

IS 13730 (Part 34): 2000
IEC 60317-34 (1997)

भारतीय मानक

(Reaffirmed 2005)

कुंडलन तारों के विशेष प्रकारों की विशिष्टि

भाग 34 पोलिएस्टर इन्वैलप्ट गोल तांबे के तार वर्ग 130 एल

(पहला पुनरीक्षण)

Indian Standard

SPECIFICATIONS FOR PARTICULAR TYPES
OF WINDING WIRES

PART 34 POLYESTER ENAMELLED ROUND COPPER WIRE, CLASS 130 L

(*First Revision*)

ICS 55.020.29.060.10

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Price Group 2

NATIONAL FOREWORD

This Indian Standard (Part 34)(First Revision) which is identical with IEC 60317-34 (1997) 'Specifications for particular types of winding wires — Part 34 : Polyester enamelled round copper wire, class 130 L' issued by the International Electrotechnical Commission was adopted by the Bureau of Indian Standards on the recommendation of the Winding Wires Sectional Committee (ET 33) and approval of the Electrotechnical Division Council.

This standard was first published in 1993 as a dual number standard with the corresponding IEC publication. IEC had revised this standard in 1997 which constitutes a technical revision and changing the designation of the wire as 130 L and the requirements of polyester enamelled round copper wire, class 130 is now covered in IEC **60317-45**. This standard was also adopted as Indian Standard and the requirements of polyester enamelled round copper wire, class 130 are now covered in IS 13730 (Part 45): **1999/IEC 60317-45** (1999).

The text of IEC standards has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standards' appear referring to this standard, they should be read as 'Indian Standard', and
- b) Comma (,) has been used as a **decimal** marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

Only the English text of the International Standard has been retained while adopting it as Indian Standard.

CROSS REFERENCES

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 317-0-1 : 1990 Specifications for particular types of winding wires — Part 0 : General requirements — Section 1 : Enamelled round copper wire	IS 13730 (Part 0/Sec 1) : 1993/IEC 317-0-1 (1990) Specifications for particular types of winding wires: Part 0 General requirements, Section 1 Enamelled round copper wire	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES

PART 34 POLYESTER ENAMELLED ROUND COPPER WIRE, CLASS 130 L

(First Revision)

1 Scope

This part of IEC 317 specifies the requirements of enamelled round copper winding wire of class 130 L with a sole coating **based** on polyester 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 130 L is a thermal class that requires a minimum temperature index of 130 and a heat shock temperature of at least 155 °C.

NOTE – This type of enamelled wire has lower heat shock performance compared to polyester enamelled round copper wire class 130 according to IEC 317-45.

The temperature in degrees Celsius corresponding to the temperature index is not necessarily that at which it is recommended that the wire be used and this will depend on many factors, including the type of equipment involved.

The range of nominal conductor diameters covered by this standard is:

- grade 1: 0,050 mm up to and including 3,150 mm;
- grade 2: 0,050 mm up to and including 5,000 mm.

The nominal conductor diameters are specified in clause 4 of IEC 317-0-I.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of IEC 317. At the time of publication, the edition indicated was valid. All normative documents are subject to revision, and parties to agreements based on this **part of IEC 317** are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. Members of IEC and **ISO** maintain registers of currently valid International Standards.

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

3 Definitions and general notes on methods of test

For the purpose of this part of IEC 317, the definitions and general notes on methods of test of clause 3 of IEC 317-0-I apply.

In case of inconsistencies between IEC 317-0-I and this part of IEC 317, the latter shall prevail.

4 Dimensions

See clause 4 of IEC 317-0-1.

5 Electrical resistance

See clause 5 of IEC 317-0-1.

6 Elongation

See clause 6 of IEC 317-0-1.

7 Springiness

See clause 7 of IEC 317-0-1.

6 Flexibility and adherence

See clause 8 of IEC 317-O-1, where the constant K used for the calculation of the number of revolutions for the peel test shall be 130 mm.

9 Heat shock

See clause 9 of IEC 317-O-1, where the minimum heat shock temperature shall be 155 °C.

9.1 Nominal conductor diameters up to and including 7,600 mm

The coating shall show no crack. The mandrel diameter shall be as specified in table 1.

Table 1 – Heat shock

Nominal conductor diameter mm		Mandrel diameter . mm
Over	Up to and including	
	0,050	0,150
0,050	0,160	3 D
0,160	0,250	4 D
0,250	1,000	6 D
1,000	1,600	7 D

* D is the **overall diameter** of the wire

9.2 Nominal conductor diameters over 1,600 mm

The coating shall show no crack after having **been elongated 10 %**.

10 Cut-through

No failure shall occur within 2 min at 240 °C.

11 Resistance to abrasion (nominal conductor diameters from 0,250 mm up to and including 2,000 mm)

The wire shall meet the requirements given in table 2.

Table 2 – 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	2,70	2,30	4,50	3,80
0,260	2,90	2,45	4,80	4,10
0,315	3,15	2,65	5,20	4,40
0,355	3,40	2,85	5,60	4,75
0,400	3,65	3,05	6,00	5,10
0,450	3,90	3,30	6,45	5,45
0,500	4,20	3,55	6,90	5,85
0,560	4,50	3,80	7,40	6,25
0,630	4,85	4,10	7,90	6,70
0,710	5,20	4,40	8,50	7,20
0,800	5,60	4,70	9,10	7,70
0,900	6,05	5,10	9,70	8,20
1,000	6,55	5,50	10,4	8,80
1,120	7,05	5,95	11,1	9,40
1,250	7,60	6,45	11,9	10,0
1,400	8,20	6,95	12,7	10,8
1,600	8,90	7,55	13,7	11,6
1,800	9,60	8,15	14,7	12,4
2,000	10,3	8,75	15,7	13,3

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

12 Resistance to solvents

See clause 12 of IEC 317-0-1.

13 Breakdown voltage

See clause 13 of IEC 317-0-1, where the elevated temperature shall be 130 °C.

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14 Continuity of insulation

See clause 14 of IEC 317-0-I.

15 Temperature index

See clause 15 of IEC 317-O-1, where the minimum temperature index shall be 130.

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.

30 Packaging

See clause 30 of IEC 317-0-I.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. **Standards** are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken **up for** revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments **or edition by referring** to the latest issue of 'BIS Handbook' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from **Doc** : No. ET 33 (3665).

Amendments Issued Since Publication

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