate.

18 Heat or solvent bonding

Test inappropriate.

19 Dielectric dissipation factor

Test inappropriate.

20 Resistance to transformer oil

Test appropriate but no requirements specified.

21 Loss of mass

Test inappropriate.

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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