



BHARATH HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI-620 014
WELDING TECHNOLOGY CENTRE

Doc. Number: **Revision:**

WCPI - 236

04

Date: 14/05/2011

Welding Consumable Purchase Instruction

Page 01 of 03

PURCHASE INSTRUCTION FOR NONSYNTHETIC SMAW ELECTRODE
ASME SEC.II.C, SFA-5.13, CLASS ECoCr-A.

1.1 SCOPE:

- 1.2 This purchase instruction prescribes the requirements for a Non Synthetic Shielded Metal Arc Welding Electrode that conforms to ASME SEC II, Part C, SFA-5.13, ECoCr-A.

2.0 GENERAL:

- 2.1 Electrodes shall be supplied in sizes and quantities as specified in the Purchase Order.
- 2.2 The Electrode shall comply with requirements called for in the latest edition and Addenda (Applicable on the date of issue of Purchase order) of ASME Sec II C, SFA-5.13, Class ECoCr-A and all Tests, Acceptance criteria etc. referred in this document shall be in accordance with this.

Additional requirements specified in this document are also to be complied

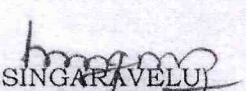
- 2.3 The Electrode shall be suitable for Hard facing overlay of Carbon steel, Low Alloy Steel Valve components for high Pressure, high temperature service.
- 2.4 The Electrode shall be of the Non-Synthetic type with a fully alloyed core wire.

3.0 CHEMICAL COMPOSITION:

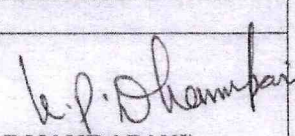
- 3.1 The chemical composition of the undiluted weld metal deposited using the Electrode shall be as follows.

Carbon	0.7-1.4%	Chromium	25-32%
Manganese	2.0% Max	Molybdenum	1.0% Max
Silicon	2.0% Max	Iron	5.0% Max
Tungsten	3.0-6.0%	Cobalt	Remainder
Nickel	3.0% Max	Total other elements	1.0% Max

PREPARED:


(S. SINGARAVELU)
SM / WTC

REVIEWED&APPROVED:


(Dr. K. P. DHANDAPANI)
SDGM/WTC



BHARATH HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI-620 014
WELDING TECHNOLOGY CENTRE

Doc. Number:

Rev:

WCPI - 236

04

Page 02 of 03

4.0 USABILITY:

4.1 The Electrodes with DCEP shall operate smoothly without excessive spatter and shall produce a thin and easily detachable slag even in multi layer weld deposits.

4.2 The Electrodes shall produce welds that after being machined/Ground are free from Surface and Sub surface defects as deducted by a Dye Penetrant test.

5.0 HARDNESS REQUIREMENTS:

The average hardness of a 2 layer Weld deposited using the Electrode, measured at a thickness of 3mm from the base metal shall be 35-47 HRC.

6.0 SIZE, COVERING, ARC END & GRIP END AND IDENTIFICATION:

6.1 SIZE:

Electrodes shall be supplied in diameters and lengths as specified in the Purchase order.

6.2 COVERING:

The core wire and covering shall be free of defects that would interfere with uniform deposition of weld metal.

The covering shall be concentric to the core wire to ensure no finger nailing shall occur during Welding.

6.3 Arc End & Grip End:

The Arc end of each Electrode shall be sufficiently bare and covering sufficiently tapered to permit easy striking of the Arc. The Grip end shall be bare for a length that is sufficient to provide electrical contact with the Electrode Holder.

6.4 IDENTIFICATION:

All electrodes shall be identifying by providing at least one imprint of the Electrode Classification near the grip end. The numbers and letters of the imprint shall be of bold block type and of a size large enough to be legible.

The ink used for imprint shall provide sufficient contrast with the electrode covering so that the imprint shall remain legible after drying and welding.

7.0 PACKING AND MARKING OF PACKAGES:

7.1 PACKAGING:

Electrodes in standard quantity shall be wrapped tightly in a corrugated



paper and then packed in moisture proof polythene bags and sealed. These shall be further packed either in hermetically sealed containers or in cardboard packets and then packed in polythene bags and sealed.

The number of electrodes per packet shall be such that the Net weight of each packet does not exceed 5 Kg. Packets shall be further packed in cardboard cartons each weighing not more than 25kg. Each carton shall contain electrode packets of one size and batch only.

Electrode cartons shall be shipped in wooden crates lined with waterproof material. Net weight of each crate shall not exceed 1000kg.

7.2 Marking of Packages:

The following product information shall be legibly marked/labeled on the outer side of each packet/container.

- a) AWS Specification and Classification designation.
- b) Supplier's Name and Brand.
- c) Size, Quantity of Electrodes and Net weight.
- d) Batch No and Date of manufacture.

8.0 CERTIFICATION AND TESTING:

8.1 Each consignment of electrodes shall be of from one Batch only.

8.2 Batch/Lot classification shall be Class C4 as per Section 5.0 of SFA-5.01 Filler metal procurement guidelines of ASME Sec.II-C.

8.3 The level of testing shall be Schedule -K as per Section 6.0 of SFA 5.01 Filler metal procurement guidelines of ASME Sec.II-C.

8.4 Three copies of Test certificates giving details of following tests done for compliance to this Purchase Instruction and ASME Sec.II.C, SFA-5.13, Class ECoCr-A shall be sent.

- a) Chemical composition of Weld Metal
- b) Test for Usability as per Sec 4.0.
- c) Test for Hardness requirements as per Sec 5.0.

The testing authority shall certify that supplies made against the Batch conforms to the requirements of the Latest Edition and Addenda (Applicable on the date of issue of purchase order) of ASME Sec II C, SFA-5.13, ECoCr-A and this Purchase instruction.

=====