



PRODUCT MANUAL FOR FUSION BONDED EPOXY COATED REINFORCING BARS ACCORDING TO IS 13620: 1993

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 13620 : 1993
	Title	:	FUSION BONDED EPOXY COATED REINFORCING BARS
	No. of Amendments	:	1
2.	Sampling Guidelines:		
a)	Raw material	:	Coating material – Clause 3 & Annex – A of IS 13620 Reinforcing steel – IS 1786
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	Coating thickness and uniformity – 1 full length coated bar Bond strength - coated 2 nos x 1 meter & uncoated 2 nos x 1 meter Chemical resistance test, adhesion of coating, Impact test, Hardness test, abrasion resistance test, resistance to applied voltage – 12 pieces of 1 meter Chemical test – 5 nos x 5 cm bars
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 13620 : 1993 with the following scope:		
	Name of the product	FUSION BONDED EPOXY COATED REINFORCING BARS	
	Size	For sizes upto and including -- mm	

ANNEX A

Grouping Guidelines

1. IS 13620: 1993 covers Fusion Bonded Epoxy Coated Reinforcing Bars of sizes 6 mm to 50mm.
2. For considering GoL/CSoL these Bars are classified into two the following groups:
 - i) Group I - upto and including 20 mm
 - ii) Group II – Above 20 mm
3. Fusion Bonded Epoxy Coated Reinforcing Bars of highest size from each group shall be tested for all requirements to cover all sizes in that size group.
2. The Firm shall declare the sizes of Bars they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
3. During the operation of the Licence, BO shall ensure that all the 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 resistance (Clause A – 2)	<ul style="list-style-type: none"> - Distilled water - CaCl₂ solution - NaOH solution - Ca (OH)₂ solution - Thermometer - Temperature controlled bath - Weighing balance
2	Resistance to applied voltage (Clause A – 3)	<ul style="list-style-type: none"> - Non conductive test vessel - Electrodes - NaCl electrolyte - Cell for power supply
3	Adhesion of coating (Clause 7.3 , 8.3 & A – 4)	<ul style="list-style-type: none"> - 150 mm diameter wooden mandrel - Protractor - Stop watch - Thermometer
4	Bond strength to concrete (Clause A-5)	<ul style="list-style-type: none"> - Cube moulds - Tamping rod - Pull out testing machine - Measuring apparatus for measuring slip of bars from cubes such as dial micrometre. - Water bath
5	Abrasion resistance (Clause A-6)	<ul style="list-style-type: none"> - Taber abrasor or its equivalent abrasive media - CS-10 wheel and 1 kg load - Testing machine with counter
6	Impact test (Clause A-7)	<ul style="list-style-type: none"> - Tup - Drop tube - Specimen holder

7	Hardness test (Clause A-8)	- Hardness tester
8	Coating thickness (Clause 7.1)	- Digital coat meter
9	Continuity of coating (Clause 7.2)	- 67.5 Volts holiday detector - Coat meter
10	General requirement	- Glass wares - Impact drilling machine

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 13620: 1993

4. CONTROL UNIT – All Fusion Bonded Epoxy Coated Reinforcing Bars manufactured from same coating material under similar condition of manufacturing in eight hours 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	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
3	Coating material	3.1, 3.2 Annex- A	IS 13620	S	1	Each consignment or once in three month, whichever is earlier.	
4	Reinforcing Steel	4	IS 13620 IS 1786	S	Reinforcing bars shall be ISI marked and on receipt of steel, it shall be segregated lot/cast wise.		
5	Surface preparation	5.1 5.2	IS 13620	-	Each bar	-	-
6	Application of coating	6, 8.1	IS 13620	-	Each bar	-	-
7.1	Coating thickness	7.1.1	IS 13620	R	1	Every 20 bars	-
7.2	Continuity of of coating	7.2, 8.2	IS 13620	R	1	Every 20 bars	-
7.3	Adhesion of coating	7.3, 8.3	IS 13620	R	For sizes upto 16 mm – 1 sample per 1 ton For sizes 16 to upto 25 mm – 1 sample per 2 ton For sizes above 25 mm – 1 sample per 4 ton		#

In case of failure, twice the number of samples shall be tested and lot shall be accepted if the retested samples pass.

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.

ANNEX - D

Possible tests in a day :

- (i) Surface preparation (Clause 5)
- (ii) Coating thickness (Clause 7.1)
- (iii) Continuity of coating (Clause 7.2)
- (iv) Adhesion of coating (Clause 8.3)
- (v) Abrasion resistance test (Clause A-6)
- (vi) Impact test (Clause A-7)
- (vii) Hardness test (Clause A-8)