

**PRODUCT MANUAL FOR  
Mild Steel Wire Rod for General Engineering Purposes  
According to IS 7887:1992**

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.	<b>Product</b>	:	<b>IS 7887:1992</b>
	<b>Title</b>	:	Mild Steel Wire Rod for General Engineering Purposes
	<b>No. of amendments</b>	:	1
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	No specific requirement. In general billets conforming to IS 2830 or bars conforming to IS 7283 are used for hot-rolling into wire rods.
b)	<b>Grouping Guidelines</b>	:	Please refer Annex – A
c)	<b>Sample Size</b>	:	For physical tests: 2 m For chemical tests : 50 gm drillings or 5pcs each of length 5 cm for OES (ref:LPPD/OES dated:21 Sep 2015)
3.	<b>List of Test Equipment</b>	:	Please refer Annex – B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer Annex – C
5.	<b>Possible tests in a day</b>	:	All Physical and Chemical tests
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 7887:1992 with the following scope:		
	<b>Name of the product</b>	Mild Steel Wire Rod for General Engineering Purposes	
	<b>Dimensions</b>	Wire rods of dia from ...mm upto and including ...mm	
	<b>Grade</b>	2,..	

**ANNEXURE A**  
**To PRODUCT MANUAL for**  
**Mild Steel Wire Rods for General Engineering Purposes**  
**According to IS 7887:1992**

**GROUPING GUIDELINES**

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Clause 6.1 of IS 7887:1992 classifies wire rods, which may be produced by hot rolling, based on chemical composition. Accordingly, Mild Steel Wire Rods for General Engineering Purposes as per IS 7887: 1992 are grouped as mentioned below:

Group	Grades
1	1,2,3
2	4,5,6,7,8,9,10
3	4M,6M,7M,8M,10M

The following procedure to be adopted towards grant of licence and inclusion of additional varieties as per IS 7887:1992:

1. One sample each from lowest and highest range of limits of Carbon from each group shall be drawn for independent testing for covering all grades for considering grant of licence/inclusion.
2. While drawing sample(s) for independent testing care shall be taken to get all declarations as per Notes under Table 1 of IS 7887:1992 such as requirements of silicon killed, aluminium killed, aluminium silicon killed, addition of copper and/or micro alloying elements if any and other values of elements as agreed between manufacturer and purchaser.
3. The samples drawn for different grades in a group as mentioned above shall include one sample each of lowest and highest sizes of wire rods intended to be covered under the scope of the licence for covering all the sizes in the range, including the lowest and the highest sizes of wire rods offered from a group.
4. It shall however be ensured that firm has necessary manufacturing and testing facilities for the entire grades proposed to be covered under scope of BIS Certification.
5. During the operation of license, BO shall ensure that all sizes / grades covered in the license are drawn for independent testing on rotation over a period of time.

**ANNEXURE B**  
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**According to IS 7887:1992**

**LIST OF TEST EQUIPMENTS**

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

Sr. No	Test Equipment/Chemicals	Tests Used in with Clause Reference
1	Rough Polishing Machine, Cutting Machine, Fine Polishing Machine, Grinder Machine	Preparation of specimen
2	<p><b>Instrumental methods</b>  Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry.</p> <p>Spectrophotometer</p>	<p>Cl 5, 5.1, 5.2,6.1, 6.2 for C,S,P,Mn,Si,Cu.</p> <p>Mn,S,P,Si</p>
3	<p>Strohlein or Leco apparatus with all attachments Barometer with chart, Hot plate, Muffle furnace, Complete range of glass wares, measuring cylinders, Desiccator, porcelain boats or ceramic crucibles, Thermometer, Electronic Balance, Distilled Water, Hot air oven, Oxygen - 99.5 percent minimum purity, ether or acetone, Standard Reference Material (NML) with certificate</p> <p>Reagents for C: tin granules or pure iron fillings, acidulated water/brine water, methyl red, caustic potash</p> <p>Reagents for S: Ceramic boats/crucibles – desiccators, Fluxes -Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate</p>	<p>Cl 6.1, 6.2 for C &amp; S (chemical method, alternative to instrumental method)</p>
4	<p>Weighing balance, Heater/ Heating element along with energy regulator, Ice water bath, Vol Flask Cap – 1 litre, (Whatman) filter paper No. 040, Suction Filtration Facility, Filter paper pulp pad, Standard Reference Material (NML) with certificate</p> <p>Potassium Permanganate (KMnO<sub>4</sub>), Sodium Nitrite (Na<sub>2</sub>NO<sub>3</sub>), Ammonium Molybdate [(NH<sub>4</sub>)<sub>2</sub> Mo<sub>2</sub>O<sub>7</sub>], Ammonium Phosphate [(NH<sub>4</sub>)<sub>3</sub> PO<sub>4</sub>], Potassium Nitrate (K<sub>2</sub>NO<sub>3</sub>), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO<sub>4</sub>), Sulphurous Acid, Hydrobromic Acid (HBr), other chemicals and reagent as applicable</p>	<p>Phosphorus content Cl 6.1, 6.2 (chemical method, alternative to instrumental method)</p>

