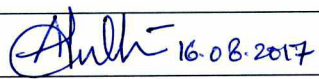
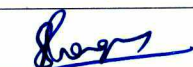
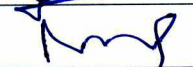
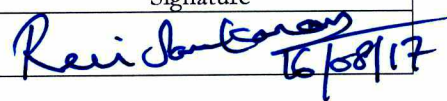


	BHARAT HEAVY ELECTRICALS LIMITED TIRUCHIRAPPALLI - 620 014, INDIA. QUALITY ASSURANCE DEPARTMENT
	STANDARD QUALITY PLAN FOR PRE-PAINTED GALVANIZED STEEL SHEETS SQP:SD:02 Rev No: 01

Page: 1 of 3

Prepared By Quality Assurance	ABDUR RAHMAN SULTAN	 16.08.2017
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Reviewed by	Signature
Quality Assurance (G. PANNERSELVAM)	
Engineering (M - SHANMUGAM)	
Materials Management (M. RADHAKRISHNAN)	
Quality Control R. DHARMAR	

Rev No	Date	Approved by	Signature
01	16/08/2017	AGM / QA & BE	 16/08/17

Record of Revisions

Rev No	Details of Revision	Remarks
00	Fresh Issue	
01	Cl. 1.0 , 3.1 to 3.5 revised, 3.6 to 3.8 removed based on feedback from MM	Raw material sources removed, Quantum of testing revised.

बी एच ई एल BHEL		MANUFACTURER'S NAME & ADDRESS: BHEL TIRUCHIRAPPALLI APPROVED SUPPLIERS		STANDARD QUALITY PLAN							QWI NO:SQP:SD:02			
				PRODUCT: PRE-PAINTED GALVANIZED STEEL SHEETS							REV NO: 01 DATE: 16/08/2017			
				SUB-SYSTEM :Steam Generator and Auxiliaries							PAGE: 2 OF 3			
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
					M	C/N				M	C	N		
1	2	3	4	5	M	C/N	7	8	9	D*	**	10	11	

1.0	RAW MATERIALS													
1.0	Steel Sheets/Coils	Chemical & Mechanical Properties (YS, TS, %Elong), Hardness, Cupping & bend tests	A	TC Verification	IS 513	IS 513	IS 513 & BHEL PO	IS 513 – Design CR1 Gr 390 & BHEL PO	MTC	√	P	V	V	
		Surface Finish	B	Visual	IS 513	IS 513	IS 513	Cl 8 of IS 513	MTC	√	P	V	-	
		Freedom from defects	B	Visual	IS 513	IS 513	IS 513	Cl 9 of IS 513	MTC	√	P	V	-	
		Dimensions	B	Measurement	IS 513	IS 513	IS 513	BHEL PO	MTC	√	P	V	-	
2.0	INPROCESS CONTROLS													
GALVANIZING														
2.1	Steel Sheets/Coils	Cleaning & Degreasing	A	Visual	100%	100%	IS 277 & BHEL PO	IS 277 & BHEL PO	Log	√	P	V	-	
2.2	Zinc Ingots*	Chemical properties	B	TC Verification	100%	100%	IS 209/ IS 13229	IS 209/ IS 13229	MTC	√	P	V	-	*Grade G250
2.3	Galvanization	Galvanizing	A	Visual	100%	100%	IS 277 & BHEL PO	IS 277 & BHEL PO	MTC	√	P	V	-	
2.4	Bend Test for zinc coating	Peeling of, flaking, cracking	B	Visual	Cl 8 of IS 277	Cl 8 of IS 277	Cl 8 of IS 277 & BHEL PO	Cl 8 of IS 277 & BHEL PO	IR	√	P	V	-	
2.5	Zinc Coating Test	Weight of coating of galvanizing*	B	Measurements	Cl 9 of IS 277	Cl 9 of IS 277	IS 277 & BHEL PO	IS 277 & BHEL PO	IR	√	P	V	-	*both sides inclusive: 275 gsm
2.6	Galvanized sheets/coils	Surface Finish	B	Visual	100%	100%	Cl 11 of IS 277	Cl 11 of IS 277	IR	√	P	V	-	
PAINTING & CORRUGATION														
2.7	Paint Coating Selection	Paint Class, viscosity, etc.	B	Visual	100%	100%	BHEL PO	BHEL PO	MTC	√	P	V	-	
2.8	Alkali Cleaning; Rinsing with Hot & cold water*;	Cleanliness of galvanized Sheets before painting	A	Visual	100%	100%	Manufacturer’s std	Freedom from oil, grease, dirt.	Log	√	P	V	-	* followed by Chromate soln treatment at room temperature
2.9	Painting: Primer on both sides; Top & bottom coats	Surface Preparation, Color Shade & DFT	B	Visual & Measurement	100%	100%	BHEL PO	BHEL PO	IR	√	P	V	-	
2.10	Corrugation of sheets *	Shape, Surface finish, peeling of paint on both sides	A	Visual	100%	100%	IS 277 & BHEL PO	IS 277 & BHEL PO	IR	√	P	V	-	*if applicable

