

**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED****MANUFACTURING QUALITY PLAN -- Solid Core Insulator/ Long rod Insulator**

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**BIHAR STATE POWER TRANSMISSION COMPANY LIMITED**

**MANUFACTURING QUALITY PLAN -- Solid Core Insulator/ Long rod Insulator**

<b>Manufacturer's Name &amp; Address</b>		<b>Customer</b>	<b>Vendor's Code:</b>	<b>Item: Solid Core Insulator/ Long rod Insulator</b>	<b>M.Q.P. No. 031</b>	<b>Valid From: 15.01.2016</b>
		<b>BSPTCL</b>			<b>Rev. No. 00</b>	<b>Valid Upto: Till Revision</b>
					<b>Date:05.01.2016</b>	
<b>Code 1</b>	Indicates place where testing is planned to be performed i.e. Inspection location		<b>Code 2</b>	Indicates who has to perform the tests i.e. Testing Agency		
A	At Equipment Manufacturer's works		J	The Equipment Manufacturer		
B	At Component Manufacturer's works		K	The Component Manufacturer		
C	At Authorised Distributor's place					
D	At Independent Lab		X	The Turnkey Contractor		
E	At Turn Key Contractor's location		Y			
F	Not specified		X			
<b>Code 3</b>	Indicates who shall witness the tests i.e. Witnessing Agency		<b>Code 4</b>	Review of Test Reports/Certificates		
P	Component Manufacturer itself					
Q	Component Manufacturer and Equipment Manufacturer		X	By Contractor during product/process inspection		
R	Component Manufacturer, Equipment Manufacturer and Contractor		Y	By BSPTCL during product/process inspection		
S	Equipment Manufacturer itself		Z	By Contractor and/or BSPTCL during product/process inspection		
T	Equipment Manufacturer and Contractor					
U	Equipment Manufacturer, Contractor and BSPTCL					
V	Third Party itself					
<b>Code 5</b>	Whether specific approval of sub-vendor / Component make is envisaged?		<b>Code 6</b>	Whether test records required to be submitted after final inspection for issuance of Dispatch Clearance/ Instructions		
E	Envisaged		Y	Yes		
N	Not Envisaged		N	No		
<b>Notes:</b>						
1. The MQP should be read in conjunction with BSPTCL specification and shall deem to include additional tests if any required as per the contract.						
2. BSPTCL specification shall include provisions of letter of Award, BSPTCL approved drawings /technical data sheet / BOM / test schedule / test procedure applicable to the specific contract.						
3. In case of any contradiction between the manufacturer's plant standards, this MQP and BSPTCL specification following precedence shall be followed :-						
a) BSPTCL specification .						
b) This Manufacturing Quality plan .						
c) Manufacturer's plant standards .						



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				<b>Date:05.01.2016</b>		
4. It is the responsibility of the manufacturer to ensure that this document is readily available at their works , as well as at the works of their sub vendors in order to avoid any delay at the time of inspection.						
5. The manufacturer shall ensure that their as well as their sub vendors control , metering & testing instruments are duly calibrated and should have calibration certificates traceable to Indian / International standards . Calibration records should be available during inspection by BSPTCL . Key testing instruments will be calibrated only by NABL accredited laboratories .						
6. In case of any tests being carried out at third party lab , such lab / facility should be NABL accredited / accepted by BSPTCL.						
7. Witnessing of Acceptance Tests by BSPTCL shall be on 25% of the number of samples for acceptance test. The Contractor or Equipment Manufacturer will inform in advance the serial number of equipment/items being offered for inspection, so that BSPTCL can inform in advance to keep the selected during inspection samples ready for witnessing.						
8. The manufacturer shall maintain the proper co-relation of test certificates from raw material stage to finished product stage and the records should be available by BSPTCL.						
9. Manufacturer shall show the approval of BSPTCL engineering for all contract specific type tests , including specific type tests if any as per the BSPTCL specification, at the time of final inspection.						
10. All packing cases should be marked with BSPTCL LOA details , name of project , item description and Dispatch Clearance/ Instructions number (by which material has been cleared for dispatch ) .						
