



BHARAT HEAVY ELECTRICAL LIMITED, BHOPAL
QUALITY CONTROL- MOTOR GROUP
QUALITY PLAN FOR COPPER FLAT/ROTOR BAR/DAMPER BAR

Customer		BHEL, Bhopal			QAP No. QA/MT/BOI/052		Rev. No.02	LEGEND		
Material description		Copper Flat/Rotor Bar/Damper Bar			Date: 17/11/2017			RR: Record Review		TPIA: Third party inspection agency
Specification		P.O./ drg./ Spec						W: Witness		
Sr. No	Stage	Characteristics	Method	Reference Document	Acceptance Criteria	Extent of check	Record of format	Inspection by	Mode of inspection	Remarks
1.	Raw material	a) Chemical Properties	Spectra Analysis	As Per Spec called in PO	As Per Spec called in PO	1 No./ Heat	Supplier TC	TPIA/BHEL	RR	(Test lab should be NABL accredited)
		b) Oxygen content as called in Specification	Spectra Analysis	-do-	-do-	1 No./ Heat	Supplier TC	TPIA/BHEL	RR	
2.	In-process									
2.1	Drawing and Annealing	No of passes and annealing temperature and time	Die dimensions, Temp and time	As per manufacturer practice	As per manufacturer practice	100%	Inspection record	TPIA/BHEL	RR	Supplier to give Die dimension for minimum 2 pass after extrusion. Annealing Temp and duration to be recorded.
2.2	Identification of test sample	Sample identification	Hard punch	Random sample selection, cutting & hard punch identification shall be done in presence of TPIA/ BHEL.					Witness	
2.3	Testing on sample (Electrical mechanical & chemical) as called in Specification	a) Tensile b) Hardness c) Conductivity d) Chemical (for O2 content ,check in external lab)	As per Po specification	As per spec -do- -do- -do-	As per spec -do- -do- --do--	One sample per lot	Test certificate -do- -do- -do-	-do- -do- -do- --do--	Witness Witness Witness RR	Check calibration status of testing equipment (calibrated by NABL accredited lab.)


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3	Defect Free	Ultrasonic Test for flats greater than 30mm thickness	NDT	As per BHEL Spec	As per BHEL Spec	100%	Test Report	TPIA/BHEL	Witnessing	BHEL / TPIA
4	Dimensions & visual inspection in finished	Dimension, surface finish, hard punch identification i.e. vendor name	Measurement / visual	BHEL drawing/ spec	BHEL drawing/ spec	100%	Inspection report	TPIA/BHEL	Witnessing	No sharp edges, sliver’s, burrs, pitting defects allowed.
5	Dispatch	Visual inspection/ packing & marking (PO, size, spec, Qty, etc.	Drawing/ packing instruction	---do---	----do---	100%	Inspection report	-do-	RR	
6	Document submission duly verified by TPIA	1. Source raw material TC. 2. Test report (Elect, Mech & Chemical) 3. Final dimension and visual report. 4. Third party inspection report (applicable BHEL)								

Note: On receipt of supply at BHEL works, surveillance testing shall be carried out by BHEL QC on samples drawn randomly for Electrical/Chemical/Mechanical properties.


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