



उत्पाद मैनुअल
आई एस 8130 : 2013 के अनुसार
विद्युतरोधित विद्युत केबलों एवं नम्म कॉर्डों के लिए चालक - विशिष्टि (दूसरा पुनरीक्षण)
के लिए

दस्तावेज़ संख्या – पीएम/आईएस 8130/1/ मई 2023

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिश्रिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/ प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

**PRODUCT MANUAL FOR
CONDUCTORS FOR INSULATED ELECTRIC CABLES AND FLEXIBLE
CORDS — SPECIFICATION (Second Revision)
ACCORDING TO IS 8130 : 2013**

Document No - PM/IS 8130/1/May 2023

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.

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, ९, बहादुर शाह ज़फ़र मार्ग
Manak Bhawan, 9, Bahadur Shah Zafar Marg
नई दिल्ली- ११०००२
New Delhi – 110002



**PRODUCT MANUAL FOR
CONDUCTORS FOR INSULATED ELECTRIC CABLES AND FLEXIBLE
CORDS — SPECIFICATION (Second Revision)
ACCORDING TO
IS 8130 : 2013**

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 8130 : 2013
	Title	:	CONDUCTORS FOR INSULATED ELECTRIC CABLES AND FLEXIBLE CORDS — SPECIFICATION (Second Revision)
	No. of Amendments	:	1
2.	Sampling Guidelines:		
a)	Raw material	:	High conductivity copper rods as per IS 613. Plain Aluminium of grade 0, H2, H4.
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	10-meter Conductor for Physical Tests and 100 gm raw material for Chemical Analysis.
d)	Sampling for surveillance	:	DP/ OB
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 License	:	As per below table

Scope of Licence

“Licence is granted to use Standard Mark as per IS 8130 : 2013 with the following scope:”	
Name of the product	Conductors for insulated electric cables and flexible cords

Conductor Material	Untinned annealed Copper/Tinned annealed Copper/Plain Aluminum
Nominal Cross Sectional Area	
Classification	a) Solid Conductor (Class 1) b) Stranded Circular Non-Compacted Conductors (Class 2) c) Stranded Compacted Circular Conductors and Shaped Conductors (Class 2) d) Flexible Conductors (Class 5 and 6) e) Copper welding cables (Class 6) f) Flexible Aluminium Conductors for Welding Cables
Grade:	0/H2/ H4 (only for Aluminium conductors)
Construction	Solid Conductor for fixed installations/ Stranded Circular Non-Compacted Conductors for fixed installations / Stranded Compacted Circular Conductors and Shaped Conductors for fixed installations / Flexible Conductors/ Flexible Aluminium Conductors for Welding Cables/ Copper Welding Cables

ANNEX A**Grouping Guidelines**

The following grouping guidelines shall be followed for Grant of Licence/Change in scope of licence for Conductors for insulated electric cables and flexible cords as per IS 8130 : 2013:

1. For Cables and cords with Copper Conductors: For covering the complete range of product within the scope of licence, a sample of the highest Nominal Cross Sectional Area shall be drawn for independent testing subject to condition that conductor material, classification of conductor, and construction of the conductor remain same.
2. For Cables and cords with Aluminium Conductors: For covering the complete range of product within the scope of licence, a sample of the highest Nominal Cross Sectional Area shall be drawn for independent testing subject to condition that conductor material, classification of conductor, grade, and construction of the conductor remain same.
3. The Firm shall declare the varieties of Conductors for insulated electric cables and flexible cords they intend to cover in the Licence.
4. The Scope of Licence may be restricted based on the Manufacturing capability and Testing facilities of the Manufacturer.
5. In addition to the varieties drawn for independent testing as per the above guidelines, factory test report of all other varieties intended to be covered in scope of licence as per the grouping guidelines shall also be submitted to BIS.
6. For the varieties which were not declared earlier/ factory test report not submitted earlier but are covered in the scope of licence in lieu of the grouping guidelines, the licensee shall submit factory test report for the new variety before applying BIS Standard Mark on them.
7. During the operation of the Licence, BO shall ensure that all the varieties covered in the scope of Licence are tested in rotation to the extent possible