11. One copy of test report , Dispatch Clearance/ Instructions shall also be sent along with consignment .						
12. Inspection of spare items ordered by BSPTCL shall also be governed by the provisions of this MQP . Items if not governed under MQP shall be offered for inspection as per BSPTCL specifications / Relevant-Indian / International Specification .						
13. Any material rejected during BSPTCL inspection shall be disposed off with approval of BSPTCL. In case the material is to be returned to the component Manufacturer, all such items shall be indebly marked (to prevent mixing) at the works of the manufacturer and offered to BSPTCL inspection engineer for verification of marking.						
14. The manufacturer shall align their quality system and that of their sub-vendors to the requirements of latest ISO 9000 quality standards in a time bound manner .						
15. The list of component manufacturers for which sub-vendor approval are envisaged is enclosed herewith.						
17. BSPTCL may review the effective implementation of the processes during the product-inspection / process-inspection. In case any violation in process or process parameters are observed, the reason along with corrective & preventive measures shall be conveyed to BSPTCL within 2 weeks.						
EM : Equipment Manufacturer		CM : Component Manufacturer		TC : Test Certificates		
EMR : Equipment Manufacturer's Record						

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Manufacturer's Name & Address		Customer		Vendor's Code:	Item: Solid Core Insulator/ Long rod Insulator	M.Q.P. No. 031 Rev. No. 00 Date:05.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision						
Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS
							1	2	3	4	5	6	
<b>A1</b>	<b><u>RAW MATERIAL - BODY</u></b>												
1.0	<b>Alpha Alumina</b>												
	Alpha content	Physical	BSPTCL Specification	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	B	K	P	W	N		
	Residue on 63 micron	Chemical	100 g/bag	"	"	"	A	J	S	W	N		
	Loss on Ignition	Chemical	5 bag/ lot	"	"	"	A	J	S	W	N		
	Soluble Soda	"	"	"	"	"	A	J	S	W	N		
2.0	<b>Feldspars Powder</b>												
	Visual appearance of fired sample	Physical	100 g/bag,	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Potash	Chemical	5% of bag/ lot	"	"	"	A	J	S	W	N		Two types of feldspar pink & white used
	Soda	"	"	"	"	"	A	J	S	W	N		
3.0	<b>China Clays</b>												
	Visual appearance of fired sample	Physical	I	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Residue on 38 micron.	"	Approx 30 kg from 5% of	"	"	"	A	J	S	W	N		Three types of China clays viz.
	Free iron content	"	bags/ lot/ each type of clay	"	"	"	A	J	S	W	N		Bageshpur/
	Particle size distribution	"	"	"	"	"	A	J	S	W	N		DM/NC-II
	Extrusion moisture	"	"	"	"	"	A	J	S	W	N		
	Fired shrinkage	"	"	"	"	"	A	J	S	W	N		
	Dry bending strength	"	"	"	"	"	A	J	S	W	N		
	Water absorption	"	"	"	"	"	A	J	S	W	N		
	Loss on ignition	Chemical	"	"	"	"	A	J	S	W	N		
	Silica,alumina,potash,soda	"	"	"	"	"	A	J	S	W	N		
4.0	<b>Ball Clays</b>												
	Visual appearance of fired sample	Physical		BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Residue on 63 micron.	"	Approx 30 kg from 5% of	"	"	"	A	J	S	W	N		Four types of ball clays are
