

### Technical Specifications

SL. No	Description and Technical Specification of the item	QTY	UNIT	Delivery
1	ER80S-B2 GMAW WIRE DIA 0.8 MM ASME SEC.II.C.SFA-5.28, ER80S-B2 LAS BARE SOILD WIRE FOR GMAW TO WCPI-153/08. DIAMETER 0.8 mm X 700/1000 GRAM PRECISION LAYER WOUND S100 PLASTIC SPOOLS.	500.00	KG	90 DAYS
2	ERNICR-3 GMAW WIRE DIA 0.8 MM ASME SEC.II.C, SFA-5.14 ERNiCr-3 BARE SOLID WIRE FOR GAS METAL ARC WELDING AS PER WCPI-155/06. DIAMETER 0.8 mm X 700-1000 GRAM PRECISION LAYER WOUND S100 PLASTIC SPOOLS.	300.00	KG	90 DAYS



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

**Doc. Number:**

**Revision:**

WCPI – 153

08

**Date:** 02/09/2009

Welding Consumable Purchase Instruction

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**PURCHASE INSTRUCTION OF BARE LOW ALLOY STEEL  
SOLID WIRE FOR GAS METAL ARC WELDING TO  
ASME SEC.II.C, SFA-5.28 CLASS: ER 80S-B2.**

**1.0 SCOPE:**

1.1 This Purchase Instruction prescribes the requirements for Bare Low Alloy Steel Solid Wire for Gas Metal Arc Welding that conforms to ASME Section II.C.SFA-5.28, Class: ER 80S-B2.

**2.0 GENERAL:**

2.1 The Wire shall comply with requirements specified in the Latest Edition and Addenda (Applicable on the date of Issue of Purchase Order) of ASME Sec.II.C.SFA-5.28, ER 80S-B2 and all tests, Acceptance Criteria shall be in accordance with this. Additional requirements specified in this document shall also be complied.

2.2 The Wire shall be precision layer wound in plastic spools and shall be supplied in sizes and Quantities as specified in the Purchase Order.

2.3 The Wires are intended for use as a Welding Electrode for butt-welding of tubes in pulsed GMAW process with Argon plus 5% to 20% Co<sub>2</sub> gas shielding in Automatic Straight Tube Butt Welding machine and Orbital TIG Welding with 100 % Argon shielding for Radiography-Quality high pressure boiler components.

2.4 The manufacture's Material Safety Data Sheet for the product shall be sent along with the consignment.

**3.0 CHEMICAL COMPOSITION:**

3.1 The chemical composition of the Wires shall conform to the following Analysis.

*Handwritten:* 9/5/2009  
8/5/2009

PREPARED:

*Signature of S. Singaravelu*  
S. Singaravelu  
SM / WTC

REVIEWED:

*Signature of Dr. K.P. Dhandapani*  
Dr.K.P. Dhandapani  
SDGM/WTC

APPROVED:

*Signature of B. Natarajan*  
B. Natarajan  
AGM/WTC & TE



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Carbon	0.07-0.12 %	Chromium	1.20-1.50 %
Manganese	0.40-0.70%	Molybdenum	0.40 – 0.65%
Silicon	0.40 – 0.70%	Copper	0.35% Max
Sulphur	0.025% Max.	Nickel	0.20% Max
Phosphorus	0.025 % Max	Other Elements Total	0.50 % Max

#### **4.0 USABILITY AND RADIOGRAPHIC SOUNDNESS:**

4.1 The Wire when used as electrode in Gas Metal Arc Welding with Argon plus 5% to 20% Co<sub>2</sub> shielding in Automatic Straight Tube Butt Welding machine and in Orbital Tig Welding with 100% Argon shielding shall deposit Weld metal that flows freely, uniformly without sputtering or other defects and shall exhibit excellent wetting characteristics. The resultant Weld metal shall be smooth and uniform with no visible evidence of cracks/porosity or other defects and shall meet Radiographic Soundness requirements specified in ASME Sec.II.C.SFA-5.28, ER 80S-B2.