List of Test Equipment*Major test equipment required to test as per the Indian Standard*

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Construction Cl. 6	Digital Plane faced Micrometer
2	Test for Copper Conductor, Cl. 7.1.1	Glass beaker, Nessler's tube, Graduated Pipette, Volumetric flask
3	Annealing Test Cl 7.1.2, 7.2.3	Tensile Testing Machine, Steel Scale, Vernier Caliper, Micrometer
4	Test for Aluminium Conductors	Tensile Testing Machine, Steel Scale, Vernier Caliper, Micrometer
5	Resistance Test Cl.7.3	Kelvin double bridge, Wheatstone bridge, thermometer, galvanometer, leads
6	Persulphate Test Cl. 7.1.1	Porcelain or Glass Beaker, Nessler's Tube, Pipette Graduated, Balance, Volumetric Flask, Persulphate Solution, Copper Sulphate, Ammonia solution, Mandrel

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

ANNEX C**Scheme of Inspection and Testing**

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment's.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirements of IS 8130 : 2013. In addition, details of BIS website shall be marked as follows: “For details of BIS certification please visit www.bis.gov.in “

4. CONTROL UNIT – For the purpose of this scheme, the entire quantity of product having same conductor material, same nominal cross sectional area, same grade (for Aluminium conductors only), same class of conductor and same construction of the conductor manufactured in a single day shall be considered as one control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – 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 Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Material	4.1, 4.2, 4.3, 4.4	IS 8130, IS 613	S		Each lot of raw material received	No further testing is required if accomplished with test certificate or ISI marked
6	Construction	6	IS 8130	R	1	Each Control Unit	
7	Test for copper conductor						
7.1.1	Persulphate test (for tinned copper only)		IS 10810 (Part 4)	R	1	Each Control Unit	Only for tinned annealed copper conductor material
7.1.2	Annealing test		IS 10810 (Part 1)	R	1	Each Control Unit	
7.2	Test for Aluminium conductor						
7.2.1	Tensile test		IS 10810 (Part 2)	R	1	Each Control Unit	Refer Note-1
7.2.2	Wrapping Test		IS 10810 (Part 3)	R	1	Each Control Unit	Refer Note-2
7.2.3	Annealing test		IS 10810 (Part 1)	R	1	Each Control Unit	Refer Note-3
7.3	Resistance Test (for Both Copper and Aluminium)	7.3. 7.3.1	IS 10810 (Part 5) & Table 6 of IS 8130	R	1	Each Control Unit	

8	Packing and Marking	8	IS 8130	R		Each reel/ drum/ coil manufactured	
---	---------------------	---	---------	---	--	---------------------------------------	--

Note-1: This test for wires taken from stranded conductors is not applicable in the case of compacted circular conductors or shaped conductors.

Note-2: This test is not applicable to shaped solid conductors, wires taken from stranded conductors in case of compacted circular or shaped conductors and wires used for welding cable conductors.

Note-3: This test is applicable to shaped solid conductor and wires of conductor (before stranding) for welding cables only.

Note-4: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-5: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

ANNEX D

Possible tests in a day

1. Form of Conductor as per Cl 4.3
2. Joints in Conductor as per Cl 4.4
3. Classification as per Cl 5.1
4. Solid Conductors Cl. 6.1
5. Stranded Circular Non-Compacted Conductors (Class 2) Cl. 6.2
6. Stranded Compacted Circular Conductors and Shaped Conductors (Class 2) Cl. 6.3
7. Flexible Conductors (Classes 5 and 6) Cl. 6.4
8. Flexible Aluminium Conductors for Welding Cables Cl. 6.5
9. Tensile Test for Aluminium Conductors Cl. 7.2.1
10. Wrapping Test for Aluminium Conductors Cl. 7.2.2
11. Annealing Test for Aluminium Conductors Cl. 7.2.3
12. Resistance Test as per Cl 7.3
13. Persulphate Test as per Cl. 7.1.1