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उत्पाद मैनुअल
चुंबकीय सामग्रियाँ –वैयक्तिक सामग्रियों के लिए विशिष्ट –माध्यम आवर्तियों पर उपयोग
के लिए पतली विधुत इस्पात पत्ती और चादर
IS 18874: 2024/IEC 60404-8-8:2017 के अनुसार

**Product Manual for
Magnetic Materials-Specification for Individual Materials-Thin Electrical Steel Strip and
Sheet for Use at Medium Frequencies
According to IS 18874: 2024/IEC 60404-8-8:2017**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता 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 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 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.	भारतीय मानक संख्या IS No.	:	IS 18874: 2024 IEC 60404-8-8:2017
	शीर्षक Title	:	Magnetic Materials-Specification for Individual Materials-Thin Electrical Steel Strip and Sheet for Use at Medium Frequencies
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement for raw material 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	:	Please refer to Annex- A
c)	नमूने का परिमाण Sample Quantity	:	(1) For Magnetic Properties (Please see Cl 8.3.1 of IS 18875:2024) Prepared sample of 25 pieces Epstein test strips (of 280-300 mm length & 30 mm width) (2) Prepared sample for Number of Bends Test (3) Geometrical characteristics and tolerances (Cl 7.2) may be tested in the factory during F/T from which samples are drawn for I/T. 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)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	:	Designation (Steel Name), Geometrical Characteristics, Delivery condition, Surface Condition Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex- B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex- C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		All tests except specific total loss on aged pieces (For grain-oriented electrical steel) 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.
6.	लाइसेंस का दायरा /Scope of the Licence:		IS 18874: 2024/IEC 60404-8-8:2017 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है □Licence is granted to use Standard Mark as per IS 18874: 2024/IEC 60404-8-8:2017 with the following scope:

7.	उत्पाद का नाम Name of the product	Magnetic Materials-Specification for Individual Materials-Thin Electrical Steel Strip and Sheet for Use at Medium Frequencies
	Designation (Steel Name)	NO 5-45, NO 10-13..... GO 5, GO 10.....
	Geometrical characteristics	Thickness from ...xx... mm to up to and including ...xx... mm Width from ...xx... mm to up to and including ...xx... mm Length (in case of sheets) from ...xx... mm to up to and including ...xx...
	Delivery Condition	without coating or with a coating on one or both sides.

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg,
New Delhi – 110002

ANNEX-A
TO PRODUCT MANUAL FOR
Magnetic Materials-Specification for Individual Materials-Thin Electrical Steel Strip
and Sheet for Use at Medium Frequencies
According to IS 18874: 2024/IEC 60404-8-8:2017

GROUPING GUIDELINES

1. IS 18874: 2024/IEC 60404-8-8:2017 classifies the product according to the maximum value of **the specific total loss in watts per kilogram** and according to the **nominal thickness**.
2. Accordingly, following grouping based on quality of product, shall be followed for grant of licence and/or change in scope of licence:-

Non-oriented electrical steel strip and sheet					
Group	Steel Name	Nominal thickness (mm)	Maximum specific total loss at 1.0 T (W/Kg)		Remarks
			At 400 Hz	At 1000 Hz	
1	NO 5-45	0.05	-	45	Sample of each designation (Steel name) shall be drawn and tested so as to cover all such designations included in the scope of the licence.
2	NO 10-13	0.10	13	-	
3	NO 15-11	0.15	11	-	If one sample of designation (Steel name) with lower Maximum Specific Total Loss is drawn and tested, the other designation having higher Maximum Specific Total Loss can also be covered in scope of licence.
	NO 15-14		14	-	
4	NO 20-13	0.20	13	-	-Do-
	NO 20-15		15	-	
5	NO 25-14	0.25	14	-	-Do-
	NO 25-17		17	-	
6	NO 30-16	0.30	16	-	-Do-
	NO 30-19		19	-	
7	NO 35-19	0.35	19	-	-Do-
	NO 35-22		22	-	

Grain-oriented electrical steel strip and sheet					
Steel Name	Nominal thickness (mm)	Maximum specific total loss (W/Kg) at			Remarks
		1.0 T	1.5 T	Frequency (Hz)	
GO 5	0.05	24	-	1000	Sample of each designation (Steel name) shall be drawn and tested so as to cover all such designations included in the scope of the licence.
GO 10	0.10	-	15	400	
GO 15	0.15	-	16	400	
GO 18	0.18	-	17	400	

3. Scope of licence shall be restricted based on the manufacturing and testing facilities available.
4. 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 EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per requirements of Indian Standard.

