



BHARAT HEAVY ELECTRICALS LIMITED  
TRICHY-620 014  
WELDING TECHNOLOGY CENTRE

WCPI - 243  
Revision No.: 07  
Date: 23.02.2016

**WELDING CONSUMABLE PURCHASE INSTRUCTION (WCPI)**  
**FOR ASME SEC.II.C, SFA-5.4 E316L-16**

**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-5.4, E316L-16. 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 shall conform to ASME SECII.C SFA-5.4, E316L-16 for each size of electrode supplied and the ferrite content of welds made using this electrode shall be controlled to be from 6FN to 10FN for each size of electrode supplied. (Ferrite content should be measured in accordance with procedure recommended in the latest edition of ASME Sec II C, SFA 5.4).

**3.0 MECHANICAL PROPERTIES:**

The mechanical properties of the weld metal deposited using this electrode shall meet the requirements of ASME SECII.C SFA-5.4, E316L-16 for each size of electrode supplied.

**4.0 RADIOGRAPHIC SOUNDNESS:**

The radiographic test shall meet the requirements of ASME SECII.C SFA-5.4, E316L-16 for each size of electrode supplied.

**5.0 FILLET WELD TEST:**



Fillet weld test done using this electrode shall meet the requirements specified in ASME SEC II C SFA 5.4, E316L-16 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 meet the requirements of SFA-5.4 for each size of electrode supplied.

**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 14 of SFA 5.4 for each size of electrode supplied.

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| Prepared:<br><br>Suraj N<br>Engineer/WTC | Reviewed and approved:<br><br>S. Singaravelu<br>SDGM/WTC |
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#### 8.0 PACKAGING:

- 8.1 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.
- 8.2 Weight of each crate shall not exceed 1000kg.
- 8.3 Markings of packages shall be as per clause 3.6 of SFA-5.02.

#### 9.0 TESTING AND CERTIFICATION:

- 9.1 Each consignment of electrodes supplied shall preferably be from one batch only.
- 9.2 Batch or lot classification shall be Class C1 as per SFA-5.01 filler metal procurement guidelines of ASME Sec IIC. (Latest edition)
- 9.3 The level of testing shall be Schedule K as per SFA-5.01 filler metal procurement guidelines of ASME Sec IIC. (Latest edition)
- 9.4 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 IIC, SFA-5.4, E316L-16 shall be sent.
- 9.5 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-5.4, E316L-16.
- 9.6 A copy of valid IBR approval certificate for the brand being supplied shall be sent along with every consignment.
- 9.7 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."**