PRODUCT MANUAL FOR HIGH STRENGTH STRUCTURAL BOLTS ACCORDING TO IS 3757: 1985

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 3757: 1985
	Title	:	High Strength Structural Bolts
	No. of Amendments	:	2
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	Please refer Clause 4 of IS 3757: 1985.
b)	**Grouping guidelines**	:	Please refer ANNEX – A
c)	**Sample Size**	:	15 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 3757: 1985 with the following scope:		
	Name of the product		High Strength Structural Bolts
	Property Class		
	Size		
	Finish		

ANNEX B

Grouping Guidelines

1. High Strength Structural Bolts as per IS 3757: 1985 are classified as follows:

   (i) Property Class: 8.8, 10.9

   (ii) Size: M16, M20, M22, M24, M27, M30, M36

   (iii) Finish – Dull Black (Property Class 8.8, 10.9)

   Hot-dip Galvanized (Property Class 10.9)

2. Considering the above, the grouping guidelines given below shall be followed for GoL/CSoL:

   (a) One sample each of lowest size, any intermediate size and highest size of each property class shall be tested for all requirements in order to cover the complete range of sizes for that particular property class.

   (b) For property class 10.9, if galvanized bolt is tested, then dull black finish bolts of corresponding sizes may also be covered.

3. The Firm shall declare the varieties of Bolts they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

4. During operation of licence, BOs 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 required to test as per the Indian Standard

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Dimensions and Tolerances (Clause 2)	(i) Go-No Go gauges of all thread sizes (ii) Micrometer (iii) Radius Gauge, Angle gauge (iv) Scale (v) Thread gauge. Thread Pitch gauge (vi) Vernier Callipers
2	Mechanical Properties (Clause 4)	(i) Hardness Tester (ii) Torsion Test Machine (iii) UTM
3	Finish (Clause 5.1)	(i) Analytical Balance (ii) Coat meter
4	Galvanising (Clause 5.2)	(i) Antimony Trichloride (ii) Antimony Trioxide (iii) Hydrochloric Acid (iv) Weighing Balance

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 requirement of IS 3757: 1985.

4. CONTROL UNIT – All Bolts of same property class and size manufactured during 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 Standards 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 Method**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
2.1 & 2.2	Dimensions	2.1, 2.2 Table1 & 2	IS 3757	R	Five	As per sampling plan given in IS 1367 (Part 17)	The existing frequency for dimensional verification would be applicable only when the firm is having adequate system of checking the dimensions and inspection at a frequency of 15min/ 30min for each operation.
2.3	Thread Requirements		IS 14962(Part 2)	R			In case of failure the production should be stopped and setting of the machine should be rectified so as to produce all subsequent product within tolerances.
3	Raw Material		IS 1367(Part 2)	S	One	Each Consignment	No further testing is required if received with test certificate or ISI marked.
4	**Mechanical properties**						
	(i) Tensile test under wedge loading	9.1	IS 1367(Part 3)	R	Two	Every 7th control unit	
	(ii) Tensile test	9.2	IS 1367(Part 3)	R	Two		
	(iii) Tensile test for full-size fasteners	9.3	IS 1367(Part 3)	R	Two		
	(iv) Proof load test	9.6	IS 1367(Part 3)	R	Two		
	(v) Head soundness test	9.8	IS 1367(Part 3)	R	Two		
	(vi) Torsional test	9.13	IS 1367(Part 3)	R	Two		

	(vii) Hardness test	9.9	IS 1367(Part 3)	R	Three	Each heat treatment batch	
	(viii) Decarburization test	9.10	IS 1367(Part 3)	R	Three		
	(ix) Carburization test	9.11	IS 1367(Part 3)	R	Three		
	(x) Retempering test	9.12	IS 1367(Part 3)	R	Three		
5.1	Finish	5.1	IS 3757	R	All		
5.2	(i) Anti-seizing test	5.2	IS 3757	R	Three	Every heat treatment batch	
	(ii) Galvanizing		IS1367 (Part 13)	R	As per sampling plan in IS 1367 (Part 13).		
6.1	Surface discontinuities		IS 1367 (Part 9/Sec 1)	R	Five	Every heat treatment batch	
6.3	Nuts (if supplied with bolt)		IS 6623	S	Each consignment		No further testing is required, if accompanied with test certificate or ISI marked
6.4	Washers (if provided)		IS 6649	S	Each consignment		

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.