

STANDARD TECHNICAL SPECIFICATION COVER SHEET

Specification No. : ENG-GEN-4005

Specification Name : GALVANISED IRON (GI) FLATS OF DIFFERENT SIZES

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1.0	SCOPE	This specification covers technical requirements of design, manufacturing, testing, Inspection, Supply & transportation of Hot dip Galvanised Iron (GI) Flat 25X3 MM, 25X4 MM, 25X6 MM, 50X6 MM, 75X10 MM, 90X6 MM at TPCODL/TPNODL/TPSODL/TPWODL stores/site.
2.0	APPLICABLE STANDARDS	<p>The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall confirm to the regulations of the local Statutory authorities:</p> <ul style="list-style-type: none"> • • IS 1239 (Part1): Specification for Steel Tubes, Tubulars & other wrought steel fittings. • IS 1239 (Part2): Specification for Steel Tubes, Tubulars & other steel fittings. • IS 228: Method for chemical analysis of steels. • IS 4736 : Specification for Hot dip zinc coating on mild steel tubes • IS 4759: Specification for Hot dip zinc coating on structural steel and other allied products. • IS 1387: General requirements for the supply of metallurgical materials. • IS 1608: Mechanical testing of metals-Tensile Strength. • IS 4711: Methods for sampling of steel pipes, tubes and fittings. • IS 4740: Code of practice for packaging of steel tubes. • IS 10748: Hot rolled steel strip for welded tubes & pipes. • IS 12278: Method for ring tensile test on metallic tubes. • IS 3043-1987: Code of practice for earthing. • IS 1367: Technical supply conditions for threaded steel fastners. • IS 14394: Industrial fastners-Nuts of product GradeC- Hot Dip Galvanised. • IS 2016:-1997: Specification for plain washers. • IS 1730-1989: Steel plates, sheets, strips and flats for structural • And general engineering purpose-Dimensions • IS 814-2004: covered electrodes for manual metal Arc welding • of carbon and carbon Manganese steel- specification. • IS: 2629(1966)- Recommended practice for hot dip galvanized of Iron Earthing Strips • IS: 2633(1972)- Methods of testing weight, thickness & uniformity of coating on hot dip galvanized articles. • IS: 5358(1969)- Specification for hot dip galvanized coating on fastness I • IS:3203-Specification for Electroplating • IS: 4759(1968)- IS: 4759(1968) • IS 2062 <p><i>*In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</i></p>

3.0	CLIMATIC CONDITIONS OF 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 Pressure	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.		
4.0	GENERAL TECHNICAL REQUIREMENTS	MATERIAL <p>Supplier has to purchase raw materials (MS Flat) as per relevant IS at his own cost. The zinc required for galvanizing shall be quality Zn-99.95% or better Zinc grade & shall confirm to IS and its latest amendments.</p> <p>The Supplier shall make his own arrangement for procurement before the commissioning of work, sufficient quantity of electrolytic zinc of proper quality for galvanizing. The Supplier shall however not link the delivery period with the supply of zinc. TPCODL/TPNODL/TPSODL/TPWODL is at liberty to have sample of zinc used and to test in any laboratory at his own cost and reject the particular supply, is found below standard.</p> <p>All raw materials required for galvanizing etc. and for complete execution of work shall be stocked in adequate quantities by the Supplier to ensure that the progress of work is not hampered.</p>		