4.2 Weld metal produced using the wire with 95 % Argon plus 5% Co<sub>2</sub> /100 % Argon shielding shall meet tensile requirements after PWHT at 620±15°C with one hour soaking as follows.

Tensile Strength	550 Mpa (Minimum)
Yield Strength	470 Mpa (Minimum)
% Elongation	19 (Minimum)

4.3 The base metal for weld test assembly and testing procedure to be employed for verifying compliance to 4.1 & 4.2 above shall be as specified in ASME Sec.II.C.SFA-5.28, ER 80S-B2.

#### **5.0 FORM, SIZE, FINISH AND IDENTIFICATION:**

##### **5.1 FORM & SIZE:**

The Wire shall be supplied in diameters 0.8 mm, 1.2 mm or 1.6 mm as specified in the Purchase Order. The tolerance on diameter shall be + 0.01, -0.04mm.

##### **5.2 FORM:**

The Wire shall be supplied in plastic spools of dimensions and weight as given below. Spools shall be such material and design so as to provide adequate protection against damage or distortion of themselves and of the wire due to normal handling or use. Spools shall be sufficiently clean and dry to maintain cleanliness of the wire. Spools shall electrically insulate the wire from wire feed spindle.



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Barrel Inner Dia. (Bore dia.)	50.5 mm.+2.5,-0 mm	16 mm +1,-0 mm
Spool Outer Dia. (Flange OD) Max	305 mm	100 mm
Spool Width	103 mm +0,-3 mm.	46 mm + 0,-2 mm
Distance between axes	44.5 mm ± 0.5 mm	-----
Driving Hole Diameter	10 mm + 1,-0 mm	-----
Net Weight	10/12.5/15 Kg.	700 /1000 gm.

**5.3 FINISH & UNIFORMITY:**

The Wire shall be uniformly copper coated and shall have a smooth & glossy finish that is free from slivers, depressions, scratches, scales, seams, laps, drawing fluids and foreign matter that would adversely affect the welding characteristics, the operation of Welding equipment, or properties of Weld metal. The copper coating shall be well adhered without any flaking so as to ensure against any rusting during long storage and also ensuring good electrical conductivity.

5.4 Each Spool shall contain one continuous length of wire from single heat of metal and no splices are permitted.

**5.5 WINDING:**

The Wire shall be precision layer wound on spools so that kinks, waves, sharp bends, overlapping or wedging are not encountered, leaving the wire free to unwind without restriction. The outside end of the wire (The end with which welding is to begin) shall be identified so that it can be located readily and shall be fastened to avoid unwinding.

5.6 The spooling shall be rigid without any intermeshing of wire layers. The outer most layer of spooled wire shall not be closer than 3.0 mm to the outside of flanges.

5.7 The cast helix and temper of wire on spools shall be such that the filler wire will feed in an uninterrupted manner in an automatic high output welding system.

**5.8 IDENTIFICATION:**

Adhesive labels containing following product information shall be securely affixed in prominent location on the outside of at least one flange of the spool.

- a) ASME Specification & Classification designation.
- b) Brand Name.
- c) Batch Number/Heat Number.
- d) Size and Net Weight.



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**6.0 PACKAGING:**

- 6.1 The spools completely devoid of moisture shall be packed in moisture proof cartons so as to prevent any rusting or any deterioration in weld quality during long storage.
- 6.2 The cartons shall have product information as required in 5.8 above legibly marked so as to visible from outside of each carton.
- 6.3 The appropriate precautionary information as specified in ANSI Z 49.1 latest edition (as minimum) or its equivalent shall be prominently displayed in legible print on all packages including unit packages.
- 6.4 Spools shall be packed in wooden crates lined with waterproof material so as to ensure against damage during shipment and normal storage conditions. The net weight of each crate shall not exceed 1000 Kg.