LEGEND: * RECORDS IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY THE SUPPLIER IN QA DOCUMENTATION;
**** M:** MANUFACTURER (COIL/PROFILER), **C:** BHEL QC/BHEL AIA, **N:** CUSTOMER; **P:** PERFORM. **W:** WITNESS, **V:** VERIFICATION; **CLASS :** A - CRITICAL ; B - MAJOR ; C – MINOR;
MTC- Mill /Manufacturer's Test Certificate; IR- Inspection/Test Report; (R): Routine test; (T)/(Ts): Type test.

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				SUB-SYSTEM :Steam Generator and Auxiliaries							PAGE: 3 OF 3			
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
					M	C/N				M	C	N		
1	2	3	4	5	M	C/N	7	8	9	D*	**	10	11	

2.11	Sheets	Dimensions of Corrugated/plane sheets	B	Measurements	100%	100%	BHEL PO & BHEL approved drawing	BHEL PO & BHEL approved drawing	IR	√	P	V	-	
3	TESTING ON PAINTED COILS/SHEETS – Tests shall be done at manufacturer’s lab or NABL accredited labs.													
3.1	Bend Test	Peeling or crack of Paint	B	Visual	1 per 10 Tonnes	1 per 10 Tonnes	Cl 6.2 of IS 14246	Cl 6.2 of IS 14246*	IR	√	P	V	V	*No peeling or cracking of paint.
3.2	Pencil Hardness Test (2H)	Scratch proof	B	Visual	1 per 10 Tonnes	1 per 10 Tonnes	Cl 6.3 of IS 14246	Cl 6.3 of IS 14246#	IR	√	P	V	V	#No scratch
3.3	Impact Resistance Test	Impact resistance	B	Visual	1 per 10 Tonnes	1 per 10 Tonnes	Cl 6.4 of IS 14246	Cl 6.4 of IS 14246*	IR	√	P	V	V	*No peeling or cracking of paint.
3.4	Cross Hatch Test	No lifting of paint	B	Visual	1 per 10 Tonnes	1 per 10 Tonnes	Cl 6.5 of IS 14246	Cl 6.5 of IS 14246#	IR	√	P	V	V	#No lifting of paint.
3.5	Salt Spray Test	Corrosion Resistance/ Durability of paint	B	Visual & Measurement	1 per 10 Tonnes	1 per 10 Tonnes	Cl 6.6 & 5.4 of IS 14246 & BHEL Specn.	Cl 6.6 & 5.4 of IS 14246 & BHEL Specn.	MTC /IR	√	P	V	V	
4.0	FINAL INSPECTION													
4.1	Dimensional Inspection	Dimensions & Shapes	B	Visual & Measurement	100%	Min 1, max 10 *	BHEL PO & BHEL approved drawing		IR	√	P	W	V	*at random for each PO item.
4.2	Paint Inspection	Color, Shade & DFT	C		100%		BHEL PO	BHEL PO	IR	√	P	W	V	
4.3	Marking & Identification	PO no, Item, Material No, Project Name	B	Visual	100%		BHEL PO	BHEL PO	IR	√	P	W	V	
4.4	Packing along with Handling & Storage instructions to Sites@	Water-proof packing & Stability	B	Visual	100%		BHEL PO	BHEL PO	IR	√	P	W	-	@shall be available on each pack of sheets.

Notes:

- For Customer inspection, if applicable, the stages indicated under Column N shall be followed with specific approval of BHEL/Customer for Witness/Verification by Customer.
- The latest editions/revisions of the above mentioned/referred standards/procedures shall be used.

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