		SL. NO.	TECHNICAL PARTICULARS	Requirement
		1	Material	Hot-Dip Galvanized Flat
		2	Relevant Standard	IS: 2062, IS: 2633, IS: 2629, IS: 4759
		3	Make	SAIL, TATA Steel, ESSAR, JSW Steel and TATA steel BSL
		4	Grade of Steel	E 250 A
		5	Minimum Tensile Strength in Mpa	410
		6	Yield Stress in Mpa	250
		7	Percentage Elongation (Min.) at Gauge Length	23%
		8	Bend Test (Internal Dia)	Min-2t
		9	Mass of Zinc Coating	705 gm/m ²
		10	Zinc Coating Thickness & No of Dips	100 Micron (6 Dip)
		11	Chemical composition	Grade: E 250 A (As per IS: 2062)
		12	Standard length of supply	6 Metre Long
		13	Tolerances	As per IS 1852 latest Amendment
5.0	GENERAL CONSTRUCTION	<p>GI Flat intended for different use in electricity distribution utility. The zinc coating shall be uniform. The materials shall be strictly from approved vendors' i.e. SAIL, TATA Steel, ESSAR, JSW Steel and TATA steel BSL & Billets(grade E250) with re rolling shall be allowed for mentioned MAKE. Documentary evidence certifying the raw material lifted from the approved vendor, which should not be less than the ordered quantity. Similarly the zinc for galvanization shall be procured from Hindustan zinc LTD. or Vedanta LTD. And the firm shall submit the documentary evidence certifying not less than the ordered quantity of zinc lifted from the approved vendor. The hot dip galvanization shall be done only after the all fabrication and welding done. The nut bolt, & washers provided shall be as per relevant IS.</p> <p>5.1 Mass of the Flats are as follows:-</p> <p>a) 25X3 mm: - 0.589kg/m</p> <p>b) 25X4 mm: - 0.785kg/m</p> <p>c) 25X6 mm: - 1.18kg/m</p> <p>d) 50x6 mm: - 2.36kg/m</p>		

e) 75x10 mm: -5.89kg/m

f) 90x6 mm: -4.24kg/m

5.2 Chemical Composition

Chemical composition for Fe 410 WA Grade

a)C - 0.23% Max

b)Mn - 1.5% Max

c)S - 0.045% Max

d)P - 0.045%Max

e)SI - 0.40% Max

f) CE (Carbon Equivalent)- 0.42%

5.3 Galvanization:

All flats shall be hot dip galvanized, are as following:

- a) All galvanizing shall be carried out by the hot dip process, in accordance with Specification IS 2629.
- b) The zinc coating (705 gms per sq.mt / 100Micron,6 dips) shall be smooth, continuous and uniform. It shall be free from acid spot and shall not scale, blister or be removable by handling or packing.
- c) There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating. Purity of zinc shall be Zn 99.95% or better.
- d) In the event of damage to the galvanizing the method used for repair shall be subject to the approval of the Engineer in Charge or that of his representative. Repair of galvanization at site will not be permitted in any situation.
- e) Partial immersion of the work shall not be permitted and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion.

After galvanizing no drilling or welding shall be performed on the galvanized parts. To avoid the formation of white rust galvanized materials shall be stacked during

		transport and stored in such a manner as to permit adequate ventilation. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization. The galvanized steel shall be subjected to test as per IS-2633.
6.0	NAME PLATE AND MARKING	The body of the device shall be appropriately marked with "TPCODL/TPNODL/TPSODL/TPWODL" , Manufacture's name or trademark and Year of Manufacturing. at suitable location such that it is permanent and does not harm the body of the device.
7.0	TESTS	All routine, acceptance & type tests shall be carried out in accordance with the relevant IS.
7.i)	TYPE TEST	<p>The following tests shall constitute the type tests and shall be carried out as per IS: 1239 Part-1: 2004(Latest Amendment)</p> <ol style="list-style-type: none"> 1)Test for Mechanical Properties (As per 1239 Part-1: 2004 or Latest Amendment clause no.14.1 & 14.1.1) <ul style="list-style-type: none"> • Percentage of Elongation. • Tensile strength. 2) Mass of zinc coating. (As per 4736:1986 or Latest Amendment clause no.5.1) 3) Chemical composition. (As per 1239 Part-1: 2004 or Latest Amendment clause no.6.1.1)
7.ii)	ROUTINE/ ACCEPTANCE TEST	<p>The following tests shall be got conducted in presence of TPCODL/TPNODL/TPSODL/TPWODL representative as per IS: 1239 Part-1: 2004 (Latest Amendment) on the samples taken from the offered lot material for the purpose of acceptance of that lot of material.</p> <ol style="list-style-type: none"> 1) Dimension of GI Flat. (As per IS 1239 Part-1: 2004 clause No.9.1 a&b)-Test shall be performed. 2) Chemical composition (Manufacturer's Test Certificate for raw material-Documents Review only.) 3) Mass of zinc coating. (As per 4736:1986 or Latest Amendment clause no.5.1)-Test shall be performed. 4) Test for mechanical properties (Manufacturer's Test Certificate for raw material-Documents Review only.) 5) Galvanizing/Electroplating test 6) Visual Inspection test to confirm products free from any defects
8.0	TYPE TEST CERTIFICATES	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 Government Labs/ NABL accredited Lab as per relevant IS. 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/TPNODL/TPSODL/TPWODL .

