PRODUCT MANUAL FOR

SPECIFICATIONS FOR PARTICULAR TYPES

OF WINDING WIRES:

Polyester Enamelled Round Copper Wire Class 130 L

ACCORDING TO IS 13730 (PART 34): 2000

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	**Product**	:	IS 13730 (Part 34):2020/ IEC 60317-34: 1997
	Title	:	Specifications for particular types of Winding Wires: Part 34 Polyester Enamelled Round Copper Wire, Class 130 L
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	--
b)	**Grouping guidelines**	:	Please refer ANNEX – A
c)	**Sample Size**	:	50 meters
3.	**List of Test Equipment**	:	Please refer ANNEX – B
4.	**Scheme of Inspection and Testing**	:	Please refer ANNEX – C
5.	**Possible tests in a day**	:	Please refer ANNEX – D
6.	**Scope of the Licence:**		
	Licence is granted to use Standard Mark as per IS 13730 (Part 34):2000 with the following scope:		
	Name of the product	Polyester Enamelled Round Copper Wire, Class 130L	

	Grade	
	Nominal Conductor Diameter	

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ANNEX A

Grouping Guidelines

1. IS 13730 (Part 34):2000 covers two grades of winding wires as given below:

Grade	**Range of Nominal Conductor Diameters**
Grade 1	0.050 mm up to and including 3.150 mm
Grade 2	0.050 mm up to and including 5.000 mm

2. The grouping guidelines as given below shall be followed for GoL/CSoL:

   a. Sample with lowest and highest Nominal Conductor Diameter from each Grade shall be tested to cover the complete range of Nominal Conductor Diameter of that particular Grade. All applicable requirements as per the Standard shall be tested on these sample(s) except Temperature Index test which shall be carried out as per the details in Sr. No. 2 (b) to cover complete range of Nominal Conductor Dia. of that particular Grade for consideration for GoL/CSoL.

   b. Temperature Index test shall be carried out on sample of any size as specified in IS 5825: 2024 of Grade 2.
   Note: As per the above, a manufacturer applying for a license for Grade 1 having any nominal conductor diameter needs to also manufacture a Grade 2 wire, having a nominal conductor diameter between 0.224 and 2.65 mm (both inclusive) to carry out Temperature Index Test for ensuring compliance to the requirement of the Standard.

3. The Firm shall declare the Varieties including the Nominal Conductor Diameter of wires they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

4. During operation of the Licence, BO shall ensure that all the Varieties covered in the Licence are tested in rotation to the extent possible.

ANNEX B

List Of Test Equipment

Major test equipment required to test as per the Indian Standard

S. No.	Test Equipment	Tests used in with Clause Reference
1.	Micrometer	Dimensions, Cl. 4
2.	Milli-ohm meter	Electrical Resistance, Cl. 5
3.	Elongation tester or Tensile Testing Machine	Elongation, Cl. 6
4.	Springiness tester with mandrels and weights	Springiness, Cl. 7
5.	Equipment for Mandrel winding and stretching tests, elongation device, mandrels, Jerk Tester with appropriate magnifying glass, Peel Tester with loads	Flexibility and Adherence, Cl. 8
6.	Electric Oven with Thermostatic Control and Mandrels	Heat Shock, Cl. 9
7.	Cut Through Tester, Compression device, transformer, overcurrent device, resistor	Cut-through, Cl. 10
8.	Abrasion Testing Machine	Resistance to Abrasion, Cl. 11
9.	White spirit, xylene, butanol, pencil set for hardness	Resistance to Solvents, Cl. 12
10.	Breakdown Voltage Tester, Electric Oven with Thermostatic Control and forces air circulation, test transformer, fault detection circuit, polished metal cylinder, twisting device, strips of metal foil, metal shots, metal mandrel	Breakdown voltage, Cl. 13
11.	Continuity tester with faults counter, Sodium Sulphate solution, felt pads	Continuity of Insulation, Cl 14
12.	Temperature Index Test Apparatus	Temperature Index, Cl. 15
13.	Facility to maintain temperature from 15 °C to 35 °C and relative humidity from 45 % to 75 %.	General conditions of test

The above list is indicative only and may not be treated as exhaustive.

