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उत्पाद मैनुअल

सतत् ढलाई और रोलिंग द्वारा उत्पादित ई सी ग्रेड एल्यूमीनियम छड़

IS 5484:2023 के अनुसार

PRODUCT MANUAL
FOR EC GRADE ALUMINIUM ROD PRODUCED BY CONTINUOUS CASTING AND ROLLING ACCORDING TO IS 5484:2023

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 underScheme-I of Bureau of Indian Standards (Conformity Assessment)Regulations,2018 for variousproducts. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या **IS No.**	:	IS 5484:2023
	शीर्षक **Title**	:	EC Grade Aluminium Rod produced by continuous casting and rolling - Specification
	संशोधनों की संख्या **No. of amendments**	:	01
2.	नमूना दिशानिर्देश **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	The ingot used for manufacturing rods by continuous casting and rolling process shall conform to any of the grades of IS 4026 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 see Annex-A

c)	नमूने का परिमाण **Sample Quantity**	:	For Physical and Tensile tests: 1 metre For Chemical tests: 5 pieces of 50mm x 50mm For Resistivity: 1.2 metres 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)
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 tests 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:**		
	"Licence is granted to use Standard Mark as per IS 5484:2023 with the following scope:		
	Name of the product		EC Grade Aluminium Rod produced by continuous casting and rolling
	Tensile Strength Range		I/II/III/IV
	Nominal Diameter		6.50 mm to 15 mm

ANNEX-A

GROUPING GUIDELINES

1) For the purpose of grant of licence/change in scope of licence, the following grouping guidelines shall apply

Group	Nominal diameter (mm)
I	<9.5mm
II	9.5 to 12.7mm
III	>12.7mm

i. One sample of lower nominal diameter in a particular Group shall be tested to include all nominal diameters in that particular Group.

ii. The manufacturer shall declare the tensile strength ranges which are intended to be covered in the licence, I/II/III/IV as per Table 1 of IS 5484:2023. One sample shall be drawn and tested from each tensile strength range which is intended to be covered in the scope of licence

2) Scope of licence shall be restricted based on the manufacturing and testing facilities available.

3) 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)

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Ultimate Tensile strength & Elongation, Cl. 9, Table-1	Tensile Testing Machine, Steel ruler, Vernier Caliper
2	Conductivity/Resitivity, Cl. 10, Table-2, Annex C	a circuit configuration and instrumentation that has a resistance measurement capability of +/- 0.15 percent accuracy.
3	Dimensions, Cl. 11, Table-3	Vernier caliper, micrometer, feeler gauges, straight edge, measuring scale/tape
4	Chemical Composition of Ingot, Cl. 6	Device for instrumental chemical analysis such as Optical Emission Spectrometer with all requisite channels and Certified/Standard Reference Materials OR Chemicals and Reagents for Chemical method as per IS 504 (various parts)

ANNEX B

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 : EC Grade Aluminium rod of the same Grade, same nominal diameter and Tensile strength range produced from the same cast of raw material on the same line in one go 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 requirementsof 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 facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory having validNABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven 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 commoncluster 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 laboratoryor 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 Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated on each tag attached to each coil of EC Grade Rods, provided always that the product thus marked and packed conforms to all the requirement of the specification. In addition, details of BIS website shall be marked as follows:

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

4. TEST CERTIFICATE - For each consignment of BIS Certified material conforming to IS 5484:2023, there shall be a test certificate which shall contain the Standard Mark, the Control Unitnumber and the corresponding test results (as given in Annexure-I enclosed)

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

TABLE1

(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				**Test equipment requirement R: required (or)S: Sub-contracting permitted**	**Levels of Control**		
Cl.	**Requirement**	**Test Methods Clause Reference**			**No. of Sample**	**Frequency**	**Remarks**
5	Manufacture	5.1,5.2	IS 5484 IS 4026	R	Primary aluminium of grades as mentioned in IS 4026 shall be used as the input for manufacture of EC grade wire rods. The hot metal shall be subjected to filtration process before rolling into EC grade aluminium rods. Manufacturer shall ensure adequate in process controls to ensure that the EC Grade Rods are manufactured in accordance with the specification. Wherever required, appropriate records shall be maintained.		
6	Chemical composition	6.1, 6.2	IS 5484 IS 4026	R	1	Each Heat/Cast	No testing is required if the raw material received is ISI marked and accompanied with test certificate.
9	Ultimate Tensile Strength & Elongation	9.1,9.2, Table 1	IS 1608 (Part 1)	R	1	Each Control Unit	----
10	Resistivity	10.1,10.1.1, Table 2	IS 5484 IS 5082 Annex C	R	1	Each Control Unit	----

11	Dimensions	11	-do-	R	Firm to have adequate in-process controls to checkcompliance 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	Joints	12	-do-	R	Manufacturer shall have adequate in-process controls to ensure that there are no joints in any coil
13	Finish and freedom fromdefects	13	-do-	R	Firm to have adequate in- process controls to ensure that the material remains free from harmful defects.

ISI MARK

ANNEXURE –I

TEST CERTIFICATE

ABC LIMITED

(REGISTERED OFFICE ADDRESS AND WORK ADDRESS)

BIS LICENCE NO CM/L-

TEST CERTIFICATE

TEST CERTIFICATE NO._____ DATE: _____

TO M/S_____(CONSIGNEE NAME AND ADDRESS)

We certify that the material described below fully conforms to the requirement of IS 5484:2023
Properties of the product as tested in accordance with Scheme of Inspection and Testing contained in the BIS Certification Marks Licence CM/L No.
Are as indicated below against each order
(PLEASE REFER TO IS 5484:2023 FOR DETAILS OF SPECIFICATION REQUIREMENTS) TEST RESULTS

Grade and Chemical composition of ingots*	Coil No and Date of Mfg	Quantity and length of coil	Ultimate Tensile Strength & Elongation	Resistivity/Conductivity	Size	Joints	Finish and Freedom from defects

*Test certificate by supplier of Aluminium ingots/test report of lab is attached

REMARKS:

WAGON/TRUCK NO/CONSIGNMENT NO

FOR ABC COMPANY LIMITED

(For BIS Certification details, visit www.bis.gov.in)