	Particle size distribution	"	bags/ lot/ each type of clay	"	"	"	A	J	S	W	N		used: Than/
	Extrusion moisture	"	"	"	"	"	A	J	S	W	N		Santalpur/
	Fired shrinkage	"	"	"	"	"	A	J	S	W	N		Htmod KC/
	Dry bending strength	"	"	"	"	"	A	J	S	W	N		Bikaner clay
	Water absorption	"	"	"	"	"	A	J	S	W	N		
	Loss on ignition	Chemical	"	"	"	"	A	J	S	W	N		
	Silica,alumina,potash,soda	"	"	"	"	"	A	J	S	W	N		
<b>A2</b>	<b><u>RAW MATERIAL-GLAZE</u></b>												
1.0	<b>Quartz</b>												
	Visual appearance of fired sample	Physical	100 g/bag,	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Residue on 63 micron.	"	5% of bag/ lot	"	"	"	A	J	S	W	N		
	Silica	Chemical	"	"	"	"	A	J	S	W	N		
2.0	<b>Iron Oxide</b>												
	Visual appearance of fired sample	Physical	100 g sample	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Residue on 63 micron.	"	from each bag of each lot	"	"	"	A	J	S	W	N		
	Visual appearance of fired glaze colour & glossyness.	"	"	"	"	"	A	J	S	W	N		
	Purity	Chemical	"	"	"	"	A	J	S	W	N		
	Loss on ignition	"	"	"	"	"	A	J	S	W	N		

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Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS
							1	2	3	4	5	6	
3.0	<b>Manganese Carbonate</b> Visual appearance of fired sample Residue on 63 micron. Visual appearance of fired glaze colour & glossyness. Purity Loss on ignition	Physical " " Chemical "	100 g sample from each bagof each lot " "	BSPTCL Specification " "	BSPTCL Specification " "	BSPTCL Records " "	A A A	J J J	S S S	W W W	N N N N N		
4.0	<b>Chrome Oxide</b> Visual appearance of fired sample Residue on 63 micron. Visual appearance of fired glaze colour & glossyness. Purity Loss on ignition	Physical " " Chemical "	100 g sample from each bagof each lot " "	BSPTCL Specification " "	BSPTCL Specification " "	BSPTCL Records " "	A A A	J J J	S S S	W W W	N N N N N		
5.0	<b>Dolomite/Wollastonite</b> Visual appearance of fired sample Residue on 63 micron. Loss on ignition Calcium,magnesia,silica (silica for wollastonite only)	Physical " Chemical "	100 g/bag, 5% of bag/ lot " "	BSPTCL Specification " "	BSPTCL Specification " "	BSPTCL Records " "	A A A	J J J	S S S	W W W	N N N N N		
6.0	<b>Barium Carbonate</b> Visual appearance Residue on 63 micron. Visual appearance of fired glaze colour & glossyness. Purity Acid insolubles	Physical " " Chemical Chemical	100 g sample from each bagof each lot " "	BSPTCL Specification " "	BSPTCL Specification " "	BSPTCL Records " "	A A A	J J J	S S S	W W W	N N N N N		
A3	<b><u>BOUGHT OUT MATLS.</u></b>												
1.0	<b>Ordinary Portland Cement/ Mortar for Assembly</b> Visual appearance Initial setting time Final setting time Soundness (Lechetalier method) Compressive strength (3 cubes, 5 days) Loss on ignition	Physical " " " " Chemical	100 g/bag, 5% of bag/ lot " " "	BSPTCL Specification IS 12269/4032 " "	BSPTCL Specification IS 12269/4032 " "	BSPTCL Records " " " "	A A A A	J J J J	S S S S	W W W W W/Z	N N N N N N	Use within six months  2 days steam cure	
