

STANDARD TECHNICAL SPECIFICATION COVER SHEET

Specification No. : ENG-GEN-4038

Specification Name : Specification for GI wires of various sizes

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CONTENTS

1. SCOPE
2. APPLICABLE STANDARDS
3. CLIMATIC CONDITIONS OF THE INSTALLATION
4. GENERAL TECHNICAL REQUIREMENTS
5. GENERAL CONSTRUCTIONS/REQUIREMENTS
6. MARKING
7. TESTS
8. TYPE TEST CERTIFICATES
9. PRE-DISPATCH INSPECTION
10. INSPECTION AFTER RECEIPT AT STORES
11. GUARANTEE
12. PACKING
13. TENDER SAMPLE
14. QUALITY CONTROL
15. MINIMUM TESTING FACILITIES
16. MANUFACTURING ACTIVITIES
17. SPARES, ACCESSORIES AND TOOLS
18. DRAWINGS AND DOCUMENTS
19. GUARANTEED TECHNICAL PARTICULARS
20. SCHEDULE OF DEVIATIONS

1. SCOPE:

This specification covers the technical requirements of design, manufacturing, Testing, inspection before dispatch at manufacturer's works packing, Loading, forwarding and unloading of GI Wires at site/store.

GI Wires (4SWG, 6SWG, 8SWG & 10SWG)

2. APPLICABLE STANDARDS:


The poles shall comply with relevant provisions made in the following Indian Standards:

IS: 280	Mild steel wire for general engineering purposes.
IS: 4826	Specification for hot-dipped galvanized coatings on round steel wires.
IS: 7887	Mild steel wire rods for general engineering purposes.
IS: 2629	Recommended practice for hot dip galvanizing of iron and steel
IS: 1521	Method for tensile testing for steel wires
IS: 1755	Method for wrapping testing for wire
IS: 6745	Methods for determination of mass of zinc coating on zinc coated iron and steel articles

3. CLIMATIC CONDITIONS OF THE INSTALLATION:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	150cm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Speed	300 Km/hr
9	Earthquakes of an intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

TPCODL/ TPNODL/ TPSODL/ TPWODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

 	Specification No: ENG-GEN-4038 Specification Name: Technical Specification for GI Wires
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4. GENERAL TECHNICAL REQUIREMENTS:

SI No.	Technical Particulars	DESIRED VALUE	
		GI Wire 4 SWG	GI Wire 6 SWG
1	Nominal Diameter of Wire	5.6 mm	5 mm
2	Sectional Area in sq. mm	24.630	19.634
3	Tolerance	± 2.5%	± 2.5%
4	Tensile Strength	550-900(N/mm ²)	550-900(N/mm ²)
5	Type of Coating (Heavy/Medium/Light)	Heavy	Heavy
6	Variety (Hard/Soft)	Hard	Hard
7	Weight of Zn Coating(gm/mtr.2)	290	290
8	No of dips the coating is able to withstand at 18±2°C in CuSO4 Solution	3x1 Min, 1x1/2 Min	3x1 Min, 1x1/2 Min
9	Adhesion Test		
a)	Min. Complete turn of wrap	10	10
b)	Diameter of mandrel on which wrapped	6 x Nominal Diameter	6 x Nominal Diameter
		GI Wire 8 SWG	GI Wire 10 SWG
1	Nominal Diameter of Wire	4 mm	3.15 mm
2	Sectional Area in sq. mm	12.566	7.793
3	Tolerance	± 2.5%	± 2.5%
4	Tensile Strength	550-900(N/mm ²)	550-900(N/mm ²)
5	Type of Coating (Heavy/Medium/Light)	Heavy	Heavy
6	Variety (Hard/Soft)	Hard	Hard
7	Weight of Zn Coating(gm/mtr.2)	275	250
8	No of dips the coating is able to withstand at 18±2°C in CuSO4 Solution	3x1 Min, 1x1/2 Min	3x1 Min
9	Adhesion Test		
a)	Min. Complete turn of wrap	10	10
b)	Diameter of mandrel on which wrapped	6 x Nominal Diameter	4 x Nominal Diameter
10	Freedom from defects	All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be sound, free from splits, surface flaws, rough jagged and imperfect edges - and other harmful surface defects.	
11	Chemical composition of the MS Wire used shall not exceed (IS:7887/1992) Gr. 5		
a)	Sulphur (Max)	0.050%	
b)	Phosphorous (Max)	0.050%	
c)	Carbon	0.10 to 0.15%	
d)	Manganese	0.30 to 0.60%	

   	Specification No: ENG-GEN-4038 Specification Name: Technical Specification for GI Wires
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12	Standard	IS: 280/1978, 7887/1992, 4826/1979
13	Weight of Each Coil (Kg)	40-60
14	Marking	Coil attached with a metallic tag containing:
		Manufacturer make & Trademark, Coil no
		Size, Mass of coil
		Length, Manufacturing Date

5. GENERAL CONSTRUCTIONS/REQUIREMENTS:

All material shall be as per IS: 280:1978. The wire shall be drawn from the wire rods conforming to IS 7887. The process of zinc coating should be as per IS 2629. Zinc coating on hot dip galvanized wire should be uniform. All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be sound, free from splits, surface flaws, rough jagged and imperfect edges and other harmful surface defects.