Sl. No.	Test Equipment/Chemicals and Identification Numbers (Where applicable)	Tests Used in with Clause Reference
1	Weigh bridge	Form of supply, Cl 6.2
2	Visual inspection	Surface condition, Cl 6.4
3	Epstein Test Frame, Tesla meter (0-2.0T), Timer, Vernier Calipers, Frequency meter, Flux Volt meter, RMS Volt meter, Watt meter, RMS Ammeter, Ageing oven, Micrometer, Thermometer, Air conditioner with Heater Shearing machine, Punching m/c, lab stress relieving furnace (reducing or neutral atmosphere) with Temp indicator, Weighing balance	Maximum specific total loss, Cl 7.1.2 and Table 1 & 2
4	Compression device/CTM Pressure gauge Vernier calipers, dial gauge, Weighing machine Rigid metal plates	Stacking Factor, Cl 7.3.2 and Table 1 & 2
5	Bend tester(Capable of bending 90° & 180°), Test mandrels (for each Thickness/width), Measuring tape, Micrometer, Steel scale	Number of bends, Cl 7.3.3 and Table 1 & 2
6	Measuring tape, measuring scale, Micrometer, Long arm digital gauge, Straight edge, Depth gauge, Steel scale Taper Gauge/Dial Gauge, Surface plate, Vernier callipers,	Geometric characteristics and tolerances, Cl 7.2

Note: The above is an indicative list for the purpose of guidance only

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 subcontracting/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: For the purpose of this scheme, entire quantity of same designation of material produced from one cast, heat treated together 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. 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.

2. ENSURING COMPLIANCE THROUGH TESTING- 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 license and Licence Number (i.e. CM/L...) shall be incorporated suitably/legibly on metal tag/label/sticker attached to each coil or package of sheets/ strips, provided that the material so marked and packed conforms to all the requirement of the specification.

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

3.2 Additional Marking requirements: Additionally, the following shall also be marked on the material or packaging:

- a) “For BIS certification details please visit www.bis.gov.in”
- b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 18874 /IEC 60404-8-8 there shall be a test certificate which shall contain the Standard Mark, the Control Unit number and the corresponding test results (as given in Annexure-I enclosed).

5. 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)				(3)		(4)
TEST DETAILS				LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		No. of Samples	Frequency	
		Clause	Reference			
6.2	Form of Supply	6.2	IS 18874 /IEC 60404-8-8	Adequate inspection to ensure each sheet/strip meet the requirements of Form of Supply as per the Standard.		
6.4	Surface Condition	6.4	IS 18874 /IEC 60404-8-8	Adequate inspection to ensure each sheet/strip meets the requirements of surface condition as per the Standard.		
7.1.1	Magnetic Polarization	7.1.1	IS 18874 /IEC 60404-8-8	One	Each Control Unit	–
7.1.2 Table 1 & 2	Specific Total Loss	7.1.2 8.3.1	IS 18874 /IEC 60404-8-8 IEC 60404-2 IEC 60404-10	One	Each Control Unit	–
7.3.2 Table 1 & 2	Stacking Factor	7.3.2 8.3.3.1	IS 18874 /IEC 60404-8-8 IEC 60404-2 IEC 60404-10 IEC 60404-13	One	Each Control Unit	–
7.3.3	Number of Bends	7.3.3 8.3.3.2 8.4.4.2	IS 18874 /IEC 60404-8-8 ISO 7799	One	Each Control Unit	–
7.2	Geometric characteristics and tolerances	7.2 8.4.3	IS 18874 /IEC 60404-8-8 IEC 60404-9	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.		
7.3.4	Insulating Coating Resistance	7.3.4	IS 18874 /IEC 60404-8-8	If required by the purchaser, the value of the insulating coating resistance may be agreed between the manufacturer and the purchaser at the time of enquiry and order		

Annexure-I
(Para 4 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
(Registered office Address and works address)

ISI Mark
With IS No.
and CM/L
no.

**Test Certificate for Magnetic Materials-Specification for Individual Materials-Thin Electrical Steel Strip and Sheet for Use at Medium
Frequencies According to IS 18874: 2024/IEC 60404-8-8:2017**
TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to IS 18874: 2024/IEC 60404-8-8:2017 Magnetic, Mechanical and Physical properties of the product as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks LicenceNo.CM/L _____are as indicated below against each order No.

(PLEASE REFER TO IS 18874: 2024/IEC 60404-8-8:2017 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Thickness & Size	Control Unit No.	Designation (Steel name)	Qty. (In tonnes)	No. of coils/ sheets	Magnetic properties			Number of bends	Delivery condition	Surface condition	Insulating coating resistance *
						Specific total loss	Magnetic polarization	Stacking factor				

*If agreed between purchaser and manufacturer

Remarks
Wagon No.
Truck No.

FOR XYZ IRON AND STEEL COMPANY

(It is suggested that size A4 paper be used for this test Certificate)