5	Hot plate, Conical flask Reagents:  silver nitrate, ammonium persulphate sodium arsenite solution, Dilute Nitric Acid, Phosphoric Acid, Dilute Sulphuric Acid, Concentrated Nitric Acid, NaCl Solution, Permanganic acid	Manganese content Cl 6.1, 6.2 (chemical method, alternative to instrumental method)
6	Medium textured filter paper, Porcelain casserole, platinum crucible, filter paper pulp, hot plate, hot air oven, muffle furnace  Reagents: Silver nitrate solution, concentrated nitric acid, concentrated sulphuric acid, Dilute Hydrochloric Acid, Dilute Sulphuric Acid, Perchloric Acid, Tartaric acid and hydrofluoric acid	Silicon content Cl 5, 5.1, 5.2, 6.1, 6.2 (chemical method, alternative to instrumental method)
7	Plate, Muffle Furnace, porcelain or silica crucible,  Reagents: Hot Wash Solution (dilute sulphuric acid solution 1 : 99 v/v with hydrogen sulphide), dilute sulphuric acid, hydrogen sulphide, Dilute Nitric Acid, Sodium Fluoride, solid, Dilute Ammonium Hydroxide, Acetic Acid, Potassium Iodide, Starch Solution, Sodium Thiosulphate Solution, Ammonium Bifluoride Solution	Cu content Cl 6, 6.1, 6.2 (chemical method, alternative to instrumental method)
8	Measuring Tape, Electronic Balance, Bandsaw Machine, Scrubber Fume Hood	7.1 (Scale)
9	Visual Inspection	8 (Freedom from Defects)
10	Vernier Calipers, Micrometer	9.1, 9.2 & 9.3 (Sizes and Tolerances)

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

**ANNEXURE C  
TO PRODUCT MANUAL FOR  
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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 equipments.

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

**3. LABELLING, MARKING, PACKING** – The Standard Mark as given in Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, and the marking and packing shall be done as per the provisions of the Indian Standard, 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: “For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”

**4. CONTROL UNIT** – All hot rolled 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.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. TEST CERTIFICATE**-For each consignment of BIS Certified material conforming to IS 7887:1992 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)

**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.

**ANNEXURE C**  
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**SCHEME OF INSPECTION AND TESTING**

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**TABLE 1: LEVELS OF CONTROL**

(1)		(2)	(3)		(4)		
TEST DETAILS			LEVELS OF CONTROL		REMARKS		
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S: Sub-contracting permitted		No. of Samples	Frequency
		Clause	Reference				
5	Manufacture	5.1 5.2	IS 7887: 1992	R	1	Every cast	i) Applicable only for manufacturers with steel making facilities.  ii) In case of rimming steel supplied, records of agreement between purchaser and manufacturer shall be maintained.
6	Chemical Composition						
	i) Ladle Analysis	6.1 Table-1	IS 7887: 1992	R	1	Each Cast	i) Applicable for manufacturers with steel making facilities
	ii) Product Analysis (See Note-2)	6.2 Table-2		R	1	Each Cast	ii) Applicable for manufacturers without steel making facilities and feeding billets/ ingots to rolling mills.
7	Condition of material on delivery	7.1 7.2	IS 7887: 1992	R	----	-----	As agreed to between manufacturer and purchaser.

8	Freedom from defects	8	IS 7887: 1992	R	1	Each Coil	
9	Sizes and Tolerances	9.1, 9.2, 9.3 & Table-3	IS 7887: 1992	R	1	Each Coil	
10	Physical Properties	10	IS 7887: 1992	S	----	-----	If required by purchaser. Records of agreed properties and corresponding values are to be maintained.

Note-1: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: No testing for product analysis is required if material fed to rolling mills is ISI marked and received with test certificate.

Note-3: ----- means the levels of control in Column(3) of Table-1 are as agreed to between the manufacturer and purchaser.

**Annexure-I****Page 4 of 4**

(Para 6 of the Scheme of Inspection and Testing)

XYZ IRON AND STEEL COMPANY

(Registered office Address and works address)

**TEST CERTIFICATE FOR SPECIFICATION FOR Mild Steel Wire Rods for General Engineering Purposes**BIS  
STANDARD  
MARK

TEST CERTIFICATE No. \_\_\_\_\_

DATE \_\_\_\_\_

To M/s \_\_\_\_\_

We certified that the material described below fully conforms to 7887:1992 Chemical composition and Physical properties of the product, as tested in accordance with the Scheme of Testing and Inspection contained in the BIS Certification Marks Licence No. CM/L \_\_\_\_\_ are as indicated below against each order No.

(PLEASE REFER TO IS 7887:1992 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

**TEST RESULTS**

Order No. & Date	(nom Size)	Control Unit No.	Grade	Qty	CHEMICAL COMPOSITION							* Physical Properties	Size and Tolerances		
					C %	S %	P %	Si %	Mn %	#Cu %	#Micro alloying		Al %	S+P %	Tolerance on nominal dia

\* as agreed to between purchaser and manufacturer

# if required by purchaser

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ IRON AND STEEL COMPANY