

ANNEXURE TO TENDER NO: DPS/MRPU/1/4/1923/OT/1393

**ANNEXURE –A**

**TECHNICAL SPECIFICATION FOR ELECTRODES & FILLER WIRES**

**1. DESCRIPTION OF THE ITEM:**

SL. No.	ITEM	SPECIFICATION	TOTAL QTY	UNIT	AWS/ASME STANADARDS
1	Sliver Brazing rod - AG306	Size: 1.0mm	1	kg	AWS A5.8 : BAg-2a
		Size: 1.2mm	1	kg	
		Size: 1.6mm	1	kg	
2	SS TIG welding filler wire, ER-308L	Size: 1.0mm x length:1000mm in packets of 5kg	20	kg	AWS 5.9 / ASME SFA A5.9
		Size: 1.2mm x length:1000mm in packets of 5kg	20	kg	
		Size: 1.6mm x length:1000mm in packets of 5kg	20	kg	
		Size: 2.0mm x length:1000mm in packets of 5kg	20	kg	
3	SS TIG welding filler wire, ER-309L	Size: 1.0mm x length:1000mm in packets of 5kg	20	kg	AWS 5.9 / ASME SFA A5.9
		Size: 1.2mm x length:1000mm in packets of 5kg	20	kg	
		Size: 1.6mm x length:1000mm in packets of 5kg	20	kg	
		Size: 2.0mm x length:1000mm in packets of 5kg	20	kg	
4	SS TIG welding filler wire, ER-	Size: 1.0mm x length:1000mm in packets of 5kg	20	kg	AWS 5.9 / ASME SFA A5.9

	316L	Size: 1.2mm x length:1000mm in packets of 5kg	20	kg	
		Size: 1.6mm x length:1000mm in packets of 5kg	20	kg	
		Size: 2.0mm x length:1000mm in packets of 5kg	20	kg	
5	Inconel-82 TIG welding filler wire - ERNiCr-3	Size : 1.0mm x length: 1000mm in packets of 5kg	10	kg	AWS A5.14, ERNiCr-3 (UNS N06082) / ASME II, SFA-5.14, ERNiCr-3 (UNS N06082)
		Size : 1.2mm x length: 1000mm in packets of 5kg	10	kg	
		Size : 1.6mm x length: 1000mm in packets of 5kg	10	kg	
		Size : 2.0mm x length: 1000mm in packets of 5kg	5	kg	
6	Cast iron welding electrodes – LH115	Size: 2.5mm, in packets of 2kg	10	kg	AWS A5.15
		Size: 3.0mm, in packets of 2kg	10	kg	
7	SS TIG welding filler wire, ER-430	Size: 1.2mm x length: 1000mm in packets of 5kg	20	kg	AWS 5.9 / ASME SFA A5.9
		Size: 1.6mm x length: 1000mm in packets of 5kg	20	kg	
		Size: 2.0mm x length: 1000mm in packets of 5kg	20	kg	
8	MS welding filler wire - ER-70S2	Size: 1.0mm x length: 1000mm in packets of 5kg	20	kg	AWS A5.18 ASME SFA A5.18
		Size: 1.2mm x length: 1000mm in packets of 5kg	20	kg	
		Size: 1.6mm x length: 1000mm in packets of 5kg	20	kg	
		Size: 2.0mm x length: 1000mm in packets of 5kg	20	kg	
9	SS coated welding electrodes, E-309-16	SS coated welding electrodes, E-309-16, Size: 2.5mm in packets of 5kg	50	kg	AWS A5.4 / ASME SFA A5.4
10	SS coated welding	Size: 2.5mm in packets of 5kg	100	kg	AWS A5.1 /

	electrodes, E-7018	Size: 3.2mm in packets of 5kg	100	kg	ASME SFA A5.1
11	SS coated welding electrodes, E-6013	Size: 2.5mm in packets of 5kg	100	kg	AWS A5.1 / ASME SFA A5.1
		Size: 3.2mm in packets of 5kg	50	kg	
12	Brass welding filler rod, BRAZE-210	Size: 1.0mm (5kg packets each)	5	kg	AWS/ASME/SFA-5.8 : RB Cu Zn-A
		Size: 1.6mm (5kg packets each)	5	kg	
15	Welding filler wire - ERNiMo-4 (HASTE ALLOY c-276 filler)	Size: 1.0mm x length:1000mm in packets of 1kg	5	kg	AWS A5.14 -89 Class: ERNiCrMo-4 - NICKEL C 276
		Size: 1.2mm x length:1000mm in packets of 1kg	5	kg	
		Size: 1.6mm x length:1000mm in packets of 1kg	5	kg	
		Size: 2.0mm x length:1000mm in packets of 1kg	5	kg	
16	Welding filler wire - ERNiCrMo-2 (HASTE ALLOY X filler)	Size: 1.0mm x length:1000mm in packets of 1kg	5	kg	AWS A5.14 , ERNiCrMo-2 (UNS N06002) / ASME SFA-5.14 , ERNiCrMo-2
		Size: 1.2mm x length:1000mm in packets of 1kg	5	kg	
		Size: 1.6mm x length:1000mm in packets of 1kg	5	kg	
		Size: 2.0mm x length:1000mm in packets of 1kg	5	kg	

