

दिनांक एवं हस्ताक्षर SIGN & DATE			संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी. - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF77196 Rev 02 पृष्ठ का Page 1 of 4																																				
	SUPERSEDES INVENTORY NO.		LOW HYDROGEN TYPE COVERED ARC WELDING ELECTRODES FOR ALLOY STEEL G20Mo5																																						
सामग्री सूची संख्या को अधिकृतित करता		1.0 Scope This specification covers the quality of chromium molybdenum steel low hydrogen covered arc welding electrodes. The electrodes are to be used for rectification welding of Mo steel.																																							
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		2.0 Compliance with National and International Standards Assistance has been taken from TLV 917301 and ASME Section II (c) in preparing the specification.																																							
		3.0 Condition of Delivery Electrodes shall be supplied in seaworthy and tight packing to avoid any damage / exposure to atmosphere during handling, transit and storage.																																							
		4.0 Manufacture The core wire and the coating used for the manufacture of the electrode shall be at the discretion of the supplier																																							
		5.0 Chemical Composition Chemical composition of deposited weld metal, when tested in accordance with ASME Sec. II (c) shall conform to the following requirements																																							
		<table border="1"> <thead> <tr> <th>Element</th> <th>Min. (%)</th> <th>Max. (%)</th> </tr> </thead> <tbody> <tr> <td>Carbon</td> <td>0.050</td> <td>0.100</td> </tr> <tr> <td>Sulphur</td> <td>---</td> <td>0.020</td> </tr> <tr> <td>Phosphorus</td> <td>---</td> <td>0.025</td> </tr> <tr> <td>Manganese</td> <td>---</td> <td>1.500</td> </tr> <tr> <td>Silicon</td> <td>---</td> <td>0.500</td> </tr> <tr> <td>Molybdenum</td> <td>0.400</td> <td>0.700</td> </tr> </tbody> </table>					Element	Min. (%)	Max. (%)	Carbon	0.050	0.100	Sulphur	---	0.020	Phosphorus	---	0.025	Manganese	---	1.500	Silicon	---	0.500	Molybdenum	0.400	0.700														
Element	Min. (%)	Max. (%)																																							
Carbon	0.050	0.100																																							
Sulphur	---	0.020																																							
Phosphorus	---	0.025																																							
Manganese	---	1.500																																							
Silicon	---	0.500																																							
Molybdenum	0.400	0.700																																							
स्वतंत्राधिकार एवं गोपनीयता इस प्र. 1 दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है। इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।		<table border="1"> <tr> <td>RMI</td> <td>KBS</td> <td>अनुवादक</td> <td>TRANSLATED BY</td> <td></td> </tr> <tr> <td>MPIC</td> <td>KB SOOD</td> <td>निर्माणकर्ता</td> <td>WORKED BY</td> <td>VIVEK GUPTA</td> </tr> <tr> <td>CHAIRMAN CPSC</td> <td>B RAHA</td> <td>जांचकर्ता</td> <td>CHECKED BY</td> <td>VK AGARWAL</td> </tr> <tr> <td>सहमत विभाग AGREED DEPTT.</td> <td>नाम NAME</td> <td>पर्यवेक्षणकर्ता</td> <td>SUPERVISED BY</td> <td>AK GARG</td> </tr> <tr> <td></td> <td></td> <td>स्वीकृति</td> <td colspan="2"> संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE </td> </tr> <tr> <td></td> <td></td> <td>निर्माण</td> <td>जारी</td> <td>दिनांक</td> </tr> <tr> <td></td> <td></td> <td>PREPARED : WELDING TECH</td> <td>ISSUED : WELDING TECHNOLOGY</td> <td>DATE : 20.10.06</td> </tr> </table>					RMI	KBS	अनुवादक	TRANSLATED BY		MPIC	KB SOOD	निर्माणकर्ता	WORKED BY	VIVEK GUPTA	CHAIRMAN CPSC	B RAHA	जांचकर्ता	CHECKED BY	VK AGARWAL	सहमत विभाग AGREED DEPTT.	नाम NAME	पर्यवेक्षणकर्ता	SUPERVISED BY	AK GARG			स्वीकृति	संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE				निर्माण	जारी	दिनांक			PREPARED : WELDING TECH	ISSUED : WELDING TECHNOLOGY	DATE : 20.10.06
