PRODUCT MANUAL FOR MILD STEEL AND MEDIUM TENSILE STEEL BARS AND HARD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT PART II - HARD-DRAWN STEEL WIRE ACCORDING TO IS 432 (PART 2): 1982

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 432 (Part 2) : 1982
	Title	:	MILD STEEL AND MEDIUM TENSILE STEEL BARS AND HARD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT - HARD-DRAWN STEEL WIRE
	No. of Amendments	:	3
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Mild Steel - clause 3 of IS 432 (Part 2)
b)	**Grouping guidelines**	:	Please refer Annex-A
c)	**Sample Size**	:	For Mechanical Test – 1 m For Chemical Test – 5 cm x 5 nos
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 :** All tests		
6.	**Scope of the Licence :**		
	"Licence is granted to use Standard Mark as per IS 432 (Part 2) with the following scope: Hard drawn steel wire for following nominal sizes upto and including _____ mm"		

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ANNEX A

Grouping Guidelines

1. For considering GoL/CSoL one sample of hard drawn wire from the lowest and the highest diameter intended to be covered in the licence shall be drawn for testing to cover all the sizes in the range.

2. The Firm shall declare the sizes of hard drawn wire they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing capability and Testing facilities of the Manufacturer.

3. During the operation of the Licence, BO shall ensure that all the Varieties covered in the Licence are tested in rotation to the extent possible.

ANNEX B

List Of Test Equipment

Major test equipment essentially required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Nominal Diameter (Clause 5.1, 6.1)	Ball ended Micrometer
2.	Cutting tolerances on length (Clause 6.2)	Measuring tape
3.	(i)Ultimate Tensile Stress (ii)Proof Stress(0.2 percent) (iii)Total Elongation % (Clause 7.1)	Tensile Testing Machine Extensometer with Dial Gauge Ball ended Micrometer Steel Scale Vernier Caliper Thermometer Scriber Hammer Sample Cutter Air Conditioner
4.	Reverse Bend test (Clause 7.2, 8.3)	Arrangement for Bend Testing with required mandrels & accessories Steel Scale Vernier Caliper Sample Cutter Right Angle Thermometer

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

SCHEME OF INSPECTION AND TESTING

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 AND MARKING – As per the requirements of IS 432 (Part 2): 1982.

4. CONTROL UNIT – Wires drawn from same cast of mild steel from one drawing machine 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.

6 . 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.

TABLE 1

(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
3	Chemical requirements	3.1, 3.1.1	IS 432 (Part 2) IS 228 (relevant parts)	S	A test certificate indicating conformity of the material to the requirements of the specification shall be obtained for each cast/lot received.		
4.	Freedom from Defects	4.1	IS 432 (Part 2)	---	Adequate inspection to ensure that each coil drawn is free from surface defects		
5	Nominal size	5.1, 6.1	IS 432 (Part 2)	R	Two	One sample shall be drawn from starting and ending of each coil.	*
6.2	Cutting tolerances on Length	6.2	IS 432 (Part 2)	R	Random check shall be carried out		---
7.1	Tensile Test (Ultimate Tensile Stress, Proof stress and Total elongation)	7.1, 8.2	IS 432 (Part 2)	R	One	Each control unit or 5 ton whichever is less	*
7.2	Reverse bend test	7.2, 8.3	IS 432 (Part 2)	R	One		*

* In case of failure, two samples from same control unit shall be tested for that requirement and control unit shall be accepted only if both samples pass.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.