



BHARAT HEAVY ELECTRICALS LIMITED  
TRICHY-620 014  
WELDING TECHNOLOGY CENTRE

WCPI - 207  
Revision No.: 09  
Date: 23.02.2016

**WELDING CONSUMABLE PURCHASE INSTRUCTION (WCPI)**  
**FOR ASME SEC.II.C, SFA-5.1 E7018-1**

**1.0 SCOPE:**

- 1.1 The electrodes shall comply with requirements specified in the latest edition (applicable on the date of issue of purchase order) of ASME Sec.II.C.SFA-5.1, E7018-1. All tests, acceptance criteria shall be in accordance with this. Additional requirements specified in this document shall also be complied.
- 1.2 The electrodes shall be supplied in quantities as specified in the purchase order. The brand of SMAW Electrodes to be supplied shall be approved by the concerned IBR Authorities of the state. Every batch to be supplied should have been manufactured during the period when IBR approval for the brand was valid.

**2.0 CHEMICAL COMPOSITION:**

The chemical composition of the undiluted weld metal using this electrode shall conform to ASME SEC IIC SFA-5.1, E7018-1 for each size of electrode supplied.

**3.0 MECHANICAL PROPERTIES:**

The mechanical properties of the weld metal deposited using this electrode after stress relieving the test plate assembly at  $620 \pm 10^\circ\text{C}$  for 300 minutes shall meet the requirements of impact test as per ASME SECII.C SFA-5.1, E7018-1 and other properties as below for each size of electrode supplied.

Yield Strength at 0.2% Offset	410 MPa Minimum
Tensile Strength	540 MPa Minimum
Elongation in 50.8mm	22% Minimum

**4.0 RADIOGRAPHIC SOUNDNESS:**

The electrode shall be suitable for radiography quality butt joint welding of boiler pressure parts of SA299, SA106GrB, SA106GrC pipe material. The radiographic test shall meet the requirements of ASME SECII.C SFA-5.1, E7018-1 for each size of electrode supplied.

**5.0 FILLET WELD TEST:**

Fillet weld test done using this electrode shall meet requirements as per ASME SECII.C SFA-5.1, E7018-1 for each size of electrode supplied. The electrodes shall exhibit smooth running characteristics with soft and stable arc with ease of striking. The spatter level shall be negligible. Weld bead appearance shall be smooth with fine ripples and slag shall be self-peeling.

**6.0 SIZE:**

The electrodes shall be supplied in diameters and lengths as specified in the purchase order. The tolerance on diameter and length shall be as per SFA-5.1 for each size of electrode supplied.

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**Welding Consumable Purchase Instruction for  
ASME SEC.II.C, SFA-5.1 E7018-1**

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**7.0 CORE WIRE, COVERING, EXPOSED CORE, IDENTIFICATION, METHOD OF MANUFACTURE:**

The electrodes shall meet the requirements of clause 3.2, 3.3, 3.4 of SFA 5.02 and clause 19 of SFA 5.1 for each size of electrode supplied.

**8.0 MOISTURE CONTENT OF COVERING AND DIFFUSIBLE HYDROGEN CONTENT:**

Moisture content of the electrode covering shall not exceed the limit specified in ASME Sec II C, SFA 5.1 E7018-1 for each size of electrode supplied. Diffusible hydrogen content of weld metal deposited using the electrode shall be maximum 4ml/100g. Test to be done as per ASME Sec IIC, SFA 5.1 E7018-1 for each size of electrode supplied.

**9.0 PACKAGING:**

9.1 Electrodes packed in standard quantity shall be wrapped tightly in a corrugated paper with moisture proof packing in polythene bags and sealed. These shall be further packed either in hermetically sealed containers or in cardboard packets and then packed with polythene bags and sealed. The number of electrodes per packet shall be such that the net weight of each packet does not exceed 5Kg. Packets shall be further packed in cardboard cartons each weighing not more than 25kg. The cartons shall be packed in waterproof boxes with crates so as to ensure no damage to electrodes during shipment and normal storage conditions.