RMI	KBS	अनुवादक	TRANSLATED BY																																						
MPIC	KB SOOD	निर्माणकर्ता	WORKED BY	VIVEK GUPTA																																					
CHAIRMAN CPSC	B RAHA	जांचकर्ता	CHECKED BY	VK AGARWAL																																					
सहमत विभाग AGREED DEPTT.	नाम NAME	पर्यवेक्षणकर्ता	SUPERVISED BY	AK GARG																																					
		स्वीकृति	संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE																																						
		निर्माण	जारी	दिनांक																																					
		PREPARED : WELDING TECH	ISSUED : WELDING TECHNOLOGY	DATE : 20.10.06																																					

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF77196 Rev 02																										
				पृष्ठ Page	का 2 of 4																									
SUPERSEDES INVENTORY NO.	6.0 Mechanical Properties The following mechanical properties shall be obtained after stress relieving at $660 \pm 10^\circ \text{C}$ / Water/Air quenching at $940 \pm 10^\circ \text{C}$ and tempering at $690 \pm 10^\circ \text{C}$ <table border="0"> <tr> <td>Yield Strength (0.2 % offset)</td> <td>-</td> <td>350 Mpa min.</td> </tr> <tr> <td>Tensile Strength</td> <td>-</td> <td>470 Mpa min.</td> </tr> <tr> <td>% Elongation</td> <td>-</td> <td>25.0 min.</td> </tr> <tr> <td>% RA</td> <td>-</td> <td>40.0 min.</td> </tr> <tr> <td>Charpy V notch (ISO-V)</td> <td>-</td> <td>27.0 J avg. of 3 specimens at $+ 20^\circ \text{C}$</td> </tr> </table> 7.0 Selection of Test Samples The selection of test samples for acceptance for chemical composition and mechanical properties shall be done as follows 7.1 Electrodes shall be drawn from one or more than one packet from each batch no. for carrying out chemical and mechanical properties. 7.2 Test Sample for chemical analysis shall be made according to ASME Sec. II (c) 7.3 Electrode shall be deposited on carbon steel plates for radiography and mechanical properties in accordance with ASME Sec. II (c). 8.0 Preparation of Test Samples Tensile and Impact specimen shall be prepared in accordance with ASME Sec. II (c). 9.0 Freedom from Defects Weldment on the test plate made as per ASME Sec. II (c) shall be free from inclusions, cracks and lack of fusion etc , on radiography, as per recommendation of ASME Sec. II (c). 10.0 Acceptance <table border="0"> <tr> <td>10.1</td> <td>Each batch of electrodes supplied by approved vendor shall be accepted on the basis of properties given in Cl. 5.0 and properties as per Cl. 6.0 shall be checked on surveillance basis.</td> </tr> <tr> <td>10.2</td> <td>For a new vendor the initial approval will be done on the basis of properties (given in Cl. 5.0, 6.0 and 9.0) obtained on the test samples prepared from the test plate made as per ASME Sec. II (c) at BHEL</td> </tr> </table> 11.0 Test Certificates The supplier shall submit five copies of test certificates giving the following information along with delivery <table border="0"> <tr> <td>11.1</td> <td>BHEL REFERENCE</td> </tr> <tr> <td>11.1.1</td> <td>PO Number</td> </tr> <tr> <td>11.1.2</td> <td>Specification No.</td> </tr> </table>					Yield Strength (0.2 % offset)	-	350 Mpa min.	Tensile Strength	-	470 Mpa min.	% Elongation	-	25.0 min.	% RA	-	40.0 min.	Charpy V notch (ISO-V)	-	27.0 J avg. of 3 specimens at $+ 20^\circ \text{C}$	10.1	Each batch of electrodes supplied by approved vendor shall be accepted on the basis of properties given in Cl. 5.0 and properties as per Cl. 6.0 shall be checked on surveillance basis.	10.2	For a new vendor the initial approval will be done on the basis of properties (given in Cl. 5.0, 6.0 and 9.0) obtained on the test samples prepared from the test plate made as per ASME Sec. II (c) at BHEL	11.1	BHEL REFERENCE	11.1.1	PO Number	11.1.2	Specification No.