2.0	<b>Quartz Sand for Assembly</b> Appearance Dry sieve analysis Dimensions of cut cork sheet	Physical " "	100 g/bag, 5% of bag/ lot "	BSPTCL Specification " "	BSPTCL Specification " "	BSPTCL Records " "	A A A	J J J	S S S	W W W	N N N		

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Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS	
							1	2	3	4	5	6		
3.0	<b>Cork Sheet</b>													
	Appearance	Physical	5% / lot	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W		N		
	Thickness	"	"	"	"	"	A	J	S	W		N		
	Density	"	"	"	"	"	A	J	S	W		N		
	Dimensions of cut cork sheet	"	"	"	"	"	A	J	S	W		N		
4.0	<b>Bituminous Paint</b>													
	Appearance	Physical	100ml /container	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W		N		
	Density	"	"	"	"	"	A	J	S	W		N		
	Viscosity (B4 Cup)	"	"	"	"	"	A	J	S	W		N		
	Drying time	"	"	"	"	"	A	J	S	W		N		
5.0	<b>Flanges of Spherodal Graphite Iron / Malleable cast Iron (caps &amp; flange) black condition</b>													
	Visual Inspection	Physical	100%	IS-1865	No crack/sur. defects	BSPTCL Records	A	J	S	W/Z		N		
	Dimension check & Guage check	"	IS 2500 LI AQL 1.5	Gr.400-15 for SGI/ IS-2108	As per rel. drg.IS-1865	"	A	J	S	W/Z		N		
	Tensile strength (Test bar )	"	1 No./heat cycle	Gr.BM340 for MCI	Gr.400-15 for SGI/ IS-2108	CMTC	B	K	P	W/Z		N		
	% Elongation (Test Bar)	"	1 No./heat cycle	"	Gr.BM340 for MCI	"	B	K	P	W/Z		N		
	Microstructure	"	1 No./heat cycle	"	"	"	B	K	P	W/Z		N		
	Phosphorous	Chemical	1 No./heat cycle	"	"	"	B	K	P	W/Z		N		
	Hardness	Physical	1 No./heat cycle	IS-3054/1865	"	BSPTCL Records	A	J	S	W/Z		N		
	MPI Test	"	100%	IS 3703	No crack	"	A	J	S	W/Z		N		
	Proof Load Test	"	1 No./heat cycle	"	"	CMTC	B	K	P	W/Z		N		
	Mechanical failing load	"	2 No./heat cycle	"	"	BSPTCL Records	A	J	S	W/Z		N		
6.0	<b>Steel Round for pins</b>													
	Visual Inspection	Physical	100%	No surface defect	No surface defect	CMTC	B	K	P	W/Z		N		
	Forgeability	"	10 Nos/ Lot/ Heat	No cracks	No cracks	"	B	K	P	W/Z		N		
	Chemical Analysis	Chemical	1 Nos/ Lot/ Heat	BS:970	BS:970	"	B	K	P	W/Z		N		
	Tensile Load Test EN19 / EN15	Physical	2 Nos/ Lot/ Heat	IS:1608	IS:1608	"	B	K	P	W/Z		N		
	Elongation EN19 / EN15	"	"	"	"	"	B	K	P	W/Z		N		
	Yield stress EN19 / EN15	"	"	"	"	"	B	K	P	W/Z		N		
	Inclusion rating	"	"	IS:4163	IS:4163	"	B	K	P	W/Z		N		
	Grain size	"	"	IS:4748	IS:4748	"	B	K	P	W/Z		N		

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Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS
							1	2	3	4	5	6	
7.0	<b>Forged Pin (Black)</b> <b>Ball Pin &amp; Cotter Pin</b> Visual Inspection Dimensional (As forged) guage check M.P.I. Failing load test Proof load test Hardness Tensile load test Yield Strength % Elongation Grain Size Non-metallic inclusion rating Heat Treatment chart Grain Flow	Physical " " " " " " " " " " " " " "	100% 1% 100% 2 Nos/ 1000/ Heat " " " " " " " " " " "	IS: 2486/ No surface defect IS: 2486/ Approved drg. IS: 3703/ No cracks Approved drg. F:8201-41 Approved drg. BS:970 BS:970 BS:970 IS:4748 Max.2 thin/ thick Time & temp. chart BSPTCL Spec.	IS: 2486/ No surface defect IS: 2486/ Approved drg. IS: 3703/ No cracks Approved drg. F:8201-41 Approved drg. BS:970 BS:970 BS:970 IS:4748 Max.2 thin/ thick Time & temp. chart BSPTCL Spec.	BSPTCL Records " " " " " CMTC " " " " " " " "	A A A A A A A B B B B B B B B	J J J J J J J K K K K K K K K	S S S S S S S P P P P P P P P	W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z W/Z	E N N N N N N N N N N N N N N		
