

PSGSG/15-16/006	Process Specifications for ETP GRADE COPPER RODS	Drg.No.	
		Date	28.09.2017
		Product	GSM-245
S.NO	BHEL Specification	Vendor compliance	
		YES/NO	Remarks
1.0	General: This specification governs the quality requirements electrolytic tough pitch copper rods and extruded sections for electrical purposes.		
2.0	Application: This material is used in high voltage switchgear applications.		
3.0	Compliance with National /International standards : The material shall comply with the requirements of the following national standard and also meet the requirements of this specification. A. INDIAN : IS : 191:2007		
4.0	Finish: a. Surface finish of the components shall be at least Ra 0.8. b. The component shall be free from dirt, grease and loose particles. c. Drawn profiles, to size, only shall be used for direct welding. No smithy is allowed for formation/ matching of profiles in view of defect inception. d. Any sharp corners shall be removed as per the drawing. Wherever not specified in the drawing, a radius of R1 shall be provided at the sharp corners and edges. e. Parallelism of the tube must be maintained within 0.1 degree and any deviation shall be subjected to rejection in supply.		
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5.0	Properties					
	Parameter	Test method	Unit	Value (Minimum)		
	Chemical	IS 191	%			
	a. Copper			Remainder		
	b. Bismuth			10ppm		
	c. Lead			0.005		
	d. Oxygen			0.045		
	Electrical Conductivity at 20°C (Minimum)	IS 191	% IACS	>97		
6.0	Test Methods Unless otherwise specified, the tests shall be conducted in accordance with relevant methods as mentioned against clause 7.					
7.0	Sample for Tests The set of test specimens prepared from same batch and in same manner as consignments shall be supplied for testing and approval. The test sample size should be as per requirement specified in relevant test method of clause 7.					
8.0	2. Test Certificate The supplier shall submit copy of test certificate for tests specified in clause 7 giving the following information: a. Results of chemical analysis, mechanical and all other tests as called for in this specification/order					
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9.0	3. Packing The components shall be packed in high density cardboard boxes, with a primary wrapped in polyethylene and packed individually in dust free boxes after degreasing. The components shall be guaranteed against all manufacturing defects.		
10.0	4. Acceptance criteria: a. Dimensional Report as per drawing. b. Finish as per clause 5. c. Test samples as per clause 8. d. Test certificate as per clause 9. e. Packing as per clause 10.		
11.0	5. Rejection and Replacement: In the event of the material proving defective in the course of manufacture, such material shall be rejected notwithstanding any previous certification of satisfactory testing and/or inspection. The supplier shall undertake to replace the material. Repairing of material is not acceptable.		
12.0	Warranty Certificate: All supplied items to be provided with warranty for 12 months from date of receipt and acceptance		
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