



## PRODUCT MANUAL FOR GALVANIZED STRAND FOR EARTHING ACCORDING TO IS 12776:2002

*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 license/certificate.*

1.	<b>Product</b>	:	IS 12776:2002
	<b>Title</b>	:	Galvanized Strand for Earthing
	<b>No. of Amendments</b>	:	Three
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	As per Cl. 4.1 of IS 12776: 2002
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX – <a href="#">A</a>
c)	<b>Sample Size</b>	:	Mechanical Tests: 10 meter of strand and 10 meter of wire before stranding ; Chemical Tests: 5 pieces of 5cm x 5cm
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – <a href="#">B</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – <a href="#">C</a>
5.	<b>Possible tests in a day:</b>		All tests
6.	<b>Scope of the Licence:</b>		
	“Licence is granted to use Standard Mark as per IS 12776:2002 with the following scope:		
	Name of the product	Galvanized Strand for Earthing	
	Construction		
	Wire tensile grade		

**ANNEX-A**

**GROUPING GUIDELINES**

1. IS 12776: 2002 covers Galvanized Strand for earthing which are classified into different varieties based on the following:
  - a) Construction - As per Clause 5 of IS 12776: 2002.
  - b) Wire Tensile Grade – 981/1100/1310
  
2. Considering the above, the guidelines given below shall be followed for GoL/CSoL:
  - i) Sample with highest wire diameter from the Construction as per Annex A of IS 12776: 2002, shall be drawn and tested for all requirements to cover Strands of wire diameter upto and including the size tested.
  - ii) If Strand with higher tensile grade of wire is tested, then Strand with lower tensile grade wires may also be covered.
  
3. The Firm shall declare the Varieties 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 the operation of license, it shall be ensured that all varieties covered in the license 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*

<b>Sr No</b>	<b>Tests used in with clause reference</b>	<b>Test equipment</b>
1.	Dimensions and tolerance, Cl. 6, Annex A	Vernier caliper, Micrometer
2.	Standard length, Cl. 7	Measuring tape / Length Counter meter
3.	Minimum breaking force - Cl. 8, Annex A Tensile test and elongation of wires- Annex A	Tensile testing machine / Breaking Load Testing Machine
4.	D C resistance test, Cl. 8.3	Contact clamps, Kelvin Bridge or any suitable instrument for measurement of resistance
5.	Wrapping test, Cl. 8.4	Mandrels of suitable size
6.	Tests for Galvanizing, Cl.8.5, Annex A	Weighing balance, Chemicals
7.	Torsion test, Cl. 8.6	Torsion testing machine
8.	Measurement of mass, Annex A	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 equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per requirements of IS 12776: 2002.

**4. CONTROL UNIT** – All Strands of same construction and grade of wire manufactured under identical conditions of production in 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					Levels of Control		
Clause	Requirement	Test Methods		Test equipment requirement Required (R) or Sub-contracting permitted (S)	No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Material	4.1	IS 12776	S	One	Each consignment	No further testing is required if accompanied with a test certificate of is ISI Marked.
5	Construction	5.1 to 5.3	IS 12776	R	Each strand		
6	Dimensions and Tolerance	4, Annex A	IS 12776	R	Two	Each control unit	-
7	Standard length	7	IS 12776	R	Each drum		
8	<b>TESTS</b>						
	<b>Tests on individual wires before stranding</b>						
8	Tensile strength	Annex A	IS 12776	R	One	Each consignment	
	Elongation	8.2, Annex A	IS 12776	R	One	Each consignment	
	Wrapping test	8.4, Annex A	IS 12776	R	One	Each consignment	
	Galvanizing test	8.5, Annex A	IS 12776	R	One	Each consignment	
	Torsion test	8.6, Annex A	IS 12776	R	One	Each consignment	

<b>Tests on wire after stranding</b>							
	Tensile strength	Annex A	IS 12776	R	One	Every 10 drum or part thereof	
	Elongation	8.2, Annex A	IS 12776	R	One	Every 10 drum or part thereof	
	Galvanizing test	8.5, Annex A	IS 12776	R	One	Every 10 drum or part thereof	
	Torsion test	8.6, Annex A	IS 12776	R	One	Every 10 drum or part thereof	
<b>Tests on strand</b>							
8.1.1	Minimum Breaking Force	8.1.2, Annex A	IS 12776	R	One	Every 10 drum or part thereof	
8.3	DC resistance test	8.3	IS 12776	R	One	Every 10 drum or part thereof	

**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.