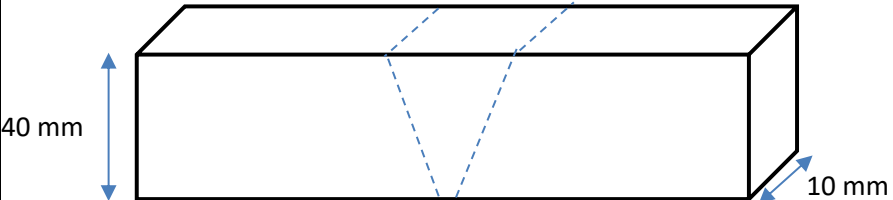


FABRICATION DIVISION
Welding Development & Technology

P.I No. _____ **Date: 10 Feb, 2020**

Technical Specification No: FBM/WD&T/TS02 Rev 05

Technical Specification for E 410NiMo T1-1/4 Flux Cored Arc Welding

S. No	Description	Requirement	Vendor to Furnish/confirm	Offered	Deviation	Remark
1.1	E 410NiMo T1-1/4	As per SFA 5.22 of ASME Sec IIC Ed 2019	Vendor/OCM to confirm			
1.2	Diameter of Wire	1.6 mm				
1.3	Weight of Spool	12.5 kgs to 15 Kgs				
1.4	Dimensions of Spool	ID : 50 mm, OD : 300 mm				
1.5	Finish and Uniformity	As per clause 18 of SFA 5.22 of ASME Sec IIC Ed 2019				
1.6	Standard package forms	As per clause 19 of SFA 5.22 of ASME Sec IIC Ed 2019				
1.7	Winding Requirement	As per clause 20 of SFA 5.22 of ASME Sec IIC Ed 2019				
1.8	Packaging	As per clause 22 of SFA 5.22 of ASME Sec IIC Ed 2019				
1.9	Marking of Pacakges	As per clause 23 of SFA 5.22 of ASME Sec IIC Ed 2019				
2	Tests Required for wire quoted					
2.1	Chemical Analysis	As per SFA 5.22 of ASME Sec IIC Ed 2019	Vendor to confirm the properties and provide Test Certificate from OCM/ Test reports of wire supplied and tested at any of the BHEL Units.			
2.2	Radiographic test	As per SFA 5.22 of ASME Sec IIC Ed 2019				
2.3	*Tensile test	As per SFA 5.22 of ASME Sec IIC Ed 2019				
2.4	*Bend Test (Transverse Side bend)	180° at 4T (40 mm) mandrel dia for atleast 4 samples. Test specimen shall be as given below with bend thickness 10 mm. Weld Joint Sample 				

S. No	Description	Requirement	Vendor to Furnish/confirm	Offered	Deviation	Remark
2.5	*Impact test at weld (Charpy): 5 Samples at RT(Room Temperature) on 2 mm V-notch	Average of three samples (Discarding Highest and lowest values): 50 J (minimum). Two of the values used for computing average shall ≥ 50 J	Vendor to confirm the properties and provide Test Certificate from OCM / Test reports of wire supplied and tested at any of the BHEL Units.			
2.6	Fillet Weld test	As per SFA 5.22 of ASME Sec IIC Ed 2019				
2.7	Diffusible Hydrogen	Diffusible Hydrogen content as per AWS A 4.3 (as opened): ≤ 5 ml/100g				
2.8	* The test mentioned at clause 2.3, 2.4 and 2.5 to be done after carrying out PWHT as mentioned at clause 4.0 and the shielding gas to be used shall be either 80% Ar + 20 % CO ₂ or 100 % CO ₂ .					
2.9	BHEL reserves the right to call a spool of weight and dimensions as mentioned in clause 1.3 and 1.4 respectively for further technical evaluation. The test results of BHEL will be final. Vendor to submit samples within 7 days after intimation by BHEL.					
3	Test Piece					
3.1	Size for bend test	40 mm Thick Plate, length and width suitable to carry test mentioned at clause 2.4 above	Material TC to be provided			
3.2	Material for Bend test	ASTM A 487 CA6NM Grade A or SA 240 Type S 41500				
3.3	Size for other test	As per SFA 5.22 of ASME Sec IIC Ed 2019				
3.4	Material for other test	As per SFA 5.22 of ASME Sec IIC Ed 2019				
4	Post Weld Heat Treatment					
4.1	Rate of Heating	≥ 50 °C per hour from 200 ° C or more	S.R graph to be provided			
4.2	Soaking Temp	600 - 620 ° C				
4.3	Soaking time	≤ 8 hrs				
4.4	Rate of Cooling	$\geq 50^{\circ}\text{C}$ per hour up to 200 ° C or more				

S. No	Description	Requirement	Vendor to Furnish/confirm		Offered	Deviation	Remark
5	Authorization and Correspondence	In case of authorized vendor quotes for the tender then the following must be met: 1. Vendor to provide authorized dealer certificate valid for atleast 1 year, and the OCM to take guarantee of the product quoted, failing this the offer will be rejected. 2. All Technical correspondence and confirmation shall be done with their principal supplier (OCM). Contact details of OCM to be provided with the offer. 3. All liability shall be of principal in the event of default by the authorized agent/dealer.	OCM to Confirm				
6	QUALIFYING CONDITIONS :						
6.1	Only those brands shall be quoted of which atleast 3 ton quantity is cumulatively supplied to a single or multiple fabrication plants in the past 3 years (from enquiry due date). The following information (S. No. 6.2 to 6.8) shall be furnished with respect to S. No. 6.1.		Vendor/OCM to confirm				
6.2	Purchase order copy (hiding the price) and invoice copy (hiding the price) is to be submitted.		Vendor/OCM to specify				
6.3	Name of the customer where wire has been supplied.		Vendor/OCM to specify				
6.4	Complete postal address of the customer.		Vendor/OCM to specify				
6.5	Year of supply.		Vendor/OCM to specify				
6.6	Name of the contact person of the customer.		Vendor/OCM to specify				
6.7	Phone/FAX no. and email address of the contact person of the customer.		Vendor/OCM to specify				
6.8	BHEL reserves the right to verify information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.		Vendor/OCM to specify				
		Legends : 1. OCM- Original Consumable Manufacturer					