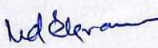
 BHARAT HEAVY ELECTRICAL LIMITED, BHOPAL, MADHYA PRADESH, HCM DIVISION		Document No. : HCM/2021-22/TS1 Rev 0/20-01-22			
Technical Specification cum compliance sheet for Carbon Steel Flux Cored Arc Welding Electrode					
Vendor Name		Mobile No			
Vendor Address		Landline No.			
Contact Person		Email Id			
NOTE:-					
1	Vendor must submit complete information from clause No.1 to 9.0, The offer meeting this clause would only be processed.				
2	The offer, correspondence and all documents enclosed with offer including test certificate should be in English language only .				
3	The information provided by vendor in specification cum compliance certificate will supersede any other information provided by vendor.				
4	Deviations in technical/ NIT conditions are not acceptable.				
Sl. No	Description	Requirement*	Vendor to specify/ Confirm	Offered	Remarks
1	Scope	This specification prescribes requirements for the classification of low and medium carbon steel electrodes for flux cored arc welding (FCAW) process.	OCM to note		
2	Application	The wire will be used for radiographic quality welding of low and medium carbon steel pressure vessel components.	OCM to note		
2.1	Classification	The electrode shall meet all the requirements of ASME Sec II - Part C, SFA 5.36 — E71T1-C1A0-CS1 and E71T1-C1P0-CS1 classification and alongwith that modified requirements specified in this specification shall also be adhered to.	OCM to Confirm		
2.2	Standard sizes	As per Table 17 of SFA 5.36 of ASME Sec II C.			
2.3	Finish and Uniformity	As per clause 18 of SFA 5.36 of ASME Sec II C.			
2.4	Standard Package Forms	As per clause 19 of SFA 5.36 of ASME Sec II C.			
2.5	Winding Requirements	As per clause 20 of SFA 5.36 of ASME Sec II C.			
2.6	Filler Metal Identification	As per clause 21 of SFA 5.36 of ASME Sec II C.			
2.7	Packaging	As per clause 22 of SFA 5.36 of ASME Sec II C.			
2.8	Marking of Packages	As per clause 23 of SFA 5.36 of ASME Sec II C.			


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Approved by:


Mohammad Ekram/Manager (HCM)


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3	Tests Required	The wire shall meet the requirements of relevant tests as per Table 6 of SFA 5.36 of ASME Sec II C and additional tests mentioned in this specification. The wire shall meet the requirements of all the tests (mentioned in S. No. 3.1 to 3.6) in as-welded condition. Also, the wire shall meet the requirements of the tests mentioned in S. No. 3.2 to 3.4 after PWHT (refer S. No. 4 for PWHT details).	Refer Note 2** of this specification		
3.1	Chemical Analysis	As per clause 10 of SFA 5.36 of ASME Sec II C.	Refer Note 2** of this specification		
3.2	Radiographic Test	As per clause 11 of SFA 5.36 of ASME Sec II C.			
3.3	Tension Test	As per clause 12 of SFA 5.36 of ASME Sec II C.			
3.4	Imapact Test	As per clause 14 of SFA 5.36 of ASME Sec II C. [Temperature for Impact Test: -20°C and Impact energy 27 J (minimum).]			
3.5	Diffusible Hydrogen Test	Diffusible Hydrogen content to be tested according to one of the methods given in AWS A4.3 and the values shall be reported.	OCM to Specify		
3.6	Fillet Weld Test	As per clause 14 of SFA 5.29 of ASME Sec II C.	OCM to Confirm		
4	PWHT	PWHT Temperature shall be as per Table 8 of SFA 5.36 of ASME Sec II C for the classification of electrode required by this specification. (refer clause 9.2.1.2 of SFA 5.36 of ASME Sec II C for other details related to PWHT).	Ref. note 2** of this spec.		
5	Test Assembly	The Test Assembly for tests mentioned in S. No. 3.1 to 3.4 shall be as per clause 9 of SFA 5.36 of ASME Sec II C. The test assembly for Fillet Weld Test (mentioned at S. No. 3.6 of this specification) shall be as per clause 9.4.2 of SFA 5.29 of ASME Sec II C.	OCM to Confirm		
6	Quality Considerations				
6.1	Information to be supplied in the bid	At the time of bidding the welding consumable supplier shall furnish all the relevant technical information regarding his product which shall include the recommended welding parameters.	OCM to Confirm		
6.2	Deviations	The bidder shall clearly state, if there are any deviations to the requirements of this specification.	OCM to Confirm		