8.0	<b>Security Clips/ Split Pins</b> <b>Ball Pin &amp; Cotter Pin</b> Visual Inspection Dimensional Check Bending Test Hardness Chemical Analysis (i) Phosphor Bronze (ii) Stainless Steel	Physical " " " " Chemical	IS: 2486 IS: 2486 5 Nos / lot of 5000 " 1 No/ lot%	IS: 2486 IS: 2486 Approved drg. IS: 2486 No crack IS: 1586/2486 Approved drg. IS: 7814/ ATSM 304	IS: 2486 IS: 2486 Approved drg. IS: 2486 No crack IS: 1586/2486 Approved drg. IS: 7814/ ATSM 304	BSPTCL Records " " BSPTCL Records CMTC	A A A A A B	J J J J J K	S S S S S P	W/Z W/Z W/Z W/Z W/Z W/Z	E N N N N N N		
9.0	<b>Graphite Iron / Malleable cast</b> <b>Iron Cap &amp; Flange after Galvanising</b> Visual appearance Gauge check Other Dimension Adhesion Test Purity of zinc Mass of zinc Coating Mechanical load test	Physical " " " Instrumental Physical "	100% 100% 2% random 2% random 1 Sample/cons. 1% random 2 per lot	IP-01-64 " As per rel. drg. BSPTCL Specification/IS2629 IS 209/ 99.25% IS 6745 As per rel. drg.	Free from crack & visual sur.defect As per BSPTCL Specification " IS 209/ 99.25% IS 6745 As per rel. drg.	BSPTCL Records " " " " " "	A A A A A A A	J J J J J J J	S S S S S S S	W/Z W/Z W/Z W/Z W/Z W/Z W/Z	E N N N N N N		
10.0	<b>Bolts &amp; Nuts Galvanised</b> Visual Inspection Dimensions Uniformity of zinc coating Mechanical Properties	Physical " Chemical Physical	IS 2614 IS 2614 IS 1367 "	BSPTCL Specification/IS 1367 IS 6639 BSPTCL Specification/IS 2633 IS 1367	BSPTCL Specification/IS 1367 IS 6639 / rel drg. As per IS 2633 As per IS 1367	BSPTCL Records CMTC BSPTCL Records CMTC	A B A B	J K J K	S P S P	W/Z W/Z W/Z W/Z	E N N N N		





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	Moisture content surface/core	Physical	Each Shift / Daily	BSPTCL Specification	IP-02-06	BSPTCL Records	A	J	S	W	N		
	Dimensions	"	"	"	IR-02-02	"	A	J	S	W	N		
	Visual check after finishing	"	Each Shift	"	"	"	A	J	S	W	N		
	Covering after shaping	"	Each Shift	"	IP-02-06	"	A	J	S	W	N		
	Penetrometer Reading	"	4 pugs/ rack	"	"	"	A	J	S	W	N		
9.0	<b>Dryer</b>												
	Moisture	Physical	Per cycle	BSPTCL Specification	WI-7503-08	BSPTCL Records	A	J	S	W	N		
	Temp. & Humidity	"	Hourly	"	"	"	A	J	S	W	N		
	Visual check	"	100%	"	"	"	A	J	S	W	N		
10.0	<b>Glazing (Dipping, Graveling &amp; Stamping)</b>												
	Litre weight	Physical	BSPTCL Specification	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Free iron particle	"	"	"	"	"	A	J	S	W	N		
	Gravel sieve analysis	"	IP-01-34	"	BSPTCL Specification	"	A	J	S	W	N	For BPI only	
	Viscosity of glue glaze	"	Each Batch	"	BSPTCL Specification	"	A	J	S	W	N	"	
	Transfer fixing for 'serial number'	"	Each Insulator	"	Readable serial number	"	A	J	S	W	N	"	
11.0	<b>Firing</b>												
	Firing schedule	Physical	Per cycle	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Porosity	"	"	"	"	"	A	J	S	W	N		
	Bulk Density	"	"	"	"	"	A	J	S	W	N		
