



## PRODUCT MANUAL FOR INDENTED WIRE FOR PRESTRESSED CONCRETE ACCORDING TO IS 6003: 2010

*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>	:	IS 6003 : 2010
	<b>Title</b>	:	INDENTED WIRE FOR PRESTRESSED CONCRETE
	<b>No. of Amendments</b>	:	NIL
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Wire – Clause 4 of IS 6003 : 2010
b)	<b>Grouping guidelines</b>	:	Please refer <a href="#">ANNEX – A</a>
c)	<b>Sample Size</b>	:	2 Nos x 1 meter for mechanical test , 3 meter for relaxation test, and 50 gm drillings for chemical test.
3.	<b>List of Test Equipment</b>	:	Please refer <a href="#">ANNEX – B</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer <a href="#">ANNEX – C</a>
5.	<b>Possible tests in a day :</b> Please refer <a href="#">ANNEX – D</a>		
6.	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 6003 : 2010 with the following scope:		
	Name of the product	INDENTED WIRE FOR PRESTRESSED CONCRETE	
	Size (mm)		
	Shape and pattern of indentation		

**ANNEX A**

**Grouping Guidelines**

1. IS 6003 : 2010 covers Indented wire for pre-stressed concrete as details given below:
  - a) Nominal Size – 8.00 , 7.00, 5.00, 4.00, 3.00 and 2.50 mm
  - b) Geometrical characteristics - Elliptical indentation , Round indentation  
(Also, any other type of indentation as agreed between the manufacturer and purchaser )
2. Though Geometrical characteristics may vary based on agreement between manufacturer and purchaser, it has impact on actual performance of product while using in prestressing and hence wires with different shape and pattern of indentation are considered as separate variety.
3. Considering the above, following grouping guidelines is developed for GoL/CSoL:
  - a) One wire of any nominal size shall be tested to cover all nominal sizes in the scope of the licence.
  - b) Separate sample of wire shall be tested for each shape and pattern of indentation to cover that shape and pattern of indentation in the scope of the licence.
4. The Firm shall declare the varieties of wires 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 the types and sizes covered in the Licence are tested in rotation, to the extent possible.

**ANNEX B****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	Chemical composition (Clause 4.1.1)	a) All glass wares & chemicals as per the relevant parts of IS 228 for sulphur and phosphorous testing
2	Nominal Sizes and Tolerances (Clause 5.1 and 6)	a) Micrometre b) Vernier calliper
3	Nominal mass (Clause 6.1.2)	a) Weighing scale b) Steel scale
4	Tensile strength (Clause 7.1) Proof Stress (Clause 7.2) Elongation after fracture (Clause 7.4)	a) Tensile testing machine/UTM b) Extensometer c) Steel scale
5	Ductility (Clause 7.3)	a) Bending arrangement with required mandrels
6	Relaxation (Clause 7.5)	a) Relaxation testing machine b) Air conditioner

*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 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 6003: 2010.

**4. CONTROL UNIT** – All coils of same nominal diameter, shape and pattern of indentation manufactured from same cast/heat under similar condition of manufacturing as continuous production shall constitute a control unit.

**4. 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. 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			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Chemical composition	4.1 , 4.1.1	IS 6003	S	1	Each cast/ heat	No further testing is required if accompanied with the Test Certificate or ISI marked
4	Manufacture	4.2 to 4.5	IS 6003	R	Each Coil	-	-
5.1	Nominal size, tolerances, Ovality, Mass	5.1 , 6	IS 6003	R			
5.2	Geometrical characteristics	5.2	IS 6003	R			
7	Physical requirements						
7.1	Tensile strength	8.3	IS 6003 IS 1608	R	3	Every Control unit	In case of failure, the coil from which sample was drawn shall be rejected. Samples from each coil shall be tested subsequently and only conforming coils shall be marked. When samples from five consecutive coils meet the requirements, the earlier frequency may be restored.
7.2	Proof stress	8.4	IS 6003 IS 1608	R	3		
7.3	Ductility / Reverse bend test	8.5	IS 6003	R	3		
7.4	Elongation after fracture	8.6	IS 6003 IS 1608	R	3		
7.5	Relaxation	8.7	IS 6003	S	1	Once in a month	For 100 h relaxation test #
10.5	Susceptibility to stress corrosion test	10.5	As required by the purchaser.				

# The relaxation test shall be carried out for 100 h and the graph shall be extrapolated to 1000 h. Relaxation test for 1000 h shall be carried out once in a year for any one size. However, samples shall be drawn in such a manner that all sizes covered in licence may be tested to the extent possible over a period of time.

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 obligatory in nature.

**ANNEX- D**

**POSSIBLE TESTS IN A DAY**

- (i) Chemical composition (Clause 4.1.1)
- (ii) Finish (Clause 4.3 to 4.5)
- (iii) Nominal diameter (Clause 5.1 and 6.1)
- (iv) Geometrical characteristics (Clause 5.2)
- (v) Nominal Mass (Clause 6.1.2)
- (vi) Tensile strength (Clause 7.1)
- (vii) Proof stress (Clause 7.2)
- (viii) Ductility (Clause 7.3)
- (ix) Elongation after fracture (Clause 7.4)