



**उत्पाद मैनुअल
आई एस 13158:1991 के अनुसार
ओवरहेड पावर ट्रैक्शन और दूरसंचार लाइनों के लिए प्रीस्ट्रेसड कंक्रीट
सर्कुलर स्पन पोल्स के लिए**

दस्तावेज संख्या – पी एम/आई एस IS 13158/1/Feb 2023

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिश्रिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसि द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज का उपयोग किया जा सकता है।

**PRODUCT MANUAL FOR
PRESTRESSED CONCRETE CIRCULAR SPUN POLES FOR OVERHEAD
POWER TRACTION AND TELECOMMUNICATION LINES
ACCORDING TO IS 13158:1991**

Document No.- PM/ IS 13158/1/Feb 23

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.

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1.	Product	:	IS 13158:1991
	Title	:	Prestressed Concrete Circular Spun Poles for overhead Power Traction And Telecommunication Lines
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Please refer ANNEX – A
b)	Grouping guidelines	:	Please refer ANNEX – B
c)	Sample Size	:	2 Poles
d)	Process & Operation of Licence		Considering the nature of product, licence is to be granted and operated based on complete factory testing basis. Manufacturer shall have complete test facilities to test the product as per Standard.
3.	List of Test Equipment	:	Please refer ANNEX – C
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – D
5.	Possible tests in a day :		2 mandays are required for complete testing of the product as per IS 13158:1991
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 13158 : 1991 with the following scope:		
	Name of the product		Prestressed Concrete Circular Spun Poles for overhead Power Traction And Telecommunication Lines
	Overall Length		
	Design Ultimate Transverse Load		

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ANNEX A
RAW MATERIAL

- 1) Reinforcing bars and wires used for the manufacture-of prestressed concrete poles shall conform to IS 432 (Part 1) or IS 432 (Part 2) or IS 1786 or IS 1785 (Part 1) or IS 1785 (Part 2) or IS 2090 or IS 6003 or IS 6006.
- 2) Aggregates used for the manufacture of reinforced concrete poles shall conform to IS 383.
- 3) Cement used for the manufacture of concrete poles shall be ISI marked conforming to the relevant Indian Standard as mentioned in IS 13158.
- 4) The design of concrete mix shall conform to the requirements laid down in IS 1343 : 1980.
- 5) Admixtures (If used) – IS 9103.

Note: If different type and/or sizes of steel for reinforcement are used, it shall be treated as additional raw material. Similarly, if source and/or size and types of coarse and fine aggregate has changed, it shall be treated as additional raw material.

ANNEX B**Grouping Guidelines**

1. Prestressed Concrete Circular Spun Poles for overhead Power Traction And Telecommunication Lines as per IS 13158:1991 are categorized as given below:

- i) Overall Length : 6 m and subsequent length shall be in steps of 0.5 m.
- ii) Design Ultimate Transverse Load

2. Considering the above, the following grouping guidelines for GoL/CSoL have been developed:

- Pole with highest Overall Length from each Design Ultimate Transverse Load shall be tested to include poles of all Overall Length upto the length tested for that particular Design Ultimate Transverse Load in the licence scope.

3. Manufacturer has to declare the Design Ultimate Transverse Load for each overall length of pole.

4. The Firm shall declare the varieties of Prestressed Concrete Circular Spun Poles for overhead Power Traction And Telecommunication Lines intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

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

ANNEX C**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

S. No.	Tests used in with Clause Reference	Test Equipment
1.	Tolerances – overall length, cross sectional dimensions, uprightness, manufacture & design requirements (Clause 4 of IS 13158)	a) Vernier calliper b) Micrometre c) Measuring tape
2.	Transverse Strength Test for Poles	a) Testing arrangement as per fig 1 of IS 2905:1989
3.	Concrete Mix design	a) Compressive Strength Test Machine fitted with Load Gauge b) Cube Moulds c) Tamping rod/ vibrator for compaction d) Humidity chamber e) Hygrometer f) Curing tank inside lab g) Air Conditioner

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

ANNEX D

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 equipment.

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 13158:1991.

4. CONTROL UNIT – Concrete poles of the same overall length and Design Ultimate Transverse Load manufactured from the same batch of material under similar condition 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 Standard and covered by the licence should be marked with Standard Mark.

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	Recommended Levels of Control		
Clause	Requirement	Test Methods Clause Reference			No. of Sample	Frequency	Remarks
5.1	Cement	5.1	IS 13158#	S	-	Each consignment	Shall be ISI marked and received with test certificate
5.2	Aggregates	5.2	IS 13158 IS 383#	S	One	Each consignment	No further testing is required if ISI marked or accompanied with test certificate.
5.3	Reinforcement	5.3	IS 13158	S	-	Each consignment	Reinforcement material received shall be ISI marked and accompanied with test certificate.
5.4	Concrete (mix design)	5.4	IS 13158 IS 1343#	R	One consisting of 3 cubes from each consignment of cement	Supply of cement executed against order spread over up to three months shall be taken as one consignment for this test only. *	
5.5	Admixtures	5.5	IS 13158#	S	One	Each consignment	No further testing is required if accompanied with test certificate or ISI marked.
6	Design	6	IS 13158	R	Firm to have adequate in-process controls to check compliance 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		
7	Manufacture	7	IS 13158	R			
8.1	Daily tests on concrete	7.9	IS 13158	R	Three	Each control unit	During manufacture, daily tests on concrete cubes shall be carried out till the concrete achieves the required strength at transfer.

							Thereafter the test on concrete shall be carried out as detailed in IS 1343.
8.2	Transverse Strength Test for Poles	8.2	IS 13158	R	One	Each control unit	In case of failure of pole in any of the requirement, two more poles from same control unit shall be tested for that requirement and control unit shall be rejected if there is any failure.

As per the latest version.

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