



उत्पाद मैनुअल

निमंज्जन मोटरों के वाइंडिंग तार - भाग 4 अलग-अलग तारों की विशिष्ट
अनुभाग 1 एच. आर. पी.वी.सी रोधित तार आईएस IS 8783 (Part 4/Sec 1): 2026 के अनुसार

PRODUCT MANUAL

Winding Wires for Submersible Motors - Part 4 Specification for Individual Wires Section 1 HR PVC Insulated Wires according to IS 8783 (Part 4/Sec 1): 2026

यह उत्पाद नियमावली सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसधारियों द्वारा विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना-1 के अंतर्गत प्रमाणन के संचालन में एकरूपता और पारदर्शिता सुनिश्चित करने के लिए संदर्भ सामग्री के रूप में उपयोग की जाएगी। बीआईएस प्रमाणन प्राप्त करने के इच्छुक भावी आवेदक भी इस दस्तावेज़ का उपयोग कर सकते हैं।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या / IS No.	:	IS 8783 (Part 4/Sec 1): 2026
	शीर्षक / Title	:	Winding Wires for Submersible Motors - Part 4 Specification for Individual Wires Section 1 HR PVC Insulated Wires
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूनाकरण दिशानिर्देश / Sampling Guidelines		
a)	कच्चा माल Raw material	:	High conductivity annealed copper conductor (Round solid/ Stranded) - IS 8783 (Part 1) <i>Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.</i>
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer ANNEX – A
c)	नमूने का परिमाण / Sample Quantity	:	25 m of wire
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	:	Parameters as given in scope of licence. <i>Note: Apart from the above, any other requirements/ parameters may also be declared as per the standard, as applicable.</i>

3.	परीक्षण उपकरण की सूची List of Test Equipment	:	Please refer ANNEX – B
4.	निरीक्षण एवं परीक्षण योजना Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	1. Overall Dimension 2. Annealing Test 3. Conductor Resistance 4. Insulation Resistance Test (Volume Resistivity at 27° C and test temperature 85° C) 5. High Voltage Test (Water Immersion Test) at room temperature 6. Conductor Diameter 7. Thickness of Insulation 8. Heat Shock test 9. Shrinkage test 10. Tensile test before ageing <i>Note: This section is for the guidance of BIS Certification Officers/ Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/ auditor.</i>
6.	लाइसेंस का दायरा / Scope of the Licence:		
“Licence is granted to use Standard Mark as per IS 8783 (Part 4/Sec 1): 2026 with the following scope:			
HR PVC Insulated Winding Wires for Submersible motors, with round solid and/or stranded copper conductor for sizes up to and including _____ sq.mm. (Nominal cross-sectional area of conductor)			

ANNEX -A **Grouping Guidelines**

1. IS 8783 (Part 4/Sec 1):2026 covers the requirements and tests for HR PVC Insulated winding wires for Submersible Motors with round solid and stranded copper conductor.
2. For considering GoL/CSoL, winding wires with the lowest and highest nominal cross-sectional area of conductor for each type of conductor (round solid/ stranded) shall be tested to cover the entire range of nominal cross-sectional area of that type of conductor.
3. The Firm shall declare the varieties and sizes of winding wire 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 the 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 Equipments** *(Indicative List, For Guidance Only)*

Sl. No.	Test Equipment	Clause Reference of tests used for.
1	Vernier Caliper	Cl.4.1
2	Vernier Caliper (min. LC-0.01mm), Micrometer (min. LC-0.01mm), Any suitable optical measuring device	Cl. 4.4 Annex C of IS 8783 (Part 3)
3	HV tester (3kV), Water bath/ tank	Cl.4.6
4	Travelling microscope with magnifying glass 10X or suitable arrangement	Cl. 4.3 (vi) of IS 8783 (Part 3)
5	Hot air oven with digital temperature controller, Air flow arrangement	Cl. 4.2(iv), Cl. 4.3(v), Cl. 4.3(vi) of IS 8783 (Part 3)
6	Tensile testing machine, Ageing oven with thermostatic controller, air flow meter & Hour meter	Cl. 4.2 (iii), Cl. 5.2 (e) of IS 8783 (Part 3)
7	Mega ohm meter	Cl. 4.3 (iv) of IS 8783 (Part 3)
8	Heat Shock Mandrels	Cl. 4.2 (iv) of IS 8783 (Part 3)
9	Hot deformation Apparatus with weight	Cl. 4.3 (vi) of IS 8783 (Part 3)
10	Vacuum oven with pump, desiccator	Cl. 4.3 (vii) of IS 8783 (Part 3)
11	Kelvin Double Bridge with galvanometer, D.C source & Conductivity attachment/ Ohm meter	Cl. 5.2(b) of IS 8783 (Part 3)

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 during operation of BIS licence manufacturers will implement a Quality Assurance Plan (QAP) i.e. 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or sub-contracting/ sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.
- 1.3 Recommended Levels of Control/ Control Unit:**
- 1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *Winding wires of continuous length manufactured under similar conditions of production for one nominal cross-sectional area of conductor* shall constitute a 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. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.
- 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.
- 1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING

The manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/ empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 Test Records- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING

The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on the label on spool/reel/coil of winding wire and also on the packaging (if applicable) provided always that the winding wire so marked conforms to each requirement of the specification.

3.1 Marking shall be done as per Cl.6 of IS 8783 (Part 4/Sec 1):2026.

3.2 **Additional Marking requirements:** The label on the spool/reel/coil of winding wire shall also be marked with the following additional requirement:

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

4. REJECTION

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

(Recommended Levels of Control by BIS- for Guidance Only)

(1)				(2)		
Test Details				Levels of Control		
Cl.	Requirement	Test Methods		No. of Sample	Frequency	Remarks
		Clause	Reference			
3.1	Conductor Resistance	3.1 5.3 (a)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)	Each coil/spool/reel		
4.6	High Voltage Test (Water Immersion Test) at room temperature	4.6 5.3 (b)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)	Each Control Unit		
3.2	Insulation Resistance (Volume Resistivity) at 27° C	3.2 5.2 (j)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
4.4	Overall Diameter	4.4 5.3 (c)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.1	Conductor Diameter	3.1 5.3 (d)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.1	Annealing Test	3.1 5.2 (c)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
4.1	Thickness of Insulation	4.1 5.2 (d)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)	Winding wires of each size and type manufactured in a month from one consignment of PVC compound		
3.2	Insulation Resistance (Volume Resistivity at test temperature 85° C)	3.2 4.3 (iv)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.2	Tensile Strength & Elongation at break (before ageing)	3.2 5.2 (e)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.2	Thermal Ageing in Air Oven	3.2 4.2 (iii)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)	Winding wires manufactured in a month from one consignment of PVC compound		
3.2	Heat Shock	3.2 4.2 (iv)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.2	Shrinkage	3.2 4.3 (v)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.2	Hot Deformation	3.2 4.3 (vi)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			
3.2	Water absorption	3.2 4.3 (vii)	IS 8783 (Part 4/Sec 1) IS 8783 (Part 3)			