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उत्पाद मैनुअल
निमग्न आर्क वेल्डिंग एवं गैस परिरक्षित आर्क वेल्डिंग इलेक्ट्रोडो के लिए कार्बन और
अल्प मिश्रधातु इस्पात के तार सरिये
IS 19497: 2026 के अनुसार
Product Manual for
Carbon and Low-Alloy Steel Wire Rods for Submerged Arc Welding and Gas Shielded
Arc Welding Electrodes
According to IS 19497: 2026

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 19497:2026
	शीर्षक Title	:	Carbon and Low-Alloy Steel Wire Rods for Submerged Arc Welding and Gas Shielded Arc Welding Electrodes
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Shall conform to the requirements of IS 14650. For integrated steel plants, establishing conformity of raw material, test certificate of raw material is sufficient. 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 Annex-A
c)	नमूने का परिमाण Sample Quantity	:	For chemical composition (Cl 6): 5 test pieces of size 50 mm x 50 mm OR 50 gram drillings (for laboratories who don't have machining facility and conducting test as per chemical method) For Dimensions and Tolerances on diameter and out-of-roundness (Ovality) of the wire (Cl 8): 500 mm test piece Requirements of Freedom from Defects (Cl 7) may be tested in the factory (F/T) on full sizes of wire rod from which samples are drawn for IT. 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 and Size. 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. 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 19497: 2026 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 19497: 2026 with the following scope:		
	उत्पाद का नाम Name of the product	Carbon and Low-Alloy Steel Wire Rods for Submerged Arc Welding and Gas Shielded Arc Welding Electrodes	

	Designation	Carbon Steel Grades for SAW electrodes (EL8, EL8K, EL12, as per table 1 of IS 19497:2026) Low-Alloy Steel Grades for SAW electrodes (S4, S4Si, EH14, as per table 1 of IS 19497:2026) Carbon Steel Grades for GSAW electrodes (S15, S16, as per table 1 of IS 19497:2026) Low-Alloy Steel Grades for GSAW electrodes (2Si, 3Si1, 3Si2, as per table 1 of IS 19497:2026)
	Nominal Size	Round wire rod from diameter mm to upto and including mm

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

Annex-A
To the Product Manual for
Carbon and Low-Alloy Steel Wire Rods for Submerged Arc Welding (SAW) and Gas
Shielded Arc Welding (GSAW) Electrodes

According to IS 19497:2026

Grouping Guidelines

1. IS 19497:2026 covers the requirements of carbon and low-alloy steel wire rods to be used as raw material for manufacture of submerged arc welding and gas shielded arc welding electrodes. There are 103 designations given in the Standard which have been categorized into four classifications as under:
(A) Carbon Steel Wire Rods for SAW electrodes,
(B) Low Alloy Steel Wire Rods for SAW electrodes,
(C) Carbon Steel Wire Rods for GSAW electrodes and
(D) Low Alloy Steel Wire Rods for GSAW electrodes.
2. 103 designations given in the Standard have been clubbed into 07 groups, Classification (A) with 02 groups, Classification (B) with 02 groups, Classification (C) with 1 group and Classification (D) with 02 groups. In order to follow a uniform policy in the drawl of samples for independent testing for the purpose of grant of license/ inclusion of additional varieties in the existing license, the procedure as mentioned below is to be followed:

(A) Carbon steel wire rods for manufacture of SAW electrodes - Manufacturer shall declare designations and sizes intended to be covered in the scope of licence.

Group	Sub-Group	Designations (as per IS 19497:2026)	Remarks
1	Carbon Steel grades	EL8, EL8K, EL12, EM11K, EM12K, EM13K, EM14K, EM15K, EH10K, EH11K, EH12K	Sample of any one grade designation may be drawn and tested to cover all grades within the group with all intended sizes in the scope of licence.
2	Carbon Steel grades with Ni, Cr & Mo	S1, S1Si, EM12, S2, S2Si, S2Si2, S3, S3Si	Sample of any one grade designation may be drawn and tested to cover all grades within the group with all intended sizes in the scope of licence.

(B) Low-alloy steel wire rods for manufacture of SAW electrodes - Manufacturer shall declare designations and sizes intended to be covered in the scope of licence.

Group	Sub-Group	Designations (as per IS 19497:2026)	Remarks
1	Carbon and Low Alloy Steel Grades	S4, S4Si, EH14, ER70S-2, ER70S-3, ER70S-4, ER70S-6, ER70S-7, ER70S-8, EA1, EA1TiB, EA2, EA2TiB, EA3, EA3K, EA4, EB1, EB2, EB2H, EB3, EB5, EB23, EB24, EF1, EF2, EF3, EF4, EF5, EF6, EM2, EM3, EM4, ENi1, ENi1K, ENi2, ENi3, ENi4, ENi5, ENi6, EW, EG	If a sample of any of the grade designation contains the maximum combination of alloying elements drawn and tested from the group then the remaining grades that contain either the same alloying elements or a subset thereof, irrespective of their specified compositions, may be included in the scope of the licence. e.g. EB23 contains the maximum combination of alloying elements occurring in this group, namely Ni, Cr, Mo, V, Al, Cu, B, Nb, N and W, in addition to C, Mn, Si, P and S. If EB23 grade is drawn and tested then the remaining all grades may be covered in the scope since they contains either the same alloying elements or a subset thereof.
2	High Chromium Alloy Steel Grades	EB6, EB6H, EB8, EB91, EB115	Sample of any one grade designation may be drawn and tested to cover all grades within the group with all intended sizes in the scope of licence.

