



**PRODUCT MANUAL FOR
MECHANICALLY WOVEN, DOUBLE – TWISTED, HEXAGONAL WIRE MESH
GABIONS, REVET MATTRESSES, ROCK FALL NETTING AND OTHER PRODUCTS
FOR CIVIL ENGINEERING PURPOSES (GALVANIZED STEEL WIRE OR
GALVANIZED STEEL WIRE WITH POLYMER COATING)
ACCORDING TO IS 16014: 2018**

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 16014 : 2018
	Title	:	Mechanically Woven, Double – Twisted, Hexagonal Wire Mesh Gabions, Revet Mattresses, Rock Fall Netting and Other Products for Civil Engineering Purposes (Galvanized Steel Wire or Galvanized Steel Wire with Polymer Coating)
	No. of Amendments	:	NIL
2.	Sampling Guidelines:		
a)	Raw material	:	(i) Mild Steel Wire – IS 280 (ii) Cold Drawn Unalloyed Steel Wire – IS 4454(part 1) (iii) Stainless Steel Wire – IS 4454(Part 4)
b)	Grouping guidelines	:	Each Product Type (Fig. 5 to Fig. 10) for each Class (Class 1 and Class 2) shall be tested for considering GoL/CSO1.
c)	Sample Size	:	(i) Wire Mesh – 2m length in full width (ii) Mesh wire – 2m long (iii) Fastener wire – 2m long
3.	List of Test Equipment	:	Please refer ANNEX – A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – B
5.	Possible tests in a day :		All Tests
6.	Scope of the Licence :		Please refer ANNEX – C

ANNEX A**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 (Clause 5.5)	(i) Degree Protector (ii) Feeler Gauge (iii) Measuring Tape (iv) Micrometer (v) Snap Gauges (vi) Vernier calipers
2	Tensile Test (Clause 6.1)	Tensile Testing Machine
3	Mesh Panel Strength (Clause 6.2 and 12.1)	(i) Gripping Vices (ii) Measuring scale (iii) Stopwatch (iv) Weights
4	Punch Test (Clause 12.2)	(i) Hammer (ii) Steel punch and cutter
5	Metallic Coating Mass Test (Clause 12.3)	(i) Micro balance (ii) Stop watch (iii) Sulphur Acid and other chemicals
6	Polymer Coating Thickness Test (Clause 12.4)	(i) Knife or stripper (ii) Measuring Tape (iii) Micrometer
7	Polymer Coating – Resistance to Sodium Chloride Solution (Clause 12.5)	(i) Measuring Tape (ii) Salt spray Chamber (iii) Sodium Chloride Solution (iv) Test tube (v) Thermometer (vi) Watch (vii) Weighing balance

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

ANNEX B

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 Clause 13 of IS 16014: 2018.

4. CONTROL UNIT – Each variety and class produced in a shift 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				
5	MATERIALS AND MANUFACTURE						
5.1, 5.3, 5.4.1, 5.4.2	Material	5.1, 5.3, 5.4.1, 5.4.2	IS 16014	S	-	Each Consignment	No further testing is required, if accompanied with test certificate or ISI marked
5.2, 5.4, 5.5	Manufacture	5.2	IS 16014	R	Each	-	
		5.4, 5.5	IS 16014	R	One	Each Control Unit	
	TESTS						
6.1	Tensile Strength	6.1	IS 16014	R	Three	Each Control Unit	
6.2, 12.1	Mesh Panel Strength	6.2, 12.1	IS 16014	R	Three	Each Control Unit	
7.1, 12.3	Physical properties of Zinc / Zinc Alloy Coating	7.1, 12.3	IS 16014	R	Three	Each Control Unit	
7.2	Physical Properties of Polymer for Coating	7.2(a), 7.2(b), 7.2(c), 7.2(f), 7.2(g)	IS 16014	R	One	Each Consignment	No further testing is required, if accompanied with test certificate.
		7.2(d), 12.5	IS 16014	S	One	Once in three months	
		7.2(e)	IS 16014	S	One	Once in a year	
8	Dimensions and Tolerances	8	IS 16014	R	Three	Each Control Unit	

9	Workmanship	9	IS 16014	R	Each Reel		
12.2	Punch Test	12.2	IS 16014	R	Three	Each Control Unit	
12.4	Polymer Coating Thickness Test	12.4	IS 16014	R	Three	Each Control Unit	
12.5	Polymer Coating – Resistance to Sodium Chloride Solution	12.5	IS 16014	R	Three	Every 7 th Control Unit	

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 CScope of Licence

Licence is granted to use Standard Mark as per IS 16014 : 2018 with the following scope:	
Name of the product	Gabion Boxes / Revet Mattresses/ Rock Fall Netting/ Sack Gabions/Soil reinforcement facia units (vertical or inclined)
Class	Class 1 / Class 2