9.0	PRE DISPATCH INSPECTION	<p>The Material shall be subject to inspection by a duly authorized representative of the TPCODL/TPNODL/TPSODL/TPWODL . Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCODL/TPNODL/TPSODL/TPWODL 's representatives at all times when the work is in progress. Inspection by the TPCODL/TPNODL/TPSODL/TPWODL or its authorized representatives shall not relieve the bidder 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/TPSODL/TPWODL . The pre-dispatch inspection shall be carried out as per annexure-IV</p> <p>Following documents shall be sent along with material</p> <ul style="list-style-type: none"> a) Test reports b) MDCC issued by TPCODL/TPNODL/TPSODL/TPWODL c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Guarantee / Warrantee card g) Delivery Challan h) Other Documents (as applicable)
10.0	INSPECTION AFTER RECEIPT AT STORES	<p>The material received at TPCODL/TPNODL/TPSODL/TPWODL store 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 each QA and Plant Engineering group.</p>
11.0	GUARANTEE	<p>Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this 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 Purchaser up to a period of 12 months from the date of commissioning or 18 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p>
12.0	PACKING	<p>Bidder shall ensure that the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.</p>
13.0	TENDER SAMPLE	<p>Samples to be provided as required to TPCODL/TPNODL/TPSODL/TPWODL</p>

Engineering Dept.		
14.0	TRAINING	Not Applicable
15.0	QUALITY CONTROL	The bidder shall have a prove track of not less than 10 years in GI Flat in manufacturing and servicing in national or international market. The bidder shall submit with the offer Quality assurance plan 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.
16.0	MINIMUM TESTING FACILITIES	Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant Indian standards.
17.0	MANUFACTURING ACTIVITIES	The successful bidder will have to 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. This bar chart will have to be submitted within 15 days from the release of the order.
18.0	SPARES ACCESSORIES AND TOOLS	To be provided by BA
19.0	DRAWINGS AND DOCUMENTS	<p>Constructional drawings are attached as annexure-I, annexure-II, annexure-III should be followed for fabrication.</p> <p>Following documents shall be prepared based on TPCODL/TPNODL/TPSODL/TPWODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:</p> <ol style="list-style-type: none"> 1. Completely filled in Technical Particulars along with Size and weight/sq.m of G.I. Flat, Standard Length, Galvanization Process, Galvanization thickness 2. General description of the equipment and all components including brochures. 3. Bill of Material 4. Type test Certificates 5. Experience List. <p>After award of order Soft of all the drawing, GTP, test certificates shall be submitted for the final approval of the same to the purchaser.</p> <p>Following Drawings/Documents shall be submitted after the award of the contract:</p>

		Sl. No	Description	For Approval	For Review Information	Final Submission
		1	General Technical Parameters	√		√
		2	Manual/Catalogues/drawings for all components.		√	
		3	Technical details and test certificates of the component.		√	√
		4	Instructions for use		√	√
		5	Transport/shipping dimension drawing		√	√
		6	QA & QC Plan	√	√	√
		7	Routine, Acceptance and Type test Certificates	√	√	√
		All the Documents and Drawings shall be in English Language.				
20.0	GUARANTEED TECHNICAL PARTICULARS	Clause wise compliance shall be provided by bidders				

21.0	SCHEDULE OF DEVIATIONS	<u>(TO BE ENCLOSED WITH THE BID)</u>								
		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 TPCODL/TPNODL/TPSODL/TPWODL 's specifications:								
		<table><tr><th>S.No.</th><th>Clause No.</th><th>Details of deviation with justifications</th></tr><tr><td></td><td></td><td></td></tr></table>			S.No.	Clause No.	Details of deviation with justifications			
		S.No.	Clause No.	Details of deviation with justifications						
We confirm that there are no deviations apart from those detailed above.										
Seal of the Company: <div>Signature Designation</div>										