**7.0 TESTING & CERTIFICATION:**

- 7.1 Each consignment of wire spools shall be from one batch only.
- 7.2 Batch /Lot classification shall be "Class S1" of SFA-5.01 Filler metal procurement guidelines of ASME Sec.II.C. (Latest Edition & Addenda)
- 7.3 The Level of Testing shall be "Schedule J" -of SFA-5.01 Filler metal procurement guidelines of ASME Sec.II.C. (Latest Edition & Addenda)
- 7.4 Three copies of Original Test certificates in English countersigned by Inspecting Authority (Latest) approved by IBR giving details of following tests done for compliance to this Purchase Instruction and ASME Sec.II.C, SFA-5.28, ER80S-B2 shall be sent.
- 7.5 The Testing Authority shall certify that supplies made against the batch conforms to the requirements of the Latest Edition & Addenda (Applicable on the date of issue of Purchase Order) of ASME Sec.II.C.SFA-5.28 ER 80S-B2.

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BHARATH HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPALLI-620 014  
WELDING TECHNOLOGY CENTRE

Doc. Number: WCPI – 155  
Revision No.: 06  
Date: 01.10.2013

**WELDING CONSUMABLE PURCHASE INSTRUCTION FOR  
GMAW WIRE AS PER ASME.SEC.II.C SFA-5.14,ERNiCr-3**

**1.0 GENERAL:**

- 1.1 The wire shall comply with the requirements specified in the latest edition and addenda (applicable on the date of issue of purchase order) of ASME Sec.II.C.SFA-5.14, ERNiCr-3. All tests, acceptance criteria shall be in accordance with this. Additional requirements specified in this document shall also be complied.
- 1.2 The wires shall be supplied in sizes and quantities as specified in the purchase order.
- 1.3 The wires are intended for use as a welding electrode for butt-welding of tubes in pulsed GMAW process with Argon plus 5% to 20% Co<sub>2</sub> gas shielding in automatic straight tube butt welding machine and orbital TIG welding machine with 100 % Argon shielding for radiographic quality high pressure boiler components.

**2.0 CHEMICAL COMPOSITION:**

The chemical composition of the wire shall conform to ASME SEC.II.C SFA-5.14, ERNiCr-3.

**3.0 RADIOGRAPHIC SOUNDNESS & USABILITY:**

- 3.1 The wire when used as an electrode in GMAW with Argon plus 5% to 20% Co<sub>2</sub> or orbital welding with 100% Argon shall deposit a weld metal that flows freely, uniformly without sputtering or other defects and shall exhibit excellent wetting characteristics.
- 3.2 The resultant weld metal shall be smooth, uniform with no visible evidence of cracks, porosity or other defects and shall meet the radiographic soundness requirements as per ASME SECIIC SFA-5.14, ERNiCr-3.

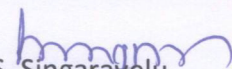
**4.0 SIZE:**

The wire shall be supplied in diameter 0.8/0.9/1.0 mm as specified in the purchase order. The tolerance on diameter shall be as per SFA-5.02.

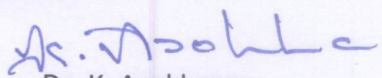
**5.0 FORM & WEIGHT:**

The wire shall be precision layer wound in ISO 644 BS300/ ISO 644 B300/S300 and/or S100 plastic spools and the net weight of the wire shall be 10/12.5/15Kg and/or 700g-1000g respectively as specified in the purchase order. The spools shall meet the clause 4.3.4 of SFA-5.02.

Prepared:

  
S. Singaravelu  
DGM / WTC

Reviewed & Approved:

  
Dr. K. Asokkumar  
AGM/WTC



**6.0 FINISH & UNIFORMITY:**

The wire shall meet the requirements of clause 4.2 of SFA-5.02.

**7.0 WINDING REQUIREMENTS:**

The wire shall meet the requirements of clause 4.4 of SFA-5.02.

**8.0 IDENTIFICATION :**

The wire shall meet the requirements of clause 4.5.2 & 4.5.5 of SFA-5.02.

**9.0 MARKING:**

The wire shall meet the requirements of clause 4.6 of SFA-5.02.

**10.0 PACKAGING:**

10.1 The wire should be completely devoid of moisture or any other foreign material with adequate sealing in suitable cartons to ensure no deterioration in the electrode quality during transportation by sea or long duration storage.

