

# **STANDARD TECHNICAL SPECIFICATION COVER SHEET**

**Specification No. : ENG-GEN-4039**

**Specification Name : Specification for GT stay wires**

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30-05-2023	31-05-2023	03-06-2023	03-06-2023	02-07-2023	05-08-2023

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## 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 Stay Wires at site/store.

GI Stay Wires (7/8 SWG GI Stay Wire, 7/10 SWG GI Stay Wire, 7/12 SWG GI Stay Wire)

## 2. APPLICABLE STANDARDS:



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

IS: 2141	Specification for Hot Dip Galvanized Stay Strand
IS: 4826	Specification for hot-dipped galvanized coatings on round steel wires.
IS: 2633	Methods for testing uniformity of coating on zinc coated articles.
IS: 280	Mild steel wire for general engineering purposes.
IS: 7887	Mild steel wire rods for general engineering purposes.
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.

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#### 4. GENERAL TECHNICAL REQUIREMENTS:

Sl. No	TECHNICAL PARTICULARS	DESIRED VALUE		
		7/8 SWG	7/10 SWG	7/12SWG
1	Nominal Diameter	4.00 mm	3.15 mm	2.5mm
2	Sectional Area in sq. mm	87.92(for stranded wire)	54.52(for stranded wire)	34.35(for stranded wire)
3	Tolerance in diameter	+0.06 mm to -0.03 mm	+0.06 mm to -0.03 mm	+0.06 mm to -0.03 mm
4	Minimum Tensile strength	1100(N/mm2)	1100(N/mm2)	1100(N/mm2)
5	Minimum breaking Load (KN)	13.85 (for single wire) 86.2 (for stranded wire)	8.58 (for single wire) 53.5 (for stranded wire)	5.40 (for single wire) 33.7 (for stranded wire)
6	Type of coating Heavy/Medium/Light	Heavy	Heavy	Heavy
7	Variety Hard/Soft	Hard	Hard	Hard
8	Weight of Zn Coating (gm/mtr.2) (Afterstranding)	275	250	230
9	No of dips the coating is able to withstand at 18±2°C in CuSO4 Solution	3x1 Min, 1x1/2 Min	3x1 Min	2x1 Min, 1x1/2 Min
10	<b>Adhesion Test</b>			
a)	Min. Complete turn of wrap	10	10	10
b)	Diameter of mandrel on which wrapped	6xNominal Diameter	4xNominal Diameter	4xNominal Diameter
11	Minimum Percentage of Elongation (%)	4	4	4
12	Freedom from defects	The wire shall be circular and free from scale, irregularities, imperfections, flaws, splits, and other defects, which may affect the quality of wire.		
13	<b>Chemical composition of the MS Wire used shall not exceed (IS:2141/1992)</b>			
a)	Sulphur (Max)	0.060%	0.060%	0.060%
b)	Phosphorous (Max)	0.060%	0.060%	0.060%
14	Standard	IS: 2141,4826,6594	IS: 2141,4826,6594	IS: 2141,4826,6594
15	Wt. of Each Coil (Kg)	70-100	70-100	70-100
16	Marking	Coil attached with a metallic tag containing:		
		Manufacturers make or Trademark, ISI Mark		
		Coil no, Size, TPCODL/ /TPNODL/TPWODL/TPSODL -marking		
		Mass of coil, Length, Manufacturing month & year		

## 5. GENERAL CONSTRUCTIONS/REQUIREMENTS:

The wires shall be cold drawn from steel made by open hearth basic oxygen or electric furnace process and of such quality that when drawn to the size of wire specified and coated with zinc, the finished strand and the individual wire shall be of uniform quality of zinc coating. The wire shall not contain Sulphur and phosphorus exceeding 0.060 percent each. All material shall be as per IS: 2141. The wires shall be so stranded together that when an evenly distributed pull is applied at the end of the completed strand, each wire shall take an equal share of pull. Uniformity of zinc coating shall be determined according to IS: 2633. The wire shall be circular and free from scale, irregularities, imperfections, flaws, splits, and other defects, which may affect the quality of wire. The stay wire is hard and the zinc coating of wire shall be heavily coated as conform to IS 4826. All finished wires shall be well and cleanly drawn to the dimensions specified.

## 6. MARKING:

Coil attached with a metallic tag containing:

- a. Manufacturer make & Trade mark, ISI Mark.
- b. Coil no, Size, TPCODL/ /TPNODL/TPWODL/TPSODL -marking
- c. Mass of coil, Length, Manufacturing month & year

## 7. TESTS:

All routine, acceptance and type tests of GI Stay Wire shall be carried out in accordance with the relevant IS 2141 standards. All routine/acceptance tests shall be witnessed by the Purchaser/his authorized representative. Following tests shall be necessarily conducted on the GI Stay wire as specified in IS standards.

### A. TYPE TESTS:

- a) Diameter of the wire.
- b) Breaking load of Single Wire.
- c) Breaking load of complete strand.
- d) Lay Ratio.
- e) Ductility Test
- f) Mass of zinc coating.
- g) Uniformity of zinc coating.
- h) Adhesion of zinc coating.
- i) Elongation test

### B. ROUTINE & ACCEPTANCE TESTS:

- a) Visual Inspection.
- b) Diameter of the wire.
- c) Breaking load of Single Wire.
- d) Breaking load of complete strand.
- e) Lay Length & Lay Ratio.
- f) Ductility Test
- g) Mass of zinc coating.
- h) Uniformity of zinc coating.
- i) Adhesion of zinc coating.
- j) Elongation test

## 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, falling 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:

Each coil of Stay wire shall be suitably bound and fastened compactly. Each coil shall be packed by suitable wrapping. The galvanized steel stay strand protected with paper/polythene/HDPE and outside wooden lagging on drum/reel. The bidder shall ensure that all the Stay Wire shall be adequately protected and specification shall be prepared for rail/road transport in a manner so as to protect the equipment 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. MINIMUM 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