



BHARAT HEAVY ELECTRICALS LIMITED BHOPAL
QUALITY PLAN FOR PAPER INSULATED COPPER CONDUCTOR (PICC)

QAP PLAN NO. QC/TCB/QAP/BO 56

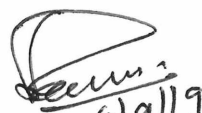
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SL.No.	COMPONENT/ ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC.	FORMAT OF RECORDS	AGENCY		REMARKS
							S	B/T	
1	Kraft Insulating Paper	a) Thickness b) Routine tests c) Type Test (Test to be conducted for each manufacturer once in 5 years)	M T T	One Sample per lot for each thickness	BHEL Spec AA21111	TC/TR	P	V	a) PICC manufacturer shall send one set of sample (20 Sheets for size 300mm x 300mm) and paper supplier 's test certificates for approval from BHEL Bhopal before use. Complete consignment details like no. of reel, weight, invoice linking paper shall be sent. 'b) Physical verification of stocks, Consumption record & storage, rodent treatment, cleanliness, air conditioning.
2	CC ROD	a) Surface finish. b) Chemical composition: i) Copper including silver ii) Oxygen content etc. c) Mass Resistivity. d) Elongation	V T T T	One Sample per lot	BHEL spec. AA 12024	TC/TR	P	V	a) Verification of records. b) CC rod shall be procured from BHEL approved Vendors only & sample shall be tested from NABL accredited lab by vendor for BHEL supply (Once in 6 Months). C) Servillance checkof Oxygen content at BHEL BHOPAL TSD.
3	a) Paraffin Wax b) PVA based adhesive used for Kraft paper Bonding (anchoring the ends of paper).	Identification of material, ash content, neutralization value, inorganic acidity. i) Type grade & make. ii) Non volatile matter content, consistency, bond strength, pH Value, Compatibility with oil (Type test)	T T	One sample per lot. One sample per lot.	IS 4654 IS 2257	TC/TR	P	V	Record Review Record Review
4	Manufacturing and Storage Area	Proper cleaning of copper Dust and normal dust in plant and Machinery.	V	100%	BHEL Spec AA28125/ AA28128	TC/TR	P	V	Surveillance check by BHEL/ TPIA.


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5	Bare Copper Conductor (During Drawing/ Flattening or annealing operation)	1) Surface Finish 2) Corner Radius 3) Dimension 4) Elongation/ Proof Stress. 5) Electrical Resistivity 6) Insulation test	V/M/T	100% Mother Reels.	BHEL Spec AA28125/ AA28128	TC/TR	P	W	CHP by BHEL/TPIA on Sample basis. 1-Surface defects like burrs, sharp edges, blisters, flakes, cracks, grease, foreign particles, loose copper dust and embedded impurities are not acceptable. 2-The conductor shall have smooth . bright and polished surface. Complete record to be maintained by vendor for ensuring traceability from CC rod to finish stage.
6	Final inspection	a) Dimensions - Covered Thickness, No. of paper layers, Thickness and width of papers, Staggering and overlap, Bare Thickness and width, Increase in dimension due to paper insulation by difference method and by individual paper thickness method, Corner Radius measurement, Perpendicular ness of edges of conductor, Merging of radius with sides, Thickness and uniformity of wax coating. Verification of conductor length. b) Test - Elongation (For annealed conductor), Proof stress (Whereever specified), Electrical resistivity, Insulation test (For bunched PICC)	M	Lot sample size (No. of reels) for each size upto 90 3 91-280 13 281-500 20	BHEL Spec AA28125/ AA28128	TC/TR	P	W	CHP by BHEL/TPIA on sample basis. Note) Unless otherwise specified. Conductor length on PO is inclusive of sample length as per sampling plan mentioned in column "Quantum of check".
7	Packing and Dispatch	1. Provision of inter-layer paper. 2. No gap between adjacent turns 3. Main gap of 25mm from drum flange top to packed conductor top. 4. Marking of winding direction. 5. Use of 560mm barrel drum for bunched & proof stressed conductor 6. Proper identification as per spec.	V	100%	BHEL Spec AA28125/ AA28128	TC/TR	P	V	Surveillance check by BHEL /TPIA.

V - VISUAL, M - MEASUREMENT, T - TEST, DRG - DRAWING, TC/TR - Test certificate/ Test Report, TPIA - THIRD PARTY INSPECTION AGENCY (APPROVED BY BHEL),

CHP- CUSTOMER HOLD POINT, S= SUPPLIER/ VENDOR, B/T= BHEL/TPIA, P= PERFORM, V= VERIFICATION/REVIEW, W= WITNESS

NOTE: 1) Surveillance test at BHEL Lab as per BHEL Norms shall be applicable.

2) This QAP shall be read in conjunction with Customer approved QAP/RQP/MQP for specific work Order (As applicable).

3) Please note that the above Inspections/ Surveillance checks does not absolve "Vendor/Supplier" of its responsibility of quality of work and performance and conforming to the relevant specification and standards as per the terms and conditions of the contract.

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