10.2 The cartons shall be packed in waterproof boxes with crates so as to protect them from damage during shipment and storage under normal conditions. Weight of each crate shall not exceed 1000kg. The cartons shall have product information as per clause 4.6 of SFA-5.02

**11.0 TESTING & CERTIFICATION:**

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

11.2 Batch /lot classification shall be Class S1 as per SFA-5.01 filler metal procurement guidelines of ASME Sec.II.C. (Latest edition and addenda).

11.3 The level of testing shall be Schedule K as per SFA-5.01 filler metal procurement guidelines of ASME Sec.II.C (Latest edition and addenda).

11.4 Three copies of original test certificates in English countersigned by inspecting authority (latest) approved by IBR of the country of origin giving details of the tests done in compliance with this purchase instruction and ASME Sec.II.C.SFA-5.14,ERNiCr-3 shall be sent. In addition, test certificate shall contain purchase order number, quantity and customer name.

11.5 The testing authority shall certify that supplies made against the batch conform to the requirements of the latest edition & addenda (applicable on the date of issue of purchase order) of ASME Sec.II.C. SFA-5.14, ERNiCr-3.

**WCPI - 155 Revision No. 06 Clause 11.4**

**Clause 11.4 Read As**

Three copies of original test certificates in English countersigned by inspecting authority (latest) approved by IBR of the country of origin giving details of the tests done in compliance with this purchase instruction and ASME Sec.II.C.SFA-5.14,ERNiCr-3 shall be sent. In addition, test certificate shall contain purchase order number, quantity and customer name

**(OR)**

Three copies of original test certificates in English countersigned by inspecting authority (latest) approved by IBR giving details of the tests done in compliance with this purchase instruction and ASME Sec.II.C.SFA-5.14,ERNiCr-3 shall be sent. In addition, test certificate shall contain purchase order number, quantity and customer name.

**(OR)**

IBR Certificate is required along with supply and Three copies of original test certificates in English countersigned by manufacturer giving details of the tests done in compliance with this purchase instruction and ASME Sec.II.C.SFA-5.14, ERNiCr-3 shall be sent. In addition, test certificate shall contain purchase order number, quantity and customer name.

Sl. No.	Pre –Qualification Criteria - PR 0136165527	Bidder remark
1	If Bidder is a manufacturer, Confirm “Yes or, No” in bidder remark.	
2	Bidder shall be a manufacturer of the Quoted items or an authorized dealer of the same. If the offer is quoted by agent, letter of authorization or agreement duly signed by the manufacturer is required to consider the offer. Tender Enquiry details must available on Letter of authorization or agreement to consider the offer.	
3	Quoted Welding Consumables Brand Name/Product Name	
4	Quoted Product Catalogue	
5	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.	
6	Manufacturing Plant capacity for GMAW Wire.	
7	Manufacturing/Bidder should confirm and full fill the WCPI-153/08 and WCPI-155/06. Any deviation from the Specification are to be mentioned in the “Bidder remark Space”. If There is no deviation vendor should indicate “No Deviation”.	
8	Seal and sign the WCPI-153/08 and WCPI-155/06 for confirmation.	
9	Diameter details and Length details	
10	Any deviation from the Specification are to be mentioned in the “Bidder remark Space”. If There is no deviation vendor should indicate “No Deviation”.	
11	IBR status to be provided for both material.	

Seal and Sign of Authorized Person

**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.

<i>To be filled by bidder</i>		
<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><u>Contact person 2</u></b>
<b>Name:</b>		<b>Name:</b>
<b>Designation:</b>		<b>Designation:</b>
<b>Office Phone:</b>		<b>Office Phone:</b>
<b>Mobile:</b>		<b>Mobile:</b>
<b>e-mail:</b>		<b>e-mail:</b>
<b>Offer/Quotation reference with date</b>		:
SI	Terms and conditions	Vendor's confirmation
1.	Inspection by BHEL/as per Technical specification(if any).	
2.	<p><b>Payment terms:</b></p> <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> <p><b>Note:</b> Deviation in above payment terms is not acceptable.</p>	
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)