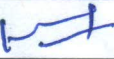
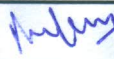
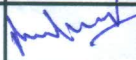


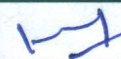
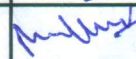
दिनांक एवं हस्ताक्षर SIGN & DATE:		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी. - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)	FF77185 Rev 07 पृष्ठ का Page 1 of 6																														
SUPERSEDES INVENTORY NO	GOUGING ELECTRODE FOR USE IN FOUNDRIES																																
समीची सूची संख्या को अधिकृत करता है 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.	1. General: This specification covers the requirement of non-jointed type gouging electrodes for use in Steel Foundry. 2. Application: The gouging electrode will be used for removal of metal/localised defects from casting maintained in temperature range of 30°C to 350°C with the help of Gouging arc holder. 3. Compliance with national standard: There is no national standard available for this item. 4. Properties: 4.1 Size : Diameter 9 mm X length 350 mm Diameter 12 mm X length 350 mm Tolerance on Diameter shall be +1 mm /-0.2 mm and on length will be +10 mm /-2 mm. 4.2 Bulk density: 1.65 gm/cc $\pm$ 0.1 without copper coating. 1.90 gm/cc $\pm$ 0.1 with copper coating. Difference in density with & without Cu coating shall be minimum 0.20 gm/cc. Bulk density will be measured by physical measurement method in which diameter will be taken by vernier caliper or screw gauge for both serrated & non serrated electrodes. 4.3 The gouging electrodes shall have uniform Cu coating & may be smooth or serrated finish. The Cu coating shall not have any crack/discontinuity. 4.4 Specific Resistance at RT: 2.5x10⁻³ ohm-cm max. without copper coating. 4.0x10⁻⁴ ohm-cm max. with copper coating. 4.5 The carbon shall not disintegrate during gouging operation. 4.6 Chemical Composition: Fixed Carbon content : 98% minimum Ash: 2% maximum 4.7 Electrode should be able to work with air pressure of 5-8 kg/cm². 4.8 Electrode should be able to work upto 900 A & 600 A (DCEP) respectively for 12mm & 9mm dia. 4.9 The copper coating shall not flake or peel off during use at rated amperage. The electrode shall not split or crack while in use.																																
स्वत्वाधिकार एवं गोपनीयता इस प्रलेख में दी गई सूचना भारत की हस्तक्षेपकारी की सम्पत्ति है इसका प्रयोग एवं प्रसारण के बिना भारत सरकार की अनुमति के बिना नहीं किया जाये।	<table border="1"> <tr> <td>RMI</td> <td>SN GHOSH</td> <td>अनुवादक</td> <td>TRANSLATED BY</td> <td></td> </tr> <tr> <td>MPIC</td> <td>AK KUSHWAHA</td> <td>निर्माणकर्ता</td> <td>WORKED BY</td> <td>SUSHANT PANDEY</td> </tr> <tr> <td>CHAIRMAN CPSC</td> <td>VK AGARWAL</td> <td>जांचकर्ता</td> <td>CHECKED BY</td> <td>ANIL KUMAR</td> </tr> <tr> <td>सहमत विभाग AGREED DEPTT.</td> <td>नाम NAME</td> <td>प्रमाणित एवं हस्ताक्षर DATE & SIGNATURE</td> <td>पर्यवेक्षणकर्ता SUPERVISED BY</td> <td>VK AGARWAL</td> </tr> <tr> <td colspan="2"></td> <td colspan="3"> स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE </td> </tr> <tr> <td colspan="2"></td> <td>PREPARED : WELDING TECH</td> <td>ISSUED : WELDING TECHNOLOGY</td> <td>दिनांक : DATE 19.10.15</td> </tr> </table>			RMI	SN GHOSH	अनुवादक	TRANSLATED BY		MPIC	AK KUSHWAHA	निर्माणकर्ता	WORKED BY	SUSHANT PANDEY	CHAIRMAN CPSC	VK AGARWAL	जांचकर्ता	CHECKED BY	ANIL KUMAR	सहमत विभाग AGREED DEPTT.	नाम NAME	प्रमाणित एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	VK AGARWAL			स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE					PREPARED : WELDING TECH	ISSUED : WELDING TECHNOLOGY	दिनांक : DATE 19.10.15
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दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी – हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF 77185 Rev 07 पृष्ठ का Page 2 of 6																									
सुपरीसृत संख्या को अधिकृत करता है SUPERSEDES INVENTORY NO.	4.10 The gouging rod shall not produce toxic smoke or excess noise during normal gouging operation.																												
