

**PRODUCT MANUAL FOR
UNCOATED STRESS RELIEVED LOW RELAXATION SEVEN –
WIRE (PLY) STRAND FOR PRESTRESSED CONCRETE
ACCORDING TO IS 14268: 2017**

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 14268 : 2017
	Title	:	UNCOATED STRESS RELIVED LOW RELAXATION SEVEN – WIRE (PLY) STRAND FOR PRESTRESSED CONCRETE
	No. of Amendments	:	NIL
2.	Sampling Guidelines:		
a)	Raw material	:	Wire – As per clause 4.1 of IS 14268
b)	Grouping guidelines	:	Please refer ANNEX- A
c)	Sample Size	:	1 meter x 3 nos for Mechanical test 50 gm or 5 pieces of 50 mm for Chemical analysis 3 meter for Relaxation test
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 : Please refer ANNEX – D		
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 14268 : 2017 with the following scope:		
	Name of the product	UNCOATED STRESS RELIVED LOW RELAXATION SEVEN – WIRE (PLY) STRAND FOR PRESTRESSED CONCRETE	
	Class and Nominal Diameter of Strand		

ANNEX A**Grouping Guidelines**

1. The For considering GoL/CSoL, Uncoated stress relieved strands for pre-stressed concrete are grouped as given below:

Group	Class	Nominal diameter of element wire (mm)
Group I	1	9.5
	1	11.1
	1	12.7
	1	15.2
Group II	2	9.5
	2	11.1
	2	12.7
	2	15.2

2. Strands with highest size of wire from each group shall be tested to cover all the varieties in that group.
3. The Firm shall declare the varieties intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
4. During the operation of the Licence, BO shall ensure that all the varieties are 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 4.1.2)	a) All glasswares & chemicals as per the relevant parts of IS 228 for sulphur and phosphorous testing
2	Strand (Clause 4.2)	a) Micrometre b) Carbon paper and plain paper
3	Nominal diameter and Tolerances (Clause 6.1)	a) Micrometre b) Vernier calliper c) Weighing balance d) Steel scale
4	Breaking strength & 0.2 percent proof load (Clause 6.2.2) Elongation (Clause 6.2.3)	a) Tensile testing machine/UTM b) Extensometer c) Steel scale
5	Relaxation (Clause 6.2.4)	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 14268: 2017

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.

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

4.2 For each consignment of BIS certified material conforming to IS 14268: 2017, a test certificate as per Annexure 1 shall be issued.

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				
4.1	Chemical Composition of wire	4.1.1 and 4.1.2	IS 14268	S	One	Each consignment	No testing is required if each consignment is received with a test certificate.
4.1.3	Surface condition	4.1.3	IS 14268	R	One	Each coil	-
4.2	Strand	4.2 and Annex A	IS 14268	R	One	Each coil	Sample may be taken from outer end of the coil.
4.3	Joints	4.3	IS 14268	R	One	Each coil	Sample may be taken from outer end of the coil.
4.4	Treatment of Strand	4.4	IS 14268	R	One	Each coil	Sample may be taken from outer end of the coil.
4.5	Workmanship and Finish	4.5	IS 14268	R	One	Each coil	Sample may be taken from outer end of the coil.
6.1	Nominal diameter, tolerance, nominal cross sectional area and nominal mass per unit length of strand.	6.1.1 and Annex A	IS 14268	R	One	Each coil	Sample may be taken from outer end of the coil.
6.2.2	Breaking strength and 0.2 percent proof load	6.2.2	IS 14268 & IS 1608	R	One	From a group of 5 coils	In case of failure, each coil shall be tested till samples from 5 consecutive coils pass. Thereafter earlier frequency may be restored. Also refer provisions of clause 6.2.1 while conducting these tests.

6.2.3	Elongation	6.2.3	IS 14268 & IS 1608	R	One	From a group of 5 coils	
6.2.4	Relaxation properties (For 100 h duration)	6.2.4	IS 14268	S	One	Once in a month	-
	Relaxation properties (For 1000 h duration)	6.2.4	IS 14268	S	One	Once in a year	Additional Sample shall be tested whenever there is change in process of manufacture. Samples shall be selected such that sample of each class and size shall be tested in rotation 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 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.

ANNEXURE I
(Para 4.2 of the Scheme of Testing and Inspection)

**STANDARD
 MARK**

XYZ COMPANY
(Registered office Address and works address)

TEST CERTIFICATE FOR UNCOATED STRESS RELIEVED LOW RELAXATION SEVEN - WIRE (PLY) STRAND FOR PRESTRESSED CONCRETE ACCORDING TO IS 14268 : 2017

TEST CERTIFICATE No. _____ DATE _____
 TO M/s _____

It is certified that the material described below fully conforms to IS 14268: 2017. Chemical composition and Mechanical properties of the Product, as tested in accordance with the Scheme of Testing and Inspection contained in the BIS Certification Marks Licence CM/L_____ are as indicated below against each order No. .

(PLEASE REFER TO IS 14268: 2017 FOR DETAILS OF SPECIFICATION REQUIREMENTS)
TEST RESULTS

Order No. & Date	Size Designation & Class	Coil No.	Lay length (mm)	Nominal Mass of Strand kg/km	Strand dia mm	Dia of Individual Wire mm	CHEMICAL ANALYSIS /					MECHANICAL PROPERTIES			Relaxation loss Percentage	REMARKS
							C	Si	Mn	S	P	0.2 % Proof Load kN or kgf	Breaking Strength kN or kgf	Elongation Percentage		
							%	%	%	%	%					

Surface defects :
 a) Splits, Surface flaws, piping etc. Absent/Present
 b) Imperfections, Injuries Absent/Present
 c) Rusting Absent/Slight but not sufficient to cause pits visible to naked eye.

REMARK

SHIPPING ADVICE No.
 WAGON NOS.

SIGNATURE:

DESIGNATION:
 FOR XYZ COMP

ANNEX – D

Possible tests in a day

- (i) Chemical analysis (Clause 4.1)
- (ii) Strand (Clause 4.2)
- (iii) Joints (Clause 4.3)
- (iv) Workmanship and finish (Clause 4.5)
- (v) Breaking strength and 0.2 percent proof load and elongation (Clause 6.2.2, 6.2.3)