



# JINDAL INDUSTRIES PRIVATE LIMITED, HISAR

## QUALITY PLAN

### ERW PIPES AS PER IS:1239 PART-1

SIZES : 15mmNB to 150mmNB

Document Number:- JPL/QP/1239/01

Rev. No.:- 00

Issue No:- 02

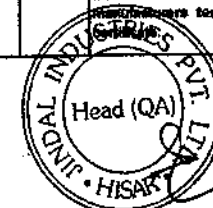
Issue Date:- 01.04.2018

CLIENT:

P.O. NO.

CLIENT'S TECHNICAL SPECIFICATION NO.(IF ANY):

Sl. No.	COMPONENT/ OPERATION	CHARACTERISTIC - Inspection & Testing/ Type of Check	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	RESULTANT INSPECTION RECORD	Hold/Witness/Insp./DR/Monitoring Points				REMARKS
							Purchase	Production	Quality	Client/ TPI	
1	2	3	4	5	6	7	8	9	10	11	12
1	Raw Material	a) Chemical & Mechanical properties	Each Heat	IS:10748:2004 & Cl. No. 6.1.1 & 7.1.1 of IS 1239(PT-I) : 2004	Chemical composition of the steel shall comply with Table 1 of IS:1239(PT-1) in Ladle Sample analysis. IS 10748 Gr.2 or Equivalent grade which is meet the chemical and Mechanical properties of IS:1239(PT-I):2004	Raw material TC	-	DR	DR	DR	
		b) Dimension & Visual	Each Coil	IS 1239(PT-I):2004 & IS 10748 Gr.2	The coil should not have laminations, Scales, Slivers, Laps, Burrs, Pitting etc. and the coil edges should be free from defect. If these defect found it shall be rectified by grinding. Thickness +10%, -8% Width +20mm, -0mm	Raw material TC/ Insp.Report	-	M	VDR	DR	
2	In - Process Inspections	a) Dimensional									
		i) Out side dia(mm)	Once/ Hour	As per Cl. No. 8 of IS 1239(PT-I) :2004	As per Cl. No. 8 Cl. 8.8.1 & table 3 to 5 of IS 1239(PT-I) :2004	Weight & Dimension Report	-	M	H,I	DR	
		ii) Wall Thickness (mm)	Once/ Hour	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)						
		iii) Length (Mtrs.)	Once/ Hour	As per Cl. No. 11 of IS 1239(PT-I) :2004	As per PO						
		iv) Weight (Kg/m)	Once/ Hour	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)						
		v) Weld Bead height	Once/ Hour	As per Cl. No.6.5 of IS 1239(PT-I) :2004	The height of the internal weld fin shall not be greater than 60% of the specified wall thickness.						
		vi) Bevel Angle / Root Face	Once/ Hour	As per Cl. No. 3.4 & 10.2 of IS 1239(PT-I) :2004	Bevel Angle : 30° to 35° Root Face : 0.8 to 2.4 mm						
		vii) Visual & workmanship	100%	As per Cl. No. 15 of IS 1239(PT-I) :2004	All pipes shall be clearly finished, dent free and defects.The ends of the pipe shall be free from sharp edges & burrs.The tubes shall be reasonably straight.						
		b) Hydrostatic Test	100%	As per Cl. No.13.1.1 of IS 1239(PT-I) :2004	Hydrostatic test shall be carried out at a pressure of 5 MPa and the same maintained for atleast 3 second and shall not show any leakage in the pipe.	Hydro Test Report	-	P	H,I	DR	
c) Chemical Analysis	One Sample / Heat	As per Cl. No. 6.1.1 & 7.1.1 of IS 1239(PT-I) : 2004	Chemical composition (Max.%) C% -0.20, Mn% -1.30, P% -0.040, S% -0.040	Chem. Analysis Report	-	-	DR	DR	No Testing is necessary if the consignment of steel strip is covered by ISI mark and received with manufacturers test		





