



**PRODUCT MANUAL FOR
GALVANIZED STEEL BARBED WIRE FOR FENCING
ACCORDING TO IS 278:2009**

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 278:2009
	Title	:	Galvanized Steel Barbed Wire for Fencing
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Mild Steel Wire – IS 280
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	Chemical tests - 50 grams or 5 cm x 5 nos. Remaining tests - 3 meters
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 278:2009 with the following scope” :		
	Name of the product	Galvanized Steel Barbed Wire for Fencing	
	Type	Type A (Iowa Type)/Type B (Glidden Type)	
	Size Designation	1/2/3/4/5/6	
	Type of protective coating	With or without Chromating	

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ANNEX - A

Grouping Guidelines

1. Galvanized Steel Barbed Wires for Fencing are classified as given below:
 - (a) Type - Type A (Iowa Type)/Type B (Glidden Type)
 - (b) Size Designation – 1 to 6
 - (c) Type of protective coating - With or without Chromating
2. Galvanized Steel Barbed Wire for Fencing are grouped as given below:

Group	Size Designation
I	1 to 4
II	5 and 6

3. Considering the above, following grouping guidelines for GoL/CSoL have been developed:
 - (a) Each Type of Galvanized Steel Barbed Wire (Type A/ Type B) of any size designation from each group shall be tested for all the requirements to cover all the size designations of Wires in that particular group and type tested.
 - (b) However, if barbed wire with protective chromate conversion coating is tested, wire without Chromating may also be covered.
4. The Firm shall declare the varieties of Galvanized Steel Barbed Wire for Fencing 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 varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX - B**List of Test Equipments****Major test equipment required to test as per the Indian Standard**

Sr. No.	Test Equipment	Tests used in with Clause Reference
1	a) Measuring scale b) Angle protractor	Finish [Clause-7.2]
2	a) Micrometer b) Vernier Caliper / Measuring Scale	Sizes [Table-1, Clause-5]
3	Weigh Bridge	Mass [Table-1, Clause-5]
4	Visual Inspection	Freedom from defects [Clause-9]
5	a) Universal Testing Machine b) Air conditioner for maintaining room temperature	Tensile test [Clause-12.1]
6	<p>For Mass of zinc coating:</p> <p><i>i) By Stripping method:</i></p> <p> a) Weighing balance</p> <p> b) Micrometer</p> <p> c) Vernier Caliper</p> <p><i>ii) By Volumetric Method</i></p> <p> a) Burette</p> <p> b) Micrometer</p> <p> c) Vernier Caliper</p> <p>For Adhesion test:</p> <p> a) Mandrels</p> <p> b) Winding machine</p> <p>For Copper Sulphate Solution test:</p> <p> a) Vernier Caliper</p> <p> b) Volatile organic solvent</p> <p> c) Alcohol</p> <p> d) Thermometer</p> <p> e) Arrangement for maintaining temperature of test piece and solution</p> <p> f) Copper Sulphate crystals</p> <p> g) Hot plate</p> <p> h) Copper Carbonate/Copper Hydroxide</p> <p> i) Hydrometer</p> <p> j) Micrometer</p>	Zinc coating [Clause-12.2]

7	<p>Spectrophotometer OR</p> <ul style="list-style-type: none"> • Carbon Sulphur (Strohlein type) Apparatus – Complete set consisting of glass parts, combustion furnace, oxygen cylinder, combustion tubes/ boats etc. • Electronic Balance • Hot plate • Muffle furnace • Barometer • Thermometer • Distilled water plant • Burette, Pipette and Full Range of Lab. Glass wares like: Conical Flasks, Beakers, Funnel, Pipettes Glass rod, watch Glass, Brush etc. • Standard Reference Material • Platinum/Silica Crucible for Silicon Test • Desicator • Whatman Filter Paper & Ashless clippings • Arrangements for nitrogen testing • Drilling machine <p>Other Chemicals and Reagents as applicable</p>	Chemical tests of material
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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 278: 2009.

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.

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

Table 1

(1)			(2)	(3)			
Test Details			Test equipment requirement	Levels of Control			
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
5	Sizes	5, Table 1	IS 278	R	One	Each reel	
6	Material		IS 280	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
7	Manufacture	7	IS 278	R	One	Each reel	
8	Chromating	8 0.4	IS 278 1340 8602	R	One	Every 25 th reel of barbed wire of one type or part thereof or one day whichever is earlier.	Protective coating may be given as per the agreement with the purchaser.
9	Freedom from Defects	9	IS 278	R	One	Each reel	
12	TESTS						
12.1	Tensile Test on Line wire	12.1	IS 278	R	Three	Each consignment	
	Tensile Test on completed barbed wire				One	Every 50 th reel of barbed wire of one type or part thereof or one day whichever is earlier.	In case of failure, two reels each manufactured before and after the non- conforming reels shall be tested. The original frequency may be restored if all the four reels pass.

12.2	Zinc Coating					Every 25 th reel of barbed wire of one type or part thereof or one day whichever is earlier.	
	(a) Line wire (b) Point wire	12.2.1 12.2.2	IS 278	R	One		
12.3	Ductility Test	12.2	IS 278	R	One		

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.