6. MARKING:

Coil attached with a metallic tag containing:

- A) Manufacturer make & Trade mark, Coil no
- B) Size, Mass of coil
- C) Length, Manufacturing Date

7. TESTS:

All routine, acceptance and type tests of GI Wire shall be carried out in accordance with the relevant IS 280 standards. All routine/acceptance tests shall be witnessed by the Purchaser/his authorized representative. Following tests shall be necessarily conducted on the GI wire as specified in IS standards.

A. TYPE TESTS:

- a) Diameter of the individual wire.
- b) Tensile Strength.
- c) Wrapping test of the wire.
- d) Bend test (Applicable for wire of 5mm diameter and above).
- e) Mass of zinc coating.
- f) Uniformity of zinc coating.
- g) Adhesion of zinc coating.
- h) Chemical Composition.

B. ROUTINE & ACCEPTANCE TEST:

- a) Diameter of the individual wire.
- b) Tensile Strength.
- c) Wrapping test of the wire.
- d) Mass of zinc coating.
- e) Uniformity of zinc coating.
- f) Adhesion of zinc coating
- f) Bend test (Applicable for wire of 5mm diameter and above).
- g) Chemical Composition

8. TYPE TEST CERTIFICATE:

The Bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/ Other Govt. Lab as per relevant IS. However, TPCODL/ TPWODL/ TPNODL/ TPSODL. TATA-POWER reserves the right to allow any other NABL accredited/ Govt. lab report under exceptional circumstances after due diligence/ scrutiny by DISCOM. Type tests should have been conducted during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to TPCODL/ TPWODL/ TPNODL/ TPSODL.

9. PRE DISPATCH INSPECTION:

Material shall be subject to inspection by a duly authorized representative of the TPCODL/ /TPNODL/TPWODL/TPSODL. Inspection may be made at any stage of manufacture at the option of the TPCODL/TPNODL/TPWODL/TPSODL and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the places of manufacture to TPCODL/TPNODL/TPWODL/TPSODL representatives at all times when the work is in progress. Inspection by the TPCODL/TPNODL/TPWODL/TPSODL authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications.

Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL/TPNODL/TPWODL/TPSODL. Following documents shall be sent along with material

- a) Test reports
- b) MDCC issued by TPCODL/TPNODL/TPWODL/TPSODL

- c) Invoice in duplicate
- d) Packing list
- e) Drawings
- f) Delivery Challan
- g) Guarantee / Warrantee card
- h) Other Documents (as applicable).

10. INSPECTION AFTER RECEIPT AT STORES:

The material received at TPCODL/TPNODL/TPWODL/TPSODL Store/Site will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.

11. GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Company up to a period of 12 months from the date of supply, the bidder shall be liable to undertake to replace/rectify such defects at its own costs, within 45 day's time frame and to the entire satisfaction of TPCODL/TPNODL/TPWODL/TPSODL, failing which TPCODL/TPNODL/TPWODL/TPSODL will be at liberty to get it replaced/rectified at the bidder risks and cost and recover all such expenses plus the company's own charges (@20% of total expenses incurred) from the bidder or from the "Security from Performance Deposit" as the case may be.

12. PACKING:

The bidder shall ensure that all material covered under this specification shall be prepared for rail/road transport in a manner to protect the material from damage in transit.

13. TENDER SAMPLE:

Not Applicable.

14. QUALITY CONTROL:

The bidder shall submit QAP indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

15. TESTING FACILITIES:

Supplier/ Manufacturer shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant Indian standards.

16. MANUFACTURING ACTIVITIES:

The successful bidder shall submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer.

17. SPARES, ACCESSORIES AND TOOLS:

Not Applicable

18. DRAWINGS AND DOCUMENTS:

Following drawings and documents shall be submitted in line with the requirement of Tender specifications:

- a) Signed & Stamped Copy of clause wise compliance of technical specification & Schedule of Deviations.
- b) Work Experience details.
- c) Type test certificates.
- d) Drawing 1 set of Hard Copy & Soft copy PDF File containing complete information about manufacturing.
- e) Signed & stamped copy of pre-bid queries.

19. GUARANTEED TECHNICAL PARTICULARS:

Bidder shall have to comply & submit clause wise compliance of this specification.

20. SCHEDULE OF DEVIATIONS:

(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

Sl. No.	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation