

Technical Specifications				
SL. No	Description and Technical Specification of the item	QTY	UNIT	Delivery
1	E 9015-B91 SMAW ELECTRODE 3.15/3.2mm  Diameter - 3.15/3.2 mm Length - 350 mm LONG.  ASME SEC.II.C, SFA-5.5, E9015-B91 SMAW ELECTRODE AS PER WCPI-245 revision 09.	14,250.00	KG	Staggered Delivery

**Delivery schedule:**

Lot 1: 4000 kg Within 60 Days.  
Lot 2: 4000 Kg Within 120 Days.  
Lot 3: 6250 Kg Within 180 Days.

**FOR INFORMATION PLEASE**

Ref : ~~0000000000~~ PR 136726420

WCPI-245 Revision 09 (Clause 2.4 )

**2.4 Creep Testing Requirement-** The weld metal deposited by this electrode shall meet minimum 1000 hours creep rupture test at testing temperature 665°C and minimum Rupture stress 60 MPa without failure. The results of the tests shall be furnished.

**Acceptance criteria for Creep testing result:**

Sample tested shall not rupture and shall meet the creep requirements at 1000 hours of testing at indicated temperatures and stress values.

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**BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPALLI-620 014  
WELDING TECHNOLOGY CENTRE**

**Welding Consumable Purchase Instruction**

**Doc. Number:**

**WCPI – 245**

**Revision:**

**09**

**Date: 26.04.2024**

**WELDING CONSUMABLE PURCHASE INSTRUCTION FOR  
NON-SYNTHETIC SMAW ELECTRODE AS PER ASME SEC.II.C, SFA 5.5, CLASS E9015-B91**

**1.0 SCOPE:**

This purchase instruction prescribes the requirements for non-synthetic Shielded Metal Arc Welding (SMAW) electrode that conforms to ASME SEC II C, SFA- 5.5, E9015-B91.

**2.0 GENERAL:**

2.1 Electrodes shall be supplied in size and quantity as specified in the purchase order.

2.2 The electrode shall comply with requirements as specified in the latest edition and addenda (applicable on the date of issue of purchase order) of ASME Sec II C, SFA 5.5, E9015-B91 and all tests, acceptance criteria etc. referred in this document shall be in accordance with this. Additional requirements specified in this document shall also be complied.

2.3 The electrode shall be suitable for radiography quality butt joint welding of boiler pressure parts of SA387 Gr91-Plate, SA335 P91-Pipe and SA213 T91-Tube material for high temperature creep resistant service.

2.4 Creep Testing Requirement- The weld metal deposited by this electrode shall meet minimum 1000 hours creep rupture test at testing temperature 665°C and minimum Rupture stress 60 MPa without failure. The results of the tests shall be furnished.

2.5 The electrode shall be non-synthetic type with alloyed core wire that matches with weld metal chemistry.

**Prepared:**

**Aditya Kumar  
DM/WTC**

**Reviewed and approved:**

**R Arivazhagan  
SM/WTC**





### 3.0 CHEMICAL COMPOSITION:

As per ASME SEC II C, SFA- 5.5, E9015-B91 and the additional requirement specified as below. The chemical composition of the undiluted weld metal deposited using the electrode shall be as follows.

Carbon	0.08-0.13%	Molybdenum	0.85-1.20 %
Manganese	1.20 % Maximum	Vanadium	0.15-0.30 %
Silicon	0.30 % Maximum	Copper	0.25 % Maximum
Sulphur	0.01 % Maximum	Aluminium	0.04 % Maximum
Phosphorus	0.01 % Maximum	Niobium	0.02-0.10 %
Nickel	0.80 % Maximum	Nitrogen*	0.02-0.07 %
Chromium	8.0-10.5 %	Mn+ Ni	1.2 % Maximum
*Minimum=(0.5 x Aluminium content + 0.03) % Elements Sb, Sn and As shall be reported			

### 4.0 RADIOGRAPHIC SOUNDNESS:

- 4.1 The electrode welded with DCEP shall deposit weld metal that meets radiographic soundness requirements specified in ASME Sec.II C, SFA-5.5, E9015-B91.
- 4.2 The electrodes shall produce acceptable radiographic quality pipe and tube welds in all positions.

### 5.0 MECHANICAL PROPERTIES:

The mechanical properties of weld metal deposited using the electrode after stress relieving the test plate assembly at  $760 \pm 15^{\circ}\text{C}$  for 120 minutes shall be as follows. (Test to be done as per ASME Sec II C, SFA-5.5, E 9015-B91)

- a) Yield strength at 0.2% offset : 530 MPa (Minimum)
- b) Tensile strength : 620 MPa (Minimum)
- c) Elongation : 17% (Minimum)
- d) Absorbed Energy at  $+20^{\circ}\text{C}$  : 27 Joules Average(Minimum)  
(Charpy 'V' Notch Impact test) (Single value shall be  $\geq 20$  Joules)
- e) Hardness : 195 HV to 320 HV

### 6.0 FILLET WELD TEST:

Fillet weld test done using the electrode shall meet requirements specified in ASME Sec II C, SFA 5.5, E9015-B91.

### 7.0 MOISTURE CONTENT OF COVERING:

Moisture content of the electrode covering shall not exceed the limit specified in ASME Sec II C, SFA 5.5, E9015-B91.



**8.0 DIFFUSIBLE HYDROGEN CONTENT OF WELD METAL:**

Diffusible hydrogen content of weld metal deposited using the electrode shall be maximum of 4ml per 100 grams. Test shall be done as per ASME Sec II C, SFA 5.5, E9015-B91.

**9.0 SIZE, COVERING, ARC END AND GRIP END AND IDENTIFICATION:**

**9.1 SIZE:**

Electrodes shall be supplied in diameter and length as specified in the purchase order.

**9.2 COVERING:**

The core wire and covering shall be free of defects and shall ensure uniform deposition of weld metal. The flux coating shall be uniform and concentric around the core wire such that the performance of welding is not affected in any position and no tapered burning of electrode is permitted. Covering shall not exhibit any cracking during welding at maximum current recommended by manufacturer. The electrode shall not become red hot upon continuous welding through the length of electrode.

**9.3 ARC END AND GRIP END:**

The arc end of each electrode shall be sufficiently bare and flux coating sufficiently tapered permitting 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. Clause 21 of ASME SEC IIC, SFA-5.5, E9015-B91 shall be complied.

**9.4 IDENTIFICATION:**

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

The ink used for imprint shall provide sufficient contrast with the electrode coating such that the imprint shall remain legible even after drying and welding. Clause 22.1 of ASME SEC II C, SFA-5.5, E9015-B91 shall be complied.

**10.0 PACKING AND MARKING OF PACKAGES:**

**10.1 PACKAGING:**

A standard quantity of electrodes with the net weight of each package not exceeding 5Kg shall be packed in hermetically sealed containers or moisture proof cardboard with polythene encapsulated packets.

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

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## **10.2 MARKING OF PACKAGES:**

The package shall be marked clearly with AWS Specification, brand name, classification, lot number, manufacturer name, size and quantity of electrodes with net weight, health and safety warnings.

## **11.0 CERTIFICATION AND TESTING:**

11.1 Batch or Lot classification shall be Class C1 of SFA-5.01 Filler metal procurement guidelines of ASME Sec.II. Part C.

11.2 The level of testing shall be Schedule K of SFA 5.01 Filler metal procurement guidelines of ASME Sec.II. Part -C.

11.3 Original Certified Material Test Report (CMTR) in English countersigned by Inspecting Authority approved by IBR giving details about tests in compliance with this purchase instruction and ASME Sec IIC, SFA-5.5, E9015-B91 shall be sent. In addition, CMTR shall contain purchase order number with date, quantity and customer name.

(OR)

A copy of valid IBR approval certificate for the brand being supplied. Original Certified Material Test Report (CMTR) in English countersigned by testing Authority giving details about tests in compliance with this purchase instruction and ASME Sec IIC, SFA-5.5, E9015-B91 shall be sent. In addition, CMTR shall contain purchase order number with date, quantity and customer name.

11.4 The testing authority shall certify that the batch supplied 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 5.5, E9015-B91 and this purchase instruction.

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Sl. No.	Pre –Qualification Criteria - PR 0136759444	Bidder remark
1	If Bidder is a manufacturer, Confirm “Yes or, No” in bidder remark.	
2	<p>Bidder shall be a manufacturer of the Quoted items or an authorized dealer of the same.</p> <p>If the offer is quoted by agent, letter of authorization or agreement duly signed by the manufacturer is required to consider the offer.</p> <p>Tender Enquiry details must available on Letter of authorization or agreement to consider the offer.</p>	
3	Quoted Welding Consumables Brand Name/Product Name	
4	Quoted Product Catalogue	
5	Manufacturing Plant Address / Mill Address	

Seal and Sign of Authorized Person

Sl. No.	Pre –Qualification Criteria – PR 0136759444	Bidder remark
6	Manufacturer/Bidder shall submit manufacturing process flow chart (Raw material to finished product) along with offer for Quoted Item (SMAW Electrode)	
7	Manufacturer/Bidder shall submit a valid ISO 9001 certificate or Quality management system certificate or Written down procedure for ISO 9001 or A valid ISO 45001 certificate or Written down procedure for Quality inspection of SMAW Electrode.	
8	Manufacturing Plant capacity for SMAW Process.	
9	Any deviation from the Specification are to be mentioned in the “Bidder remark Space”. If There is no deviation vendor should indicate “No Deviation”.	
10	Quoted items - Diameter details	
11	Quoted items – Length details.	
12	Seal and sign on technical specification for acceptance.	
14	Valid IBR certificate status to be provided for Quoted material.	
15	Creep data status for E9015-B91 SMAW Electrode (Creep data is required along with supply).	

Seal and Sign of Authorized Person



Sl. No.	Pre –Qualification Criteria – PR 0136759444	Bidder remark
16	<p>Manufacturer/Bidder shall have successful experience for supplying of ER 70S-A1 or, ER 80S-B2 or, ER 80S-G or, ER 90S-B3 or, ER 90S-G or GMAW Spool or GTAW Spool or GTAW Rod or SMAW Electrode 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>	

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**Annexure – A- Additional Terms and Conditions for GeM Enquiry**

The terms and condition mentioned in this document are applicable in addition to the GeM General Terms and Conditions. Bidders shall furnish pointwise confirmation/details.

<b><u>To be filled by bidder</u></b>		
<b>Description of the Equipment:</b>		
<b>GeM Tender No. &amp; Date</b>		
<b>Name of the firm (Bidder)</b>		:
<b>Address</b>		:
<b><u>Contact person 1</u></b> <b>Name:</b> <b>Designation:</b> <b>Office Phone:</b> <b>Mobile:</b> <b>e-mail:</b>		<b><u>Contact person 2</u></b> <b>Name:</b> <b>Designation:</b> <b>Office Phone:</b> <b>Mobile:</b> <b>e-mail:</b>
<b>Offer/Quotation reference with date</b>		:
<b>Sl</b>	<b>Terms and conditions</b>	<b>Vendor's confirmation</b>
1.	Inspection by BHEL/as per Technical specification(if any).	
2.	<b>Payment terms:</b> <ol style="list-style-type: none"> <li>1. Payment terms for Non MSME Suppliers: 90 days from the Vehicle entry date (Against submission of GST invoice, GeM invoice, LR copy, Last Movement e-Way Bill, UD).</li> <li>2. Payment terms for Micro &amp; Small Enterprises (MSEs): 45 days from the Vehicle entry date (Against submission of GST invoice, GeM invoice, LR copy, Last Movement e-Way Bill, UD). The supplier should upload UDYAM Registration Certificate in proof of MSE.</li> <li>3. Payment terms for Medium Enterprises: 60 days from the Vehicle entry date (Against submission of GST invoice, GeM invoice, LR copy, Last Movement e-Way Bill, UD). The supplier should upload UDYAM Registration Certificate in proof of Medium Enterprises.</li> </ol> <b>Note:</b> Deviation in above payment terms is not acceptable.	
3.	Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration number which should clearly mentioned in the offer. Indicate the GST registration number. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.	GST Registration No. _____
4.	<b>EMD / Performance Security:</b>	Not Applicable
5.	Kindly Indicate the HSN Code for all items	HSN CODE : ____
6.	Rate quoted in GeM portal should be on FOR destination basis inclusive of all taxes, P&F, freight etc. Transit Insurance is under Supplier scope.  Please indicate how much GST percentage is included in quoted price.	GST in %: ____

Vendor's Seal & Signature

## / On Bidder's office letter pad /

Self-Declaration

Enquiry No.	
Enquiry Date	

In line with Government public procurement order Number P-45021/2/2017-B.E-II dated 15.06.2017, and further modified order dt. 28.05.2018, 29.05.2019 & order 04.06.2020 issued by DPIIT

I / We hereby declare that I / We are a "Local Supplier" meeting the requirement of minimum local content (..... %) defined in the above government notification for the goods against above mentioned enquiry Number.

Details of location at which local value addition will be made is as follows:

Door No.	
Street / Address 1	
Street / Address 2	
District	
State	
Country	
PIN Code	

We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

For Company Name:

Seal:

Signature:

Date:

Place:

**Note:**

" Local Content "means the amount of value added in India which shall ,unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured(excluding net domestic indirect taxes) minus the value of imported content in the item(including all customs duties) as a proportion of the total value, in percent. "Local Supplier "means a supplier or service provider whose product or service offered for procurement meets the minimum local content.

# The above declaration shall be submitted mandatorily along with the offer in company letter head with seal & signature.

(Please fill all the yellow color field)