PM/ IS 2879/ 1/June 2018

PRODUCT MANUAL FOR
Mild Steel for Metal Arc Welding Electrodes
According to IS 2879:1998

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.	**Product**	**:**	**IS 2879:1998**
	Title	**:**	Mild Steel for Metal Arc Welding Electrodes
	No. of amendments	**:**	2
2.	**Sampling Guidelines**		
a)	**Raw material**	**:**	No specific requirement for raw material
b)	**Grouping Guidelines**	**:**	Please refer Annex - A
c)	**Sample Size**	**:**	For Physical Test: 2m and For Chemical Test: 5 pcs, length of 5cm each/ 50g drilling.
3.	**List of Test Equipment**	**:**	Please refer Annex – B
4.	**Scheme of Inspection and Testing**	**:**	Please refer Annex – C
5.	**Possible tests in a day**	**:**	Dimensions and tolerances (Cl.8 & 9), Freedom from defects (Cl.7) and Chemical Composition (Cl.6 and Table-1) through instrumental method using a suitable device such as optical spectrometer
6.	**Scope of the Licence :**		
	Licence is granted to use Standard Mark as per IS2879:1998 with the following scope:		
	Name of the product	Mild Steel for Metal Arc Welding Electrodes	
	Type	*[Mention type i.e. whether cast billet ingots, billets, bloom, wire rods]*	
	Size	*[Mention range of nominal sizes i.e. width across flat for billets, billet ingots and blooms, diameter for wire rods etc. and length of billets and blooms]*	
	Designation	*[Mention designation i.e EWR, EWNR]*	

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ANNEXURE A
FOR PRODUCT MANUAL FOR
MILD STEEL FOR METAL ARC WELDING ELECTRODES
According to IS 2879:1998

GROUPING GUIDELINES

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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 following procedure is to be followed:

When one sample of a particular designation (see Table 1 of IS 2879) of any of the sizes (see Cl.8 of IS 2879) of a particular type i.e. Billets, Blooms, Cast Billet Ingots and wire rods is tested, grant of licence/inclusion can be considered for all sizes and types of the designation whose sample is tested, subject to availability of complete manufacturing/testing facility with manufacturer.

For example:.

If sample of Billet of width across flat 70 mm, designation EWR is tested, all sizes of billets of designation EWR can be considered for grant of licence/inclusion subject to availability of complete manufacturing/testing facility with manufacturer

While considering grant of licence/inclusion of additional varieties, it shall be ensured that complete manufacturing/testing facility is available with manufacturer. During operation of licence, BOs shall ensure that all varieties covered in the licence shall be tested in rotation to the extent possible

ANNEXURE B
FOR PRODUCT MANUAL FOR
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LIST OF TESTING EQUIPMENT

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Major test equipment essentially required to test as per requirement of Indian Standard.

Sl.No.	Test Equipment	Test used in with clause Reference
1.	**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 deg. 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	For Chemical Composition (Cl. 6)
2.	Micro meter (Flat Type), Vernier Calipers and Steel Measuring Tape	Dimensions, Length and Maximum Difference between two readings (Out of shape) (Cl.8 and Cl.9)

3.	----------	Freedom from defects (Cl.7)
4	Magnifying instrument 10x with necessary chemicals and wire brush	Macro Examination (Cl.5.2.1)

Note: This is an indicative list for the purpose of guidance only and may not be treated as exhaustive

ANNEXURE C
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SCHEME OF INSPECTION AND TESTING

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1. **LABORATORY** – A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in Column 2 of Table-1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipment.

2 **TEST RECORDS** The manufacturer shall maintain test records for the tests carried out to establish conformity.

3 **LABELLING AND MARKING** : The Standard Mark as given in Schedule of the license and Licence Number (i.e. CM/L…….) shall be incorporated, and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirements of the specification. In addition, details of BIS Manakonline website shall be marked as follows: "For details of BIS certification please visit www.manakonline.in"

3.1 In case of billets, blooms and cast billets ingots, the marking shall be made legibly at one end either on the face or on the side. In case of rods, duplicate metal tags bearing the marking shall be securely tied to each coil.

4 **CONTROL UNIT**: Each designation and size manufactured from same lot/cast.

5 **LEVELS OF CONTROL** - The test and inspection indicated in Table 1 attached and at the levels of ~~control specified ther~~ein shall be carried out on the whole production covered under this scheme and appropriate records and charts maintained in accordance with paragraph 2 above..

6. **TEST CERTIFICATE**-For each consignment of BIS Certified material conforming to IS 2879:1998 there shall be a test certificate which shall contain the Standard Mark, the lot/cast number and the corresponding test results (as given in Annexure I enclosed).

7. REJECTIONS–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. Any rejected material which is potentially re-salable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/coil number/control unit number, as applicable, relating to all such rejections/defective/sub-standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
TEST DETAILS					**LEVELS OF CONTROL**		
Clause	**Requirements**	**Test Method**		**Test equipment requirement** R: required (or) S: Sub-contracting permitted	**No. of Samples**	**Frequency**	**REMARKS**
		Clause	**Reference**				
5.2.1	Macro examination	5.2.1	IS 7739(Part 5)	R	One from each cast	One per cast or per 40 tonnes whichever is more. (Applicable for rimming quality only)	
6	Chemical composition : Product Analysis of Steel	6	Relevant Part of IS 228 or any other established instrumental/ chemical method	R	One from each cast	One sample from Billet, Bloom Cast Billet Ingots wire rod rolled from a cast for every 25 Tonnes or part thereof. In case material is received with ISI mark then no further testing is required	
7	Freedom from Defects	7	IS 2879:1998	R	Adequate	Adequate inspection to ensure that the material free from all harmful surface defects.	
8 & 9	Dimensions and Tolerances	8.1, 8.2, 9.1, 9.2, 9.3	- do-	R	One from each cast	Adequate inspection to ensure that the products are within limit of the specifications.	

Note 1: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.

SCHEME OF INSPECTION AND TESTING

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TEST CERTIFICATE FORMAT

ANNEXURE I
XYZ IRON AND STEEL COMPANY
TEST CERTIFICATE FOR MILD STEEL METAL FOR METAL ARC WELDING ELECTRODE CORE WIRE

TEST CERTIFICATE NO. _____ DATED_____
TO M/s_____

It is certified that the material described below fully conforms to IS 2879:1998. Chemical composition 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. etc.

(PLEASE REFER TO IS 2879:1998 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order no and date	Type (i.e. cast billet ingot, billet, bloom, wire rod) and nominal size	Designation (EWR, EWNR)	Cast No.	Quantity (in tonnes)	Chemical Analysis (in %)											Macro examination	Remarks
					C	Si	Mn	P	S	Cu	V	Ti	Al (total Al)	Cr	Ni	Mo	

The material supplied conforms to specified tolerances

REMARKS
SHIPPING ADVICE NO.
WAGON NOS.

FOR XYZ IRON AND STEEL COMPANY
(It is suggested that size A-4 paper be used for this test certificate)