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.	5: Sampling: The number of electrodes, to be selected, shall be according to below table for testing. <table border="1" data-bbox="267 540 1335 647"> <thead> <tr> <th>Lot Size (Nos)</th> <th>No's of boxes/packets selected from lot</th> <th>No's of electrode taken from each box</th> <th>Sample size No's</th> </tr> </thead> <tbody> <tr> <td>< 10,000</td> <td>2</td> <td>4</td> <td>8</td> </tr> <tr> <td>10,000 to 25,000</td> <td>4</td> <td>3</td> <td>12</td> </tr> <tr> <td>25,001 to 60,000</td> <td>5</td> <td>3</td> <td>15</td> </tr> <tr> <td>60,001 to 1,00,000</td> <td>6</td> <td>3</td> <td>18</td> </tr> <tr> <td>> 1,00,000</td> <td>7</td> <td>3</td> <td>21</td> </tr> </tbody> </table> The boxes & electrode shall be selected at random to represent complete lot & average of values considered for acceptance. However, if variation in individual pieces are more, then vendor shall be intimated for improvement in future supply. For specific resistance 2 samples having highest & lowest density with Cu coating will taken. The same sample may consider for chemical composition test.					Lot Size (Nos)	No's of boxes/packets selected from lot	No's of electrode taken from each box	Sample size No's	< 10,000	2	4	8	10,000 to 25,000	4	3	12	25,001 to 60,000	5	3	15	60,001 to 1,00,000	6	3	18	> 1,00,000	7	3	21
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60,001 to 1,00,000	6	3	18																										
> 1,00,000	7	3	21																										
6. Acceptance:																													
स्वतंत्राधिकार एवं गोपनीयता इस प्रलेख में की गई सूचना भारत हेतु इलेक्ट्रिकल की सम्पत्ति है इसका प्रयोग एवं आरक्षण रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में होना आवश्यक हो न किया जाए।	For technical scrutiny vendor shall be furnish technical data sheet as per Annex-II.																												
	All vendors shall submit samples for shop trial along with their offer. Acceptance shall be on the basis of tests at Clause 4 as well as shop trial at both technical scrutiny stage and at the time of bulk supply.																												
हस्ताक्षर एवं दिनांक SIGN & DATE	7. Packaging & Marking :																												
सुपरीसृत संख्या	(a) Each electrode should bear supplier's name, trademark, if any and size near the holding end together with batch no (If supplier not able to imprint identification on each electrode, then supplier shall ensure that each paperboard box/other containing these electrodes shall have such identification. Nature of identification shall be clearly intimated at enquiry stage with technical bid). (b) The supply should have BHEL PO No. (c) TC and GC (d) Date of manufacturing and Lot No. The electrodes should be supplied in original manufacturer's packing, suitably in paperboard box after encased in polythene sheet. These paper board boxes should be housed in cardboard carton to avoid any damage during handling, transit and storage.																												
निर्माणकर्ता WORKED BY		Sushant Pandey		19/10/15																									
जांचकर्ता CHECKED BY		Anil Kumar		19/10/15																									

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF 77185 Rev 07 पृष्ठ का Page 3 of 6	
सामग्री सूची संख्या को अधिकृतित करता है SUPERSEDES INVENTORY NO.	8. Inspection, Deviation and Replacement: 8.1 BHEL reserves the right to inspect material at site before despatch. The supplier shall intimate in advance about readiness of material enclosing a copy of test certificate of the material offered for inspection. However inspection at BHEL shall be final. The supplier shall offer BHEL representative all reasonable test facilities without charge to satisfy the latter that the material being furnished is in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed tests elsewhere. 8.2 If the material received at CFFP is not found in accordance with the requirements, it shall be liable to be rejected and the supplier will have to replace it free of cost at the earliest. 8.3 For any deviation from the specification sought by the supplier, prior approval of BHEL must be obtained in writing.				