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7	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. 4. If any document provided by vendor is in language other than english, it must be supported with valid english translation.	OCM to Confirm		
8	Technical Evaluation Parameters	The interested vendor who quotes for the wire required by this specification should meet all of the following conditions: (1) To submit test result/datasheet from OCM as per SFA 5.36 of ASME Sec-II C and with specific mention of all properties as required in S. No. 3. TC/Datasheet can be a standard TC/Datasheet and not specific to the batch being dispatched to BHEL. (2) To Submit Test results from WRI Trichy atleast as per Annexure 1 of this specification along with offer. (Please note that Sample of Brand testing at WRI,Trichy has to be done independently by vendor/OCM in direct correspondence with WRI Trichy. Sample testing is done on chargeable basis by WRI Trichy). (3) To submit free sample of atleast one spool of 12.5-15.0 kg as per this specification for shop trial at BHEL Bhopal. BHEL Bhopal will do running characteristic tests to check for Slag removal, Arc Striking/Stability, Appearance of Weld, Visible Defect, Restart Defect, Spattering, Porosity and Undercuts followed by DPT and MPI and can also randomly do any of the test mentioned in this specifications.	Vendor to Confirm		
9	Note :	1. BHEL reserves the right to call free sample spool (of size as required in PO) of minimum 12 kgs for further technical evaluation and testing at recommended parameters. The test results of BHEL will be final. Vendor to submit samples within 7 days after intimation by BHEL. 2**. OCM to confirm and provide TC/Datasheet along with offer. TC/Datasheet must have specific mention of all properties as required in S. No. 3. TC/Datasheet can be a standard TC/Datasheet not specific to the batch being dispatched to BHEL. 3. OCM to provide recommended welding parameters.	OCM to Confirm		
Legends : 1). OCM- Original Consumable Manufacturer. 2).WRI-Welding Research Institute *All ASME standards referred in this specification shall be of Ed 2019 COPY RIGHT AND CONFIDENTIAL The information on this document is the property of BHEL. Hence it shall not be used directly or indirectly in any way detrimental in the interest of the company					



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Annexure 1 to Document No. :HCM/2021-21/TS1 Rev 00/20.01.2022			
Table 1			
Sl. No.	Description	Requirement	Heat Treatment Condition
1	Test Required	The wire shall meet the requirements of tests mentioned in S. No. 1.1 to 1.6 :	
1.1	Chemical Analysis	As per clause 10 of SFA 5.36 of ASME Sec II C.	
1.2	Radiographic Test	As per clause 11 of SFA 5.36 of ASME Sec II C.	As-welded
1.3	Tension Test	As per clause 12 of SFA 5.36 of ASME Sec II C.	PWHT ^a
1.4	Imapact Test	As per clause 14 of SFA 5.36 of ASME Sec II C. [Temperature for Impact Test: -20°C and Impact energy 27 J (minimum).]	PWHT ^a
1.5	Diffusible Hydrogen Test	Diffusible Hydrogen content to be tested according to one of the methods given in AWS A4.3 and the values shall be reported.	As-welded
1.6	Fillet Weld Test	As per clause 14 of SFA 5.29 of ASME Sec II C.	As-welded
2	Test Assembly	The Test Assembly for tests mentioned in S. No. 1.1 to 1.4 (of Table 1) shall be as per clause 9 of SFA 5.36 of ASME Sec II C. The test assembly for Fillet Weld Test (mentioned at S. No. 1.6 of Table 1) shall be as per clause 9.4.2 of SFA 5.29 of ASME Sec II C.	
	^a The PWHT shall be as per S. No. 4 of the specification (HCM/2021-22/TS1 Rev 0/17-04-21)		
*All ASME standards referred in this specification shall be of Ed 2019			
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