	Temperature control	"	Constant check	"	"	"	A	J	S	W	N		
12.0	<b>Sorting</b>												
	Visual check for cracks/ gravel/ bend	Physical	100%	BSPTCL Specification	BSPTCL Specification	BSPTCL Records	A	J	S	W	N		
	Dimensions	"	2 / cycle	"	"	"	A	J	S	W	N		
	Porosity	"	Each cycle	"	No dye penetration	"	A	J	S	W	N		
	Bulk Density	"	"	"	BSPTCL Specification	"	A	J	S	W	N		
	Chemical/ Alumina content	Chemical	Monthly Once	"	"	"	A	J	S	W	N	For long rod only	
	Physical Property	Physical	Weekly once	"	"	"	A	J	S	W	N		
	Glaze thickness	"	Weekly once, 2 pieces	"	100-300 micron	BSPTCL Records	A	J	S	W	N		

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Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS
							1	2	3	4	5	6	
13.0	<b>Cutting &amp; Grinding</b> Dimension check Ultrasonic Test	Physical "	Each Shift 100%	BSPTCL Specification IEC-60168 1994/BSPTCL Specification	As per rel. drg. Free from cracks	BSPTCL Records "	A	J	S	W	N	N	
14.0	<b>Assembly</b> Cement mix check Cement cube test	Physical "	Each Batch 6 cubes/week	BSPTCL Specification "	BSPTCL Specification "	BSPTCL Records "	A	J	S	W	N	N	
<b>C FINAL INSPECTION</b>													
<b>1.0 Routine Test</b>													
<b>a) For Solidcore Insulator</b>													
(i)	Visual examination	Physical	100%	BSPTCL specn.IEC60273/168	BSPTCL specn.IEC60273/168	BSPTCL Records	A	J	S	W/Z	N	N	
(ii)	Check for surface & glazing defects	"	100%	BSPTCL specn.IEC60273/168	BSPTCL specn.IEC60273/168	"	A	J	S	W/Z	N	N	
(iii)	Bending Test in four directions (50% min. failing load)	"	100%	BSPTCL specn.IS:2544/IEC60168	BSPTCL specn.IS:2544/IEC60168	"	A	J	S	W/Z	N	N	
(iv)	Deflection at 50% (one direction)	"	100%	BSPTCL apprd. Drg. IS:2544/IEC60168/273	BSPTCL apprd. Drg. IS:2544/IEC60168/273	BSPTCL Records	A	J	S	W/Z	N	N	
	Dimensional checks(critical dimension)	"	Random	BSPTCL apprd. Drg. IS:2544/IEC60168/273	BSPTCL apprd. Drg. IS:2544/IEC60168/273	BSPTCL Records	A	J	S	W/Z	N	N	
<b>b) For Longrod Insulator</b>													
(i)	Visual examination	Physical	100%	IEC-60383/433 NO CRACK	IEC-60383/433 NO CRACK	BSPTCL Records	A	J	S	W/Z	N	N	
(ii)	Check for surface & glazing defects	"	100%	BSPTCL specn.IEC60383/433	BSPTCL specn.IEC60383/433	"	A	J	S	W/Z	N	N	
(iii)	Dimensional checks (Length)	"	5%	BSPTCL apprd.drg. IEC60383/433	BSPTCL apprd.drg. IEC60383/433	"	A	J	S	W/Z	N	N	
(iv)	Mech.Routine Test(80% of Min. UTS)	"	100%	BSPTCL apprd.drg. IEC60383/433 /IS-731	BSPTCL apprd.drg. IEC60383/433 /IS-731	BSPTCL Records	A	J	S	W/Z	N	N	
<b>2.0 Acceptance Test</b>													
<b>a) For Solidcore Insulator</b>													
(i)	Dimensional check	Physical	IEC-168/ 1% for lot less than 500 Nos.	BSPTCL apprd.drg IEC-60168/273	BSPTCL apprd.drg IEC-60168/273	BSPTCL Records	A	J	U	W/Z	Y	Y	
(ii)	Eccentricity & Parallelism	"	"	BSPTCL specn. IEC-60168	BSPTCL specn. IEC-60168	BSPTCL Records	A	J	U	W/Z	Y	Y	
(iii)	Temperature cycle test	"	"	BSPTCL specn. IEC-60168 & IS 2544	BSPTCL specn. IEC-60168 & IS 2544	BSPTCL Records	A	J	U	W/Z	Y	Y	
(iv)	Porosity Test	"	"	"	"	BSPTCL Records	A	J	U	W/Z	Y	Y	
(v)	Ultrasonic Test with angular probe	"	2% per/lot	IEC 60168/273	IEC 60168/273	EM TC	A	J	U	W/Z	Y	Y	
