

ANNEXURE - I

TECHNICAL DELIVERY CONDITION
Product : NORMALISING & TEMPERING FURNACE /EF BAY – RADIANT TUBE
Document No: TDC: CMM : 006 Rev No : 00 **Effective Date: 18.06.2024** **Page- 1 of 2**

ITEM DETAIL		As per BHEL Drg : 1-7-0123-07-01751 Rev 02 /1-7-0129-07-01753 Rev 02					
S. N.	Component & Operation	Characteristics Checked	Type Of Check	Quantum of Check	Reference Document	Acceptance norms	Remarks
1	180° BEND (Item No.1), CC TUBE (Item No.2,3,4)						
1	POURING	Chemical Analysis Prior To Pouring & Product Analysis	SPECTROMETER IC ANALYSIS	100%	Approved Drawing /As per Table 1.1		NABL Chemical Test Report to be submitted
2	IDENTIFICATION	Metallic punching of pouring h.no.	Visual	100%	Pouring Report		
3	SAND / SHOT BLASTING	clean surface	Visual	100%	Approved Drawing	No Surface Defects	
4	VISUAL INSPECTION	Surface Appearance		100%	As Per Table 1.2		Mechanical Test Report from NABL lab to be submitted
5	MECHANICAL TESTING	Tensile Test & Elongation	UTS	1 no. / per heat	Approved drawing		
6	DIMENSIONAL INSPECTION	DIMENSIONS	Measurement	100%	Approved drawing		
7	AIR LEAK TEST OF TUBE ,180° BEND	LEAKAGE	PRESSURE TEST	100%	Approved drawing	No leakage	Pneumatic Pressure Test at 5 Kg/cm ² for 20 mins. Test report to be submitted
II	WELDING OF 180° BEND ,CC TUBE ,Plate ,Pad Plate ,Sealing Flange, & Item No.5,6,7,9,10,11,13,14						
1	TUBE TO BEND	D.P Test Of Root & Final Pass		100%	ASME SEC.V, Article 6		Test reports of DP & Radiography along with Radiographic films to be submitted.
2	TUBE TO FLANGE, PLATE	D.P Test On Weld	Visual	100%		ASME SECTION VIII , DEV 1, App. 8	
3	NDT TEST OF BUTT WELD JOINT	Internal defect in weld, tube to bend	Radiography	100%	ASME Sec. V, Article 2	ASME SECTION VIII ,DEV 1,Sec. UW 51	NDT reports shall be certified by NDT level II qualified personnel as per SNT-TC-1A

IV PRESSURE LEAK TESTING OF W Radiant Tube ASSY .									
1	LEAK TEST OF ASSY	Leakage	Pneumatic Pressure Test	100%	Approved drawing	No leakage	Pneumatic Pressure Test at 5 Kg/cm ² for 20 mins. Test report to be submitted		
V FINAL INSPECTION OF W Radiant Tube ASSY.									
1	DIMENSIONAL INSPECTION	DIMENSIONS	Measurement	100%	Approved drawing				
VI PACKING & IDENTIFICATION:									
1	IDENTIFICATION	HARD PUNCHING	Visual	100%	Approved drawing	Metal Punching on Job indicating BHEL PO No on Part No. 08			

Table 1.1

CHEMICAL COMPOSITION:

Melting: As per the Specification, Fully Killed

Chemical Specification:

C	Mn	Si	P	S	Cr	Ni	Mo	W
0.5-0.55	1.3 - 1.5	1.4 - 1.6	0.04 Max	0.03 Max	27.0- 30.0	47 - 50	0.50 Max	4.8 - 5.2

Product Analysis on test bar for each melt including residual elements shall be carried out:

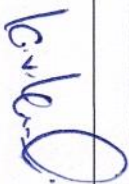
Table 1.2

MECHANICAL TESTS:

Test bars to be cast integral with the casting or separately. If cast separately, they shall be cast at the same time as the castings and from the same ladle.

A metal strip with heat number stamped shall be fused with the test bar during casting, to maintain traceability. Following tests to be conducted per heat / batch, as per ASTM A370.

S. NO	Tension Test		Material specification as per EN 10295	
01	Tensile Strength (Min)		440 MPa	
02	Yield Strength (Min)		240 MPa	



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