(C) Carbon steel wire rods for manufacture of GSAW electrodes - Manufacturer shall declare designations and sizes intended to be covered in the scope of licence.

Group	Designations (as per IS 19497:2026)	Remarks
1	S15, S16, S17	If a sample of S17 grade designation is drawn and tested, then entire grades within the group may be covered in the scope of the licence. If S15 grade designation is drawn and tested, then S16 grades may be covered in the scope of the licence.

(D) Low-alloy steel wire rods for manufacture of GSAW electrodes - Manufacturer shall declare designations and sizes intended to be covered in the scope of licence.

Group	Sub-Group	Designations (as per IS 19497:2026)	Remarks
1	Carbon, Mn-Si, Ni-Mo based Low-Alloy Grades	2Si, 3Si1, 3Si2, 4Si1, 2Ti, 2Al, S11, S12, S13, S14, S18, ER70S-G, ER70S-A1, S2M3, S2M31, S3M3T, S3M1, S3M1T, ER80S-D2, ER90S-D2, ER80S-Ni1, ER80S-Ni2, ER80S-Ni3, ER100S-1, ER110S-1, ER120S-1, ERXXS-G	If a sample of any of the grade designation contains the maximum combination of alloying elements drawn and tested from the group then the remaining grades that contain either the same alloying elements or a subset thereof, irrespective of their specified compositions, may be included in the scope of the licence.
2	Chromium-Molybdenum based Low-Alloy Steel Grades	ER80S-B2, ER70S-B2L, ER90S-B3, ER80S-B3L, ER80S-B6, ER80S-B8, ER90S-B9	

3. In the above groups, the sample of any size may be drawn and tested to cover all the sizes within the group.
4. Scope of licence shall be restricted based on the manufacturing and testing facilities/arrangements available.
5. During the operation of licence, BO shall ensure that all the grades covered in the license are drawn for independent testing on rotation over a period of time.

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.	Tests used in with Clause reference	Test equipment/Chemical
1.	For Chemical Composition (Cl. 6)	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels OR, Carbon Sulphur (Strohlein's type) Apparatus – Complete set consisting of glass parts, combustion furnace, oxygen cylinder , combustion tubes/ boats etc. ● Porcelain boat (capable of withstanding 1150 .C) ● Weighing Balance ● Hot plate ● Muffle furnace ● Induction Furnace ● Barometer, Thermometer ● Burette, Pipette and Full Range of Lab. Glassware ● like : Conical Flasks ,Beakers, Funnel, Pipettes ● Glass rod, watch Glass, Brush etc. ● Standard Reference Material ● Platinum Crucible for Silicon Test ● Dessicator ● Filter paper, Whatman Filter Paper & Ash less ● clippings ● Arrangements for nitrogen testing ● Drilling machine Chemicals and reagents as applicable
2.	Freedom from defects (Cl. 7)	-----
3.	Dimensions and Tolerances (Cl. 8)	Micro meter (Flat Type), Vernier Calipers and Steel Measuring Tape

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, all wire rods representing the same cast and drawn to same dimensions, and manufactured under uniform conditions of production in a day 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.

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 suitably incorporated on each coil or package of coil or shown on a tag attached to each coil and/or on the Test Certificate accompanied along with each consignment, provided always that the product thus marked conform to all the requirements 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 each package:

- 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 19497:2026 there shall be a test certificate which shall contain the Standard Mark, the cast/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	Chemical Composition (Product analysis)	6	IS 19497 Relevant part of IS 228 or IS 8811 or any other established instrumental/chemical method	One	For every 25 tonnes or part thereof	No further testing is required if: (i) the raw material received is ISI marked, or (ii) raw material is received with Test Certificate within the setup of an integrated steel plant.
7	Freedom from defects	7	IS 19497	Manufacturer shall exercise adequate in-process controls to ensure each item to be free from all harmful defects.		
8	Dimensions and Tolerances	8	IS 19497 IS/ISO 16124	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances on diameter and out-of-roundness (Ovality) of the wire rods given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		

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

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

Test Certificate for Carbon and Low-Alloy Steel Wire Rods for Submerged Arc Welding and Gas Shielded Arc Welding Electrodes
According to IS 19497:2026

TEST CERTIFICATE NO. _____

To M/s _____ Dated _____

We certified that the material described below fully conforms to IS 19497:2026. The chemical and physical properties of the product 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 19497:2026 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No.	Nominal Size	Steel designation	Cast/ Batch No.	Quantity (Tonnes)	Chemical composition (in %) - Product Analysis																Freedom from defects	Remarks
					C	Mn	Si	P	S	Ni	Cr	Mo	V	Ti	Zr	Al	Cu	B	Nb	N		

Remarks
Wagon No.
Truck No.

FOR XYZ STEEL COMPANY

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