## 2.0 OTHER TECHNICAL REQUIREMENTS:

2.1 The specimens for all weld metal tensile test, chemical analysis of undiluted all weld deposits, delta ferrite measurements and inter-granular corrosion tests shall be prepared from weld pads shall be prepared as per ASME Section II Part C, if linkable test reports are not submitted.

2.2 All weld deposit shall contain delta ferrite within 5-10 FN.

2.3 All weld deposit shall confirm the Inter-granular Corrosion Test as per ASTM A 262 Practice –E. The acceptance criteria: The specimen shall be subjected to Inter-granular corrosion test as per procedure given in the above standard. The specimen shall be bent through 180° and over a diameter equal to the thickness of the specimen being bent. The bent specimen shall be examined under 5 to 20X magnification. Appearances of fissures or cracks are not acceptable.

2.4 Each size filler wire supplied shall be from same lot and heat number.

2.5 Each filler rod shall have suitable identification method either stamping or embossing.

2.6 The weld pads and coupon preparation, further testing shall be witnessed by IGCAR representative.

### **3.0 INSPECTION & TESTING:**

- 3.1 The bidder shall offer for pre dispatch inspection of electrodes & filler wires of full quantity as per P.O. along with the linkable test certificates for chemical and mechanical properties.
- 3.2 The purchaser representative will inspect the electrodes & filler wires, verify the chemical, mechanical properties and with respect to dimensions, packing, etc as per AWS/ASME codes mentioned in the above table.
- 3.3 The batch number / heat number / lot number mentioned in the test certificate shall be the same as that marked in the packet.
- 3.4 Once, the chemical and mechanical properties are within the limits as per test certificate the electrodes & filler wires will be accepted, if the bidder fails to submit corresponding test certificates. Then the samples shall be randomly taken to carryout qualifying and acceptance tests at IGCAR qualified authorized testing laboratories & all expenses will have to be borne by bidder.

### **4.0 ACCEPTANCE CRITERIA:**

For each size and lot, the sample filler wires shall be subjected for the following qualification tests.

- 4.1 The filler wires will be accepted only on confirmation of satisfactory results as per ASME Section – II Part-C & AWS standards mentioned in the table including special requirements given in Para 2.2.
- 4.2 The all weld deposit coupon shall be subjected to following tests for each size & grade at Government Approved Laboratories and test reports shall accompany the supply.
  - 4.2.1 Chemical composition of undiluted weld deposit
  - 4.2.2 Mechanical Properties of all weld metal
  - 4.2.3 Delta Ferrite in weld deposit
  - 4.2.4 Inter-granular Corrosion Test as per ASTM A 262 Practice –E of weld deposit.

### **5.0 BIDDER EVALUATION CRITERIA:**

- 5.1 The bidder should be Original Manufacturers / Authorized dealers and the dealership certificates have to be enclosed along with quotation.
- 5.2 The bidder has to quote for all items and only such bidders will be considered for technical evaluation. The bidders qualified in technical evaluation will only be considered for cost evaluation.
- 5.3 Cost evaluation will be carried out on overall. No splitting of order is envisaged.
- 5.4 All tests specified in the technical specification will be carried out by the bidder in NABL certified labs only and witnessed by the purchaser. The costs for carrying out such tests are in the scope of the bidder. Any bid, which indicates that testing charges extra will be outright rejected.

### **6.0 SPECIAL INSTRUCTIONS:**

- 6.1 The diameter of the filler rods shall be even throughout its length and shall have smooth surfaces.
- 6.2 Identification shall be stamped on either end of the Filler wires.
- 6.3 The filler wire shall be packed and sealed appropriately in plastic tubes.
- 6.4 Each pack shall be identified with product specification number, bidder's name and trade name, size, weight, lot & heat number.