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							Purchase	Production	Quality	Client/TP	
1	2	3	4	5	6	7	8	9	10	11	12
	In - Process Inspections	d) Physical tests									
		i) Tensile & Elongation,	Once/ 4 Hour	As per Cl. No. 14.1 of IS 1239(PT-I) : 2004	T.S. = 320 MPa Min., % of El =12% Min.(For the sizes ≤ 25mmNB) % of El =20% Min.(For the sizes > 25mmNB)	Physical Test report	-	M	H,I	DR	
		ii) Bend Test ( on the sizes ≤ 50mmNB)	Once/ Hour	As per Cl. No. 14.2 of IS 1239(PT-I) : 2004	When tested in accordance with IS 2329 the tubes shall be capable of withstanding the bend test without showing any signs of fracture or failure. Welded tubes shall be bent with the weld at 90° to the plane of bending. The tubes shall not be filled for this test. i) Ungalvanized tubes shall be capable of being bent cold without cracking through 180° round a former having a radius at the bottom of groove in the plane of bending, equal to at least six times the outside diameter of the tube. ii) Galvanized tubes shall be capable of being bent cold, without cracking of the steel, through 90° round a former having a radius at the bottom of the groove equal to at least eight times the outside diameter of the tubes.	Physical testing report	-	M	H,I	DR	
		iii) Flattening Test ( on the sizes > 50mmNB)	Once/ Hour	As per Cl. No. 14.3 of IS 1239(PT-I) : 2004	Flattening Rings not less than 40 mm in length cut from the ends of the selected tubes shall be flattened cold between parallel plates with the weld, if any at 90° (point of maximum bending) in accordance with IS 2328. No opening shall occur by fracture in the weld area until the distance between the plates is less than 75% of the original outside diameter of the tube and no cracks or breaks in the metal elsewhere than in the weld shall occur until the distance between the plates is less than 60% of the original outside diameter.	Physical testing report	-	M	H,I	DR	
		e) Galvanizing Tests: Mass of Zinc Coating, Uniformity, Adhesion & Free bore test	Once/ 4 Hour	As per Cl. No.12 of IS 1239(PT-I):2004 & Cl.No.5 of IS:4736	Mass of zinc shall not be less than 360 g/m <sup>2</sup>	Galvanizing test Report	-	M	H,I	DR	If applicabe
		f) Threading: Gauging of threads to be checked with GO-NOGO gauge	Once/ Hour	IS:1239 (I)-2004 Cl.10.1 & IS:554	IS:1239 (I)-2004 Cl.10.1 & IS:554	Log book	-	M	H,I	DR	If applicabe
		g) Marking & Finishing	Each Pipe	As per Cl. No. 17 of IS 1239(PT-I) :2004 & Cl.No. 4 of STI	i)The Standard Mark shall be embossed at a suitable place on the outside of each tube ii) Licence number (CM/L.....) shall be marked on each tube by embossing/stencilling/transfix labels/etching. iii) in addition the following information shall be included in the durable tag (metal/plastic) attached to each bundle : a) The class of tubes/ process of manufacture (Cl. 6.3); b) Identity of the source of manufacture; c) Size; d) Batch number or Identification mark in code or otherwise to enable the date of manufacture and control unit no. to be traced back to factory records; e) Made in India (if required);and	Log book	-	M	H,I	DR	





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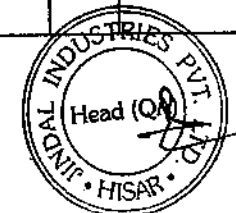
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							Purchase	Production	Quality	Client/ TPI	
1	2	3	4	5	6	7	8	9	10	11	12
3	Final Lot Inspections	a) Dimensional				Weight & Dimension Report					
		i) Out side dia(mm)	As per IS:4711	As per Cl. No. 8 of IS 1239(PT-I) :2004	As per Cl. No. 8 Cl. 8.8.1 & table 3 to 5 of IS 1239(PT-I) :2004						
		ii) Wall Thickness (mm)	As per IS:4711	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)						
		iii) Length (Mtrs.)	As per IS:4711	As per Cl. No. 11 of IS 1239(PT-I) :2004	As per PO						
		iv) Weight (Kg/m)	As per IS:4711	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004	As per Cl. No.8 & 9 of IS 1239(PT-I) :2004 & table 3 to 5 of IS 1239(PT-I)				H,I	W	
		v) Weld Bead height	As per IS:4711	As per Cl. No.8.5 of IS 1239(PT-I) :2004	The height of the internal weld fin shall not be greater than 60% of the specified wall thickness.						
		vi) Bevel Angle / Root Face	As per IS:4711	As per Cl. No. 3.4 & 10.2 of IS 1239(PT-I) :2004	Bevel Angle : 30° to 35° Root Face : 0.8 to 2.4 mm						
		vii) Visual & workmanship	As per IS:4711	As per Cl. No. 15 of IS 1239(PT-I) :2004	All pipes shall be clearly finished, dent free and defects. The ends of the pipe shall be free from sharp edges & burrs. The tubes shall be reasonably straight.						
		b) Hydrostatic Test	As per client requirement	As per Cl. No.13.1.1 of IS 1239(PT-I) :2004	Hydrostatic test shall be carried out at a pressure of 5 MPa and the same maintained for atleast 3 second and shall not show any leakage in the pipe.	Hydro Test Report			H,I	W	If required by client
		c) Physical tests									
i) Tensile & Elongation,	As per IS:4711	As per Cl. No. 14.1 of IS 1239(PT-I) :2004	T.S. = 320 MPa Min., % of El =12% Min. (For the sizes ≤ 25mmNB) % of El =20% Min. (For the sizes > 25mmNB)	Physical Test report			H,I	W			
ii) Bend Test ( on the sizes ≤ 50mmNB)	As per IS:4711	As per Cl. No. 14.2 of IS 1239(PT-I) :2004	When tested in accordance with IS 2329 the tubes shall be capable of withstanding the bend test without showing any signs of fracture or failure. Welded tubes shall be bent with the weld at 90° to the plane of bending. The tubes shall not be filled for this test. i) Ungalvanized tubes shall be capable of being bent cold without cracking through 180° round a former having a radius at the bottom of groove in the plane of bending, equal to at least six times the outside diameter of the tube. ii) Galvanized tubes shall be capable of being bent cold, without cracking of the steel, through 90° round a former having a radius at the bottom of the groove equal to at least eight times the outside diameter of the tubes.	Physical testing report			H,I	W			
iii) Flattening Test ( on the sizes > 50mmNB)	As per IS:4711	As per Cl. No. 14.3 of IS 1239(PT-I) :2004	Flattening Rings not less than 40 mm in length cut from the ends of the selected tubes shall be flattened cold between parallel plates with the weld, if any at 90° (point of maximum bending) in accordance with IS 2328. No opening shall occur by fracture in the weld area until the distance between the plates is less than 75% of the original outside diameter of the tube and no cracks or breaks in the metal elsewhere than in the weld shall occur until the distance between the plates is less than 60% of the original outside diameter.	Physical testing report			H,I	W			