Yield Strength (0.2 % offset)						-	350 Mpa min.																							
Tensile Strength						-	470 Mpa min.																							
% Elongation						-	25.0 min.																							
% RA	-	40.0 min.																												
Charpy V notch (ISO-V)	-	27.0 J avg. of 3 specimens at $+ 20^\circ \text{C}$																												
10.1	Each batch of electrodes supplied by approved vendor shall be accepted on the basis of properties given in Cl. 5.0 and properties as per Cl. 6.0 shall be checked on surveillance basis.																													
10.2	For a new vendor the initial approval will be done on the basis of properties (given in Cl. 5.0, 6.0 and 9.0) obtained on the test samples prepared from the test plate made as per ASME Sec. II (c) at BHEL																													
11.1	BHEL REFERENCE																													
11.1.1	PO Number																													
11.1.2	Specification No.																													
सामग्री सूची संख्या को अधिकृत करता	COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company																													
स्वत्वाधिकार एवं गोपनीयता इस दस्तावेज की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।	निर्माणकर्ता WORKED BY VIVEK GUPTA																													
दिनांक एवं हस्ताक्षर SIGN & DATE	जांचकर्ता CHECKED BY VK AGARWAL																													

दिनांक एवं हस्ताक्षर SIGN & DATE				संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF77196 Rev 02 पृष्ठ का Page 3 of 4	
सामग्री सूची संख्या को अधिकृतित करता		SUPERSEDES INVENTORY NO.		11.2 SUPPLIER REFERENCE 11.2.1 Supplier Name and Emblem. 11.2.2 Chemical Analysis 11.2.3 Result of Mechanical Properties 11.2.4 Diameter of core wire and length of electrodes 11.2.5 Batch No. 11.2.6 Date of manufacture 11.3 Party shall certify that the electrodes have been manufactured in accordance with FF77196 Rev 02.			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited It must not be used directly or indirectly in any way detrimental to the interest of the company		12.0 Marking Each electrode shall be marked by imprint of Plant Standard No./ AWS No. and brand name of supplier near to the gripping end. Ink used for imprinting shall provide sufficient contrast with the electrode covering, so that it is legible before and after normal welding operation. Party shall imprint following information on each carton. - Brand Name - Size of electrode - Batch no. and Date of Manufacture - Quantity and net weight.					
स्वत्वाधिकार एवं गोपनीयता इस प्रमाण में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।		दिनांक SIGN & DATE					
सामग्री सूची संख्या				निर्माणकर्ता WORKED BY VIVEK GUPTA			
				जांचकर्ता CHECKED BY VK AGARWAL			

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF77196 Rev 02			
				पृष्ठ का Page 4 of 4			
SUPERSEDES INVENTORY NO. सामग्री सूची संख्या	RECORD OF CHANGES						
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited It must not be used directly or indirectly in any way detrimental to the interest of the company	REV CODE	NO. OF CHANGES	DOCU. NO.	SHEET NO.	SIGN	DATE	
	02	Clause No. 2.0 DIN 17245 (87) replaced with TLV 917301		1 of 4		20.10.06	
		Clause No. 6.0 SR and Q & T temperatures specified		2 of 4		20.10.06	
		Clause No. 7.4 deleted		2 of 4		20.10.06	
		Clause No. 9.0 Radiography added		2 of 4		20.10.06	
		Clause no. 10.0 added		2 of 4		20.10.06	
		Clause No. 12.0 AWS No. added		3 of 4		20.10.06	
स्वत्वाधिकार एवं गोपनीयता इस प्रलेख में दी गई सूचना भारत देशी इलेक्ट्रिकल्स की सम्पत्ति है इस्तेमाल प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाय।	DISTRIBUTION OF PRINTS						
हस्ताक्षर एवं दिनांक SIGN & DATE	RMI	✓					
	STANDARD SECTION	✓					
	MPIC	✓					
सामग्री सूची संख्या INVENTORY				निर्माणकर्ता WORKED BY	VIVEK GUPTA		
				जांचकर्ता CHECKED BY	VK AGARWAL		