ANNEX C
Scheme of Inspection and Testing

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan that is a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *All coils/spools/reels of winding wires of the same size (Nominal Conductor diameter) and grade manufactured on the same set of machines from the same consignment of raw materials in a day shall constitute one control unit..*

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING

2.1 It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.2 For the guidance of manufacturers, Table 1 of this Manual provides the recommended levels of control. Column 2 of Table 1 indicates routine tests where test equipment is required in house as "R" or other tests which can be subcontracted as "S". Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as "R" in Column 2 of Table 1) is also optional.

2.3.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.4 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as "R" in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.4.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.5 TEST RECORDS

The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING

3.1 The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each *coils/spools/reels* provided always that the material so marked conforms to each requirement of the Standard.

3.2 Packing and Marking shall be done as per Cl. 30 of IS 13730 (Part 34): 2000.

3.3 Additional Marking requirements: The following additional marking details shall be marked on the packaging of each of the *coils/spools/reels*.

"For BIS certification details please visit www.bis.gov.in"

4. HYGIENIC CONDITIONS (if applicable) – NA.

5. REJECTION

All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Methods**			**No. of Sample (s)**	**Frequency**	**Remarks**
		Clause	**Reference**				
3	Appearance	3.3	IS 13730 (Part 0/Sec 1):2018	--	Each coil / spool / reel		--
4	Dimensions	4	IS 13730 (Part 0/Sec 1):2018	R	One	Each coil / spool / reel	--
		3	IS 13778 (Part 2):2013				
5	Electrical Resistance	5	IS 13730 (Part 0/Sec 1):2018	R	One	Each Control Unit	--
		3	IS 13778 (Part 5):2012				
6	Elongation	6	IS 13730 (Part 0/Sec 1):2018	R	Three	Each Control Unit	--
		4	IS 13778 (Part 3):2024				
7	Springiness	7	IS 13730 (Part 0/Sec 1):2018	R	Three	Each Control Unit	--
		5	IS 13778 (Part 3):2024				
8	Flexibility and Adherence	8	IS 13730 (Part 0/Sec 1):2018	R	Three	Each Control Unit	--
		6	IS 13778 (Part 3):2024				
9	Heat Shock	9	IS 13730 (Part 0/Sec 1):2018	R	Three	Each Control Unit	--
		3	IS 13778 (Part 6):2018				
10	Cut-through	4	IS 13778 (Part 6):2018	R	One	Each Control Unit	
11	Resistance to Abrasion	11	IS 13730 (Part 0/Sec 1):2018	R	One	Each Control Unit	--
		7	IS 13778 (Part 3):2024				
12	Resistance to Solvents	12	IS 13730 (Part 0/Sec 1):2018	R	Three	Each Control Unit	--
		3	IS 13778 (Part 4):2018				

13	Breakdown Voltage	13	IS 13730 (Part 0/Sec 1):2018	R	Five	Each Control Unit	—
		4	IS 13730 (Part 5):2012				
14	Continuity of Insulation	14	IS 13730 (Part 0/Sec 1):2018	R	One	--	
		5	IS 13730 (Part 5):2012				
15	Temperature Index	15	IS 13730 (Part 0/Sec 1):2018	S	Once in three years or whenever there is change in insulation		Please see Note 1
		5	IS 13778 (Part 6):2018				

Note - 1: Test Report for Temperature Index Test (either In-house/OSL) shall be submitted to BIS for records. Surveillance Samples (FS/MS) drawn need not be tested for this parameter and compliance shall be ensured based on the test reports submitted by the firm.

ANNEX – D

POSSIBLE TESTS IN A DAY

(i) Dimensions as per Cl. 4

(ii) Electrical Resistance as per Cl. 5

(iii) Elongation as per Cl. 6

(iv) Springiness as per Cl. 7

(v) Flexibility and Adherence as per Cl. 8

(vi) Heat Shock as per Cl. 9

(vii) Cut-Through as per Cl. 10

(viii) Resistance to Abrasion as per Cl. 11

(ix) Resistance to Solvents as per Cl. 12

(x) Breakdown voltage as per Cl. 13

(xi) Continuity of Insulation as per Cl. 14