9.2 Weight of each crate shall not exceed 1000kg.

9.3 Markings of packages shall be as per clause 3.6 of SFA-5.02.

**10.0 TESTING AND CERTIFICATION:**

10.1 Each consignment of electrodes supplied shall preferably be from one batch only.

10.2 Batch or lot classification shall be Class C1 as per SFA-5.01 filler metal procurement guidelines of ASME Sec IIC. (Latest edition).

10.3 The level of testing shall be Schedule K as per SFA-5.01 filler metal procurement guidelines of ASME Sec IIC. (Latest edition).

10.4 Three copies of original certified material test report in English signed by the manufacturer giving details of tests done in compliance with this WCPI and ASME Sec II C, SFA-5.1, E7018-1 shall be sent.

10.5 The manufacturer shall certify that supplies made against the batch conforms to the requirements of the latest edition (applicable on the date of issue of purchase order) of ASME Sec IIC SFA-5.1, E7018-1.

10.6 A copy of valid IBR approval certificate for the brand being supplied shall be sent along with every consignment.

10.7 Every packet supplied shall be exhibited with details in the below mentioned format through a seal or securely affixed label.

**"Certified by -----  
(Mention the concerned IBR authority of the state)  
Under periodic check test dated: XX-XX-XXXX.  
Brand approval valid till : XX-XX-XXXX."**

Sl. No.	Pre –Qualification Criteria for E7018-1	Bidder remark
1	<p>Bidder shall be a manufacturer of the Quoted Welding Consumables / an authorized dealer of the same.</p> <p>If the offer is quoted by agent, letter of authorization and agreement duly signed by the manufacturer is required to consider the offer.</p> <p>(Specify: Manufacturer / Authorized dealer)</p>	
2	<p>Bidder (Principle Supplier) shall have successful experience for supplying of Welding Consumables (E7018-1 as per ASME Section IIC) to any govt. Organizations/ PSUs/ Public Ltd./ Company/Reputed Industries etc.</p> <p>Purchase orders copies/ related documents to be submitted along with offer to consider the offer.</p> <p>Note: Successful experience means – supplied and accepted.</p>	
3	<p>Kindly provide the self-declaration for “successfully supplied and accepted by customer” on Principle Supplier letter head regarding document SI . No. 2.</p> <p>In self-declaration document, kindly provide the following details:</p> <ul style="list-style-type: none"> <li>I. PO number</li> <li>II. PO date</li> <li>III. PO items description</li> <li>IV. Brand Name</li> <li>V. Supplied Quantity</li> </ul>	
4	<p>Quoted Welding Consumables brand name shall be provided along with offer.</p>	
5	<p>Mill address (manufacturing address) shall be provided along with offer.</p>	
6	<p>Mill capacity for Quoted Welding Consumables (By Principle Supplier) shall be provided along with offer.</p>	
7	<p>Manufacturer shall submit manufacturing process flow chart (Raw material to finished product).</p>	
8	<p>Manufacturer (Principle Supplier) shall submit a valid ISO 9001 certificate or Quality management system certificate or Written down procedure.</p>	

Sl. No.	Pre –Qualification Criteria for E7018-1	Bidder Remark.
9	Shall confirm to Technical Specifications as per WCPI - 207/09	
10	<p>Vendor should give confirmation to BHEL’s Technical Specification (as per WCPI - 207/09 ).</p> <p>Any deviation from the Specification are to be mentioned in the “Bidder remark Space”.</p> <p>If There is no deviation vendor should indicate “No Deviation”.</p>	
11	The manufacturer shall certified that supplies made against the batch conforms to the requirements of the latest edition(applicable on the date of issue of purchase order) of ASME Sec IIC SFA-5.1,E7018-1.	