Sl. No.	Pre –Qualification Criteria	Bidder remarked
1	Bidder shall have successful experience for supplying Flux for EG or EB2 or EB3 wire to any govt. Organizations/ PSUs/ Public ltd./ Company/Reputed Industries. Purchase orders copies or any related document to be submitted along with offer to consider the offer. Note: Successful experience means – supplied and accepted	
2	Quoted Welding Consumables brand name shall be provided along with offer.	
3	The Flux shall be suitable for use with ASME Sec.II.C, SFA-5.23, EG, EB2 and EB3 wire for Butt joint SAW of Drum/ pressure Vessel shells.	
4	Shall confirm to Technical Specification as per the WCPI – 415 rev 0.	
5	The Test certificate shall contain report of the following tests done to ensure compliance to this WCPI. a. Chemical analysis of flux b. Basicity Index of flux c. Grain size of flux	

PURCHASE INSTRUCTION FOR SUBMERGED ARC WELDING FLUX FOR BUTT JOINT WELDING OF BOILER DRUM SHELLS

1.0 SCOPE:

1.1 This purchase instruction details the requirements for fused/agglomerated Submerged Arc Welding Flux , which is to be used for butt joint welding of thick walled Boiler Drum Shells and Pipes

2.0 GENERAL:

2.1 The Flux shall be suitable for multi run Submerged Arc Welding of thick walled Drum/Pressure Vessels Shells up to 250 mm thickness using single wire and multiple wire techniques.

2.2 The Flux shall allow high current carrying capacity both in AC and DC.

2.3 The Flux shall suitable for use with ASME SEC.II.C, SFA-5.23, EG wire for Butt joint SAW of Drum/Pressure Vessel shells of SA 299 Grade A. Other wires indended for use are ASME SEC.II.C, SFA-5.23, EB2 & EB3

2.4 The Flux when used with ASME SEC.II.C, SFA 5.23, EG wire shall yield Weld metal of Tensile Strength higher than 540 MPa.

2.5 The flux shall be supplied in quantities as specified the Purchase order.

3.0 CHEMICAL COMPOSITION:

3.1 The flux shall be of basic type.

3.2 The Basicity index of the flux shall be 1 to 1.6.

3.3 The flux shall be either fused or agglomerated

4.0 GRAIN SIZE:

4.1 The grain size of the flux particles shall be 12x65 Tyler Mesh.

4.2 Flux shall be granular in form and shall be conveyed freely by the flux feeding system.The particle size distribution shall be uniform and consistent in different packs.

5.0 USABILITY:

5.1 The flux shall produce uniform well-shaped beads that merge smoothly with each other and base metal sidewalls.

5.2 The flux shall exhibit excellent slag detachability.

5.3 The flux shall produce radiographic quality submerged arc welds in deep grooves with AC/DC tandem welding involving high heat inputs with Low Alloy Steel wires confirming to ASME Section II C, SFA-5.23, EG,EB2 & EB3

5.4 Radiographic of weld metal shall meet acceptance criteria specified in the Latest Edition and Addenda (Applicable on the date issue of Purchase Order) of ASME Section –II.C, SFA-5.23.

6.0 PROPERTIES OF WELD METAL:

6.1 The flux when used with dia 4.0 mm EG wire confirming to ASME SEC.II.C, SFA 5.23 shall produce weld metal of Chemistry and Mechanical properties as given below. Test assembly is as per ASME Sec II C for Groove Weld for Multiple Pass Classifications

a) Chemistry of weld metal :

Carbon	: 0.15 % Max.
Manganese	: 1.80 % Max.
Silicon	: 0.80 % Max
Molybdenum	: 0.40 – 0.65 %
S & P	: 0.025 max each
Copper	: 0.30 Max

Wire Chemistry of EG Wire

Carbon	: 0.07-012 % Max.
Manganese	: 1.20- 1.80 % Max
Silicon	: 0.05 % Max
Molybdenum	: 0.40 – 0.65 %
Copper	: 0.30 Max
Chromium	: 0.15 Max
S & P	: 0.025 max each

b) Mechanical properties after SR at 620°±15° C with 3 hours soaking:

All Weld Tensile Strength	: 550 MPa minimum
Yield strength	: 470 MPa minimum
% Elongation	: 20 Minimum
Absorbed Energy (Charpy 'V' Notch Impact Test at +20 deg C)	: 30 Joules Average minimum

6.2 The flux shall be suitably packaged to ensure against damage during shipment. The flux shall be packed in humidity resisting plastic lining and further sealed in air tight metal Drums/HDPE Bags so as to withstand transportation by sea.

6.3 The weight of each metal Drum shall be maximum 100 Kg . The weight of each HDPE Bag shall be a maximum of 50 kg.

6.4 The flux in the original unopened drum/HDPE Bag shall withstand storage under normal condition for a period of at least 18 months without any adverse change to its welding performance or properties of weld.

6.5 The entire lot of each dispatch shall be from one batch only.

7.0 MARKING:

7.1 The following information shall be legibly marked/placed inside each drum/HDPE Bag.

a) Band Name
b) Grain size
c) Batch number
d) Nett weight

8.0 TESTING AND CERTIFICATION:

8.1 Every batch of flux supplied shall be individually tested for compliance to this WCPI. A batch is defined as the quantity produced from the same combination of raw materials under one production schedule. Three copies of Test certificates in English shall be sent.

8.2 The Test certificate shall contain report of following tests done to ensure compliance to this WCPI.

a) Chemical analysis of flux
b) Basicity Index of flux
c) Grain size of flux

8.3 Prior Approval from BHEL shall be obtained for any deviation to this Purchase instruction.

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