(vi)	Mech. Strength Test	"	IEC-168/ 1% for lot less than 500 Nos.	BSPTCL specn.IEC-60168 & IS 2544 approved drg.	BSPTCL specn.IEC-60168 & IS 2544 approved drg.	EM TC	A	J	U	W/Z	Y	Y	
(vii)	Deflection Test at 20%,50%,70% min. bending failing load on complete stack	"	"	"	"	EM TC	A	J	U	W/Z	Y	Y	
(viii)	Bending Test 100% of min. failing load in 4 directions on complete stack and final load to actual breaking in forth direction	"	"	"	"	EM TC	A	J	U	W/Z	Y	Y	
(ix)	Torsional Test	"	"	"	"	EM TC	A	J	U	W/Z	Y	Y	

BIHAR STATE POWER TRANSMISSION COMPANY LIMITED														
MANUFACTURING QUALITY PLAN -- Solid Core Insulator/ Long rod Insulator														
Manufacturer's Name & Address		Customer BSPTCL		Vendor's Code:	Item: Solid Core Insulator/ Long rod Insulator	M.Q.P. No. 031 Rev. No. 00 Date:05.01.2016	Valid From: 15.01.2016 Valid Upto: Till Revision							
Sr. No.	Components / Operations & Description of Test	Type of check	Quantum of Check / Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						REMARKS	
							1	2	3	4	5	6		
<b>b)</b>	<b>For Longrod Insulator</b>													
(i)	Visual Examination	Visual	IEC 60383	IEC 60383	IEC 60383	EM TC	A	J	U	W/Z			Y	
(ii)	Dimensional checks	Physical	IEC60383/IEC60433/IS-731/ 3 Pcs for lot < 300 Nos	BSPTCL appr. Drg IEC-60383/433/IS:731	BSPTCL appr. Drg IEC-60383/433/IS:731	EM TC	A	J	U	W/Z			Y	
(iii)	Axial, Radial & Angular displacement check	"	"	"	"	EM TC	A	J	U	W/Z			Y	Test load upto breakage
(iii)	Temp. Cycle Test	"	IEC-60383/IEC-433/IS-731/ 10 Pcs for lot < 300 Nos	"	"	EM TC	A	J	U	W/Z			Y	
(iv)	Mechanical Performance Test	"	IEC-60383/IEC-433/ IS-731/1%	BSPTCL appr. Drg IEC-60383/575/433/IS:731	BSPTCL appr. Drg IEC-60383/575/433/IS:731	EM TC	A	J	U	W/Z			Y	
(v)	Mechanical failing load test	"	"	"	"	EM TC	A	J	U	W/Z			Y	
(vi)	Porosity Test	"	IEC-60383/IEC-433/IS-731/ 3 Pcs for lot < 300 Nos	BSPTCL appr. Drg IEC:60383 Non porous	BSPTCL appr. Drg IEC:60383 Non porous	EM TC	A	J	U	W/Z			Y	
(vii)	Warpage, creepage appearance check	"	"	BSPTCL appr. Drg IEC-60383/433/IS:731	BSPTCL appr. Drg IEC-60383/433/IS:731	EM TC	A	J	U	W/Z			Y	
(viii)	Ultrasonic Test with angular probe	"	IEC-60383/IEC433/ IS-731/5%/Lot	No flaws	No flaws	EM TC	A	J	U	W/Z			Y	
(ix)	Thermal Mechanical Performance Test	Mechanical	5 samples / every 3260 nos.	BSPTCL Specs.	BSPTCL Specs.	EMTC	A	J	U	W/Z			Y	
<b>3.0</b>	<b>Galvanising Test</b>													
	Mass of zinc coating	Physical	IEC-60168/ 1994, 3 Pcs/ lot < 300 Nos.	IEC-60168 1994/IP-03-03	IEC-60168 1994	EM TC	A	J	U	W/Z			Y	
	Uniformity of zinc coating	"	"	"	"	EM TC	A	J	U	W/Z			Y	
	Adhesion Test	"	"	"	"	EM TC	A	J	U	W/Z			Y	
<b>4.0</b>	<b>Additional Tests (On Samples brought from Site)</b>													
(i)	Electro Mechanical Test	Electrical	3 samples / every 1500 nos.	BSPTCL Specs.	BSPTCL Specs.	EMTC	A	J	U	Y			Y	Random Samples to be taken after segregating insulators damaged in transit. Samples to be sealed by BSPTCL site. Test reports to be submitted to BSPTCL FQA.
<b>D</b>	<b>PACKING &amp; DESPATCH</b>													
	Visual Inspection	Visual	10%	EM Drawing	EM Drawing	EM TR	A	J	S	W			N	
	Dimension	Physical	10%	EM Drawing	EM Drawing	EM TR	A	J	S	W			N	