9. Test Certificates: 9.1 Unless otherwise specified, one original and three copies of original manufacturer's test certificates shall be supplied with each consignment bearing the following information. In order to facilitate quick clearance of material, the supplier shall ensure to send a copy of test certificate along with dispatch document. - BHEL PO No. with Date - Specification No. - Supplier reference / trade mark - Identification No. / Batch No. - Properties as per Clause 4 - Date of manufacture - Any other specific information which the supplier would like to convey. 9.2 Suppliers other than the original manufacturer shall ensure providing original manufacturer's test certificates with linkage to supplier's invoice stating the batch No., lot No., etc of the supply.					
स्वत्वाधिकार एवं गोपनीयता इस प्रत्येक में दी गई सूचना भारत की इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए । COPYRIGHT AND CONFIDENTIAL The information on this document 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.					
दिनांक एवं हस्ताक्षर SIGN & DATE	निर्माणकर्ता WORKED BY Sushant Pandey  19/10/13				
सामग्री सूची संख्या	जांचकर्ता CHECKED BY Anil Kumar  19/10/13				

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF 77185 Rev 07 पृष्ठ का Page 4 of 6									
सामग्री सूची संख्या को अधिकारिता करता है SUPERSEDES INVENTORY NO	Annexure-I <u>PROCEDURE FOR SHOP TRIAL OF GOUGING ELECTRODES</u> 1.0 PROCEDURE 1. Take 8-10 (or as required) gouging electrodes from supplied lot/ sample. 2. Check the supplier Identification No. 3. Trial may be carried out on casting to grade of plain carbon/ high alloy steel/ Base metal of any steel grade 4. Confirm the air pressure in between of 5-8 kg/cm² 5. Confirm the operational condition of gouging holder for testing. 6. Set the rectifier current up to max 900 A & 600A (DCEP) respectively for 12mm & 9mm dia. 7. For trial electrode should be held such that a maximum of 178mm (7 inch) extends from the cutting torch. 8. Trial may carried out at an angle 90° to 160° (angle b/w holder axis and electrode axis in anticlockwise direction) of position of defect. 9. Before striking the arc, turn the air jet on and grip the cutting torch as per defect location. 2.0 ACCEPTANCE The gouging electrodes shall be treated as satisfactory on meeting the following. 1. The copper coating shall not flack or peel off during use at rated amperage (Cu peel off shall not lead more than 25 mm than carbon, after use of 270-280 mm electrode length). 2. The carbon shall not disintegrate during gouging operation. 3. Uniform material removal. 4. The gouging rod shall not produce toxic smoke or excess noise during normal gouging operation.												
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													
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दिनांक एवं हस्ताक्षर SIGN & DATE													
सामग्री सूची संख्या	<table border="1"> <tr> <td data-bbox="777 1785 958 1844">निर्माणकर्ता WORKED BY</td> <td data-bbox="958 1785 1154 1844">Sushant Pandey</td> <td data-bbox="1154 1785 1292 1844"></td> <td data-bbox="1292 1785 1432 1844">19/10/15</td> </tr> <tr> <td data-bbox="777 1844 958 1911">जांचकर्ता CHECKED BY</td> <td data-bbox="958 1844 1154 1911">Anil Kumar</td> <td data-bbox="1154 1844 1292 1911"></td> <td data-bbox="1292 1844 1432 1911">19/10/15</td> </tr> </table>					निर्माणकर्ता WORKED BY	Sushant Pandey		19/10/15	जांचकर्ता CHECKED BY	Anil Kumar		19/10/15
निर्माणकर्ता WORKED BY	Sushant Pandey		19/10/15										
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		PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		पृष्ठ का Page 5 of 6	
सामग्री सूची संख्या को सुपरसेड्स INVENTORY NO.	Annexure -II GOGING ELECTRODE DATA SHEET FOR TECHNICAL SCRUTINY				
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.	Ref:	Vendor			
	SL NO.	CL. NO.	Properties/particulars*	Specified	Confirmation from Vendor
	1	7 (a)	Identification on electrode	Brand Name/Other	
	2	4.1	Size : Diameter (mm) Length (mm)	X +1 / -0.2 350, +10 / -2	
	3	4.2	Density : With Cu coating : Without Cu coating Difference in density with & without Cu coating	1.90 gm/cc $\pm$ 0.1 1.65 gm/cc $\pm$ 0.1 0.20 gm/cc Min.	
