



उत्पाद मैनुअल
नरम चुंबकीय लौह पट्टियों के लिए विशिष्टता

IS 11946:1987 के अनुसार

**PRODUCT MANUAL FOR
SPECIFICATION FOR SOFT MAGNETIC IRON STRIPS
ACCORDING TO IS 11946: 1987**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में अभ्यास और पारदर्शिता के संचालन में पारदर्शिता सुनिश्चित करने के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

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.	उत्पाद Product	:	IS 11946 : 1987
	शीर्षक Title	:	Specification for Soft Magnetic Iron Strips
	संशोधनों की संख्या No. of Amendments	:	01
2.	नमूना दिशानिर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	No specific requirement 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
b)	समूहीकरण दिशानिर्देश Grouping guidelines	:	As per Annex-A
c)	नमूने का आकार Sample Size	:	For chemical test: 5 pcs of 5 cm x 5 cm For mechanical tests and magnetic tests: 2 pieces of 500

		mm length
		Requirements of Dimensional Tolerances (cl.8.) (Tables 2,3,4,5) to be tested on full width/length of the Strip/Sheet samples during factory testing from which samples are drawn for independent testing. <i>Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)</i>
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer ANNEX – B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	: All test except Magnetic Properties as per Cl 7 of IS 11946
		<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 11946 :1987 with the following scope:
	Name of the Product	: Soft Magnetic Iron Strips
	Size	: e.g. Thickness- from....mm upto and includingmm Width- from....mm upto and includingmm Length- from....mm upto and includingmm
	Supply Condition (Declared)	: Untreated/Annealed/Full Hard/Quarter Hard or any other condition as per mutual agreement

BUREAU OF INDIAN STANDARDS
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New Delhi – 110002

Annex-A
Grouping Guidelines

- 1) IS 11946:1997 covers the requirements of Cold rolled soft magnetic iron strips primarily intended for electromagnetic purposes, such as relay yoke, armature and the like of electrical machinery and apparatus.
- 2) The material shall be supplied in the form of coils/straight lengths in conditions such as Untreated, Annealed, Quarter Hard, Half Hard etc.
- 3) Dimensional Tolerances of strips of thicknesses from less than 0.10 mm to 5.00 mm and width upto 600 mm are given in Tables 2.3 & 4. However, strips having dimensional tolerances other than those mentioned in Tables 2,3 and 4 can also be supplied based upon mutual agreement between manufacturer and purchaser.
- 4) In view of above, the following Grouping Guidelines shall be considered for the purpose of GoL/CSoL:
 - a) **One sample of strip of any thickness and width, from the range of sizes intended to be covered in the scope of the licence, for each condition (Untreated, Annealed, Full Hard, Quarter Hard, Half Hard etc.) shall be drawn and tested to cover all sizes for that condition.**
- 5) Scope of licence shall be restricted based on the manufacturing and testing facilities available.
- 6) During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible.

ANNEX-B
List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

S. No.	Tests used in with Clause Reference	Test Equipment
1.	Chemical Composition (Clause 4)	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels and Certified/Standard Reference Materials
2.	Physical Condition (Clause 5.1)	Vision based digital microscope
3	Physical Condition (Clause 5.2)	Feeler gauge with cord and Flat Bench
4.	Physical Condition (Clause 5.3)	Hardness Tester (Vickers/Brinell/Rockwell)
5.	Tensile Strength (Clause 6.1)	Tensile Testing Machine
6.	Hardness test (Clause 6.1.1)	Hardness Tester (Rockwell)
7.	Bend test (Clause 6.2)	Bend Test Equipment/ Mandrels
8.	Grain Size (Clause 6.3)	Vision based digital microscope/Sample Preparation and Polishing Machines/Erichsen cupping apparatus
9.	Magnetic Properties (Clause 7)	FORSTER type Coercimeter or Conventional ballistic flux meter, Oven
10.	Dimensional Tolerances (Clause 8)	Vernier Calipers, Micrometer, Steel Scale, Surface Table, Measuring Tape, Feeler Gauge, Cord

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 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 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 quantity of material of same thickness, supply condition and manufactured from the same cast - 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**.

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- 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.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. 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.

2.2 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.

2.2.1 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.

2.3 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.

2.3.1 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.

2.4 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/empanelled 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 - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on on the top of each bundle or package of Soft Magnetic Iron Strips or on tag attached to each coil, provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

4. TEST CERTIFICATE: Each consignment of BIS certified Soft Magnetic Iron Strips confirming to IS 11946 :1987 shall be accompanied by a test certificate as given in Annex-1.

5. REJECTIONS – 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	Frequency	Remarks
		Clause	Reference				
4.1	Chemical Composition (Product Analysis)	IS 228 or any other established instrumental/chemical method		R	One	Each Control unit	--
5	Physical Condition	5.1, 5.2, 5.3 & 5.4	IS 11946	R	Adequate inspection to ensure that the strips manufactured conform to the requirement of specification		
6.1	Tensile Strength	6.1	IS 1608 (Part 1)	R	One	Each Control unit	The value of hardness is given for guidance only. If the purchaser requires the material in any other condition, such as ‘quarter hard’, ‘half hard’ etc, the mechanical properties shall be as agreed to between the contracting parties.
6.1.1	Hardness Test	6.1.1	IS 1586 (Part 1)	R	One	Each Control unit	
6.2	Bend Test	6.2	IS 1599	R	One	Each Control unit	
6.3	Grain Size	6.3	IS 11946	R	One	Each Control unit	
7.1	Coercive Force	7.1	IS 11946	R	One	Each Control unit	---
7.2	Ageing	7.2	IS 11946	R	One	Once in a month	---
7.3	Magnetic Induction	7.3	IS 11946	R	One	Each Control unit	

7.4	Remanence	7.4	IS 11946	R	One	Each Control unit	
8.1	Dimensional Tolerance	8.1	IS 11946	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
12.1	Packing	12.1	IS 11946	R			
					Each Strip/Sheet shall conform to the requirements of the specification		

ANNEX-1

XYZ COMPANY

STANDARD MARK

(Registered office address and works address)

TEST CERTIFICATE FOR Specification for Soft Magnetic Iron Strips ACCORDING TO IS 11946 :1987

TEST CERTIFICATE No. _____ DATE _____

TO M/s _____

We certified that the material described below fully conforms to 11946:1987 as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L are as indicated below against each order No..

(PLEASE REFER TO IS 11946 :1987 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Size	Control Unit No.	Qty	Net and Gross weight	Date of Mfg/ batch No.	Chemical Composition					Mechanical properties					Magnetic Properties			
						Carbon	Silicon	Manganese	Sulphur	Phosphorus	TS	Elongation	Hardness	Bend Test	Grain Size	Coercive Force	Aging	Magnetic Induction	Remanence

REMARK

SHIPPING ADVICE No.

SIGNATURE:
NAME &
DESIGNATION:FOR
XYZ COMPANY