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							Purchase	Production	Quality	Client/ TPI	
1	2	3	4	5	6	7	8	9	10	11	12
	Final Lot Inspections	d) Galvanizing Tests: Mass of Zinc Coating, Uniformity, Adhesion & Free bore test e) Threading: Gauging of threads to be checked with GO-NOGO gauge	As per IS:4736	As per Cl. No. 12 of IS 1239(PT-I):2004 & Cl.No.5 of IS:4736	Mass of zinc shall not be less than 360 g/m <sup>2</sup>	Galvanizing test Report	-	-	H,I	W	If applicabe
			As per IS:4711	IS:1239 (I)-2004 Cl.10.1 & IS:554	IS:1239 (I)-2004 Cl.10.1 & IS:554	Weight & Dimension Report	-	-	H,I	W	If applicabe
4	Marking	Identification & Tracability	As per IS:4711	As per Cl. No. 17 of IS 1239(PT-I) :2004	Each tube shall be marked with manufacturer's name or trade-mark, IS No. that is, IS 1239 (Part 1) and class of tubes, that is, L, M, and H, for light, medium and heavy class. Batch No., Color coding as per class etc.	Weight & Dimension Report	-	-	H,I	W	
5	Protection & Packing	Bevel End Protection	As per IS:4711	As per Cl. No. 18 of IS 1239(PT-I) :2004	(i)Both ends of the pipe shall be protected by high impact plastic bevel protector. (ii)Black tubes not otherwise protected shall be varnished or suitably painted externally throughout the length unless ordered unvarnished or unpainted. Where tubes are bundled for transport,all qualities of tubes shall be packed in accordance with IS 4740.	-	-	-	H,I	W	
6	IRN Test Certificate	Heat No.Wise	100%	IS 1239(PT-I) :2004	IS 1239(PT-I) :2004	MTC	-	-	M	DR	

<b>7 FINAL STAMPING AND DESPATCH INSPECTION</b>											
7.1	Final Documents	Review of internal test reports, Calibration reports and MTC of pipes	100%	IS 1239(PT-I) :2004	IS 1239(PT-I) :2004	Internal test reports, calibration reports and TPIA Inspection Report	-	-	M	DR	As per Spec./ PO
7.2	Stamping of pipes by TPIA	Stamping for Identification	As per client PO	As per client PO	As per client PO	TPIA Inspection Report	-	-	M	H	Final stamping shall be done by client/TPI on pipes after inspection
7.3	Issue of Inspection Release Note	Completeness	100%	TPIA Inspection Report	As per client PO / TPIA	TPIA IRN Format	-	-	M	H	

**Abbreviations:** H- HOLD      W-WITNESS      M-MONITERING      DR-DOCUMENT REVIEWED      I-INSPECTION

Prepared By:-  Dy. Manager (QA)	Reviewed By:  Head-QA	Approved By:-	Inspection Agency:-
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