	4	4.3	Uniform Cu coating & visual	No crack/discontinuity	
	5	4.4	Specific Resistance at RT: (a) With Cu coating, (ohm-cm) (b) Without Cu coating (ohm-cm)	(a) 4.0×10^{-4} max. (b) 2.5×10^{-3} max	
	6	4.5	No carbon disintegration during operation	To confirm	
	7	4.6	Chemical composition (a) Fixed Carbon content (%) (b) Ash content (%)	(a) 98% Min (b) 2 % Max	
	8	4.7	Suitability to working Air Pressure.	5-8 kg/cm ²	
	9	4.8	Working current rating	Upto 900 A/600A (DCEP)	
	10	4.9	Cu coating shall not be flack or peel off during use at rated amperage	To confirm	
	11	4.10	No production of toxic gas or excessive noise	To confirm	
	12	5.0	Acceptance of Cl.5, Sampling	To confirm	
	13	6.0	Acceptance of Cl. 6, Acceptance	To confirm	
	14	7.0	Acceptance of Cl. 7, Marking & Packaging	To confirm & specify	
	15	8.0	Acceptance of Cl. 8, Inspection , Deviation & Rejection	To confirm	
	16	9.0	Acceptance of Cl. 9, Test Certificate	To confirm	
17	Anne x-I	Acceptance of procedure and acceptance norms of shop trial	To confirm		
18	-	Confirmation of PPS FF77185 R07, If any deviation & clarification, specify	To confirm/ specify		
* These are indicative, for more details refer Spec Clause as mentioned.					
हस्ताक्षर एवं दिनांक SIGN & DATE	निर्माणकर्ता WORKED BY		Sushant Pandey		19/10/15
सामग्री सूची संख्या	जांचकर्ता CHECKED BY		Anil Kumar		19/10/15

दिनांक एवं हस्ताक्षर SIGN & DATE				संस्थान क्रय विनिर्देश (सी.एफ.एफ.पी - हरिद्वार) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF77185 Rev 07 पृष्ठ का Page 6 of 6	
सामग्री सूची संख्या SUPERSEDES INVENTORY NO		RECORD OF CHANGES					
संपत्ति सूची संख्या REV CODE		NO. OF CHANGES		Nature of change		SIGN	
02		1		Format changed. Technical details introduced.		15.3.01	
03		1		Technical details modified		25.06.01	
04		1		Tolerance on diameter of rod was ± 0.2 mm		19.5.09	
05		2		Clauses 8 & 9 modified to introduce original manufacturer's TC and packing conditions.		31.8.09	
06		-		Specification rewritten		09.03.15	
07		-		Cl 4.0 modified, Cl 5.0 as sampling introduce, Cl 6 & 7 Acceptance & Marking modified, Cl 9.0, Merged with Marking Annex-I , Testing removed, Annex-II & III Shop trial & Technical scrutiny modified		19.10.15	
DISTRIBUTION OF PRINTS							
RMI		✓					
STANDARD SECTION		✓					
MPIC		✓					
सामग्री सूची संख्या		निर्माणकर्ता WORKED BY		Sushant Pandey		 19/10/15	
सामग्री सूची संख्या		जांचकर्ता CHECKED BY		Anil Kumar		 19/10/15	