

Document No. : BHEL/NPCIL/30447/FBM/ WD&T/NU9		FABRICATION DIVISION Welding Development & Technology BHEL, BHOPAL		
Technical Purchase Specification of ER316L bare rods for GTAW				
P.I No.		Revision 01		Date:18-12-2019
S. No	Description	Requirement*		Vendor to Confirm
1	Scope:	This specification prescribes requirements for bare stainless steel rods for Gas Tungsten Arc Welding (GTAW) process. The welding consumable required in this specification shall be as per NPCIL approved brand list.		
2	Requirements	The consumable will be used for radiographic quality welding of low-carbon, molybdenum-bearing austenitic alloys.		
2.1	Classification	The bare rod shall meet the requirements of SFA 5.9 of ASME Sec II C — ER316L classification and alongwith that additional requirements specified in this specification shall also be adhered to.		
2.2	Standard size and shapes	As per Table 2 of SFA 5.9 of ASME Sec II C.		
2.3	Finish and Uniformity	As per clause 12 of SFA 5.9 of ASME Sec II C.		
2.4	Standard Package Forms	As per clause 13 of SFA 5.9 of ASME Sec II C.		
2.5	Winding Requirements	As per clause 14 of SFA 5.9 of ASME Sec II C (if applicable)		
2.6	Filler Metal Identification	As per clause 15 of SFA 5.9 of ASME Sec II C.		
2.7	Packaging	As per clause 16 of SFA 5.9 of ASME Sec II C.		
2.8	Marking of Packages	As per clause 17 of SFA 5.9 of ASME Sec II C.		
3	Batch Testing			
3.1	Acceptance	The batch shall be deemed to be accepted only if it meets the testing requirements as mentioned in S. No. 4 of this specification.		
3.2	Lot	The complete quantity of bare rods of a given size ordered shall be from a single heat/lot/batch (not more than 45 MT).		
3.3	Lot Class	Lot class shall be S2 as per SFA 5.01 of ASME SEC II C.		
3.4	Facilities for Batch testing	The manufacturer /supplier shall have all facilities to conduct batch testing as per S. No. 4 of this specification. If the manufacturer/supplier is not having facility for conducting any particular test(s) then manufacturer/supplier shall provide list of relevant testing facilities. The testing for such cases shall be done at NPCIL approved lab or NABL accredited lab.		
*All ASME standards referred in this specification shall be of Ed 2017				

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4	Testing	All tests mentioned in S. No. 4.1 to 4.4 shall be duly witnessed by BHEL and NPCIL.		
4.1	Tests required	All relevant tests to be carried out as per SFA 5.9 of ASME Sec II C. In addition to this the tests specified in this specification must also be conducted.		
4.2	Chemical Analysis	1) To be done in accordance with and shall meet the requirements of SFA 5.9 of ASME Sec II C. 2) The following elements in addition to those mentioned in Table 1 of SFA 5.9 of ASME Sec II C must be reported : "Cb + Ta" 3) The result of chemical analysis shall be reported as per subsection C of NB-2432.2 of ASME Sec III NB		
4.3	IGC Test	The resistance to Intergranular Corrosion (IGC) shall be determined as per ASTM A262 Practice 'E'.		
4.4	Delta Ferrite Determination	1) Delta Ferrite Determination to be done as per NB-2433 of ASME Sec III NB . 2) Method to be followed for determination of delta ferrite shall be in accordance with NB-2433.1 of ASME Sec III NB . 3) Acceptance Criteria shall be as per NB 2433.2 of ASME SEC III NB .		
5	Level of Testing	As per schedule 6 or K of SFA 5.01 of ASME Sec II C.		
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 and also instructions such as shielding gas etc.		
6.2	Deviations	The bidder shall clearly state, if there are any deviations to the requirements of this specification.		
6.3	Reports / Certificates	1. Signed and sealed test certificates of all the tests as specified in S. No. 4 of this specification shall be submitted in 6 original copies (with scanned PDF version on CD/USB drive) to BHEL. 2. An additional copy shall accompany the welding consumables in their package for shipment.		
6.4	Calibration Report	All equipments used for conducting above mentioned tests must be calibrated and the callibration report shall be submitted to BHEL.		

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