		ACTUS				SION COMPANY				• el • • •	44.4	601/	
	MANUF Manufacturer Name		NG QUAL	ITY PLAN For c <u>Customer</u> BSPTCL	omposite Long Ro	d Polymer Insulators	M.Q.P.No - 32 Rev. 00					Valid From-	
		1	r		;	applicable for 400kV System	Date - 06.01.2016						15.01.2016
			Sampling				Date -	06.01.2	016	1	1	1	Valid To- Till Revisio
S.No	Component/ Operation & Description of test	Type of check	plan with basis	Reference document for testing	Acceptance Norms	Format of Records	1	2		3 4	5	6	Remarks
	TERIAL INSPECTION												
Section:1 Si	licone rubber compound	1	1		r	1	1	1		E	1	1	1
1.1	Silicon Content	Test	1 sample/lot	BSPTCL Spec/Approved Drawing	Min 30 %	TPL	D	L	U	W/Z		Y	
1.2	Specific gravity	Physical	Manufacture r's Sampling	Manufacturer's test	1.50 - 1.59	CMTC	В	К	Р	W/Z		N	
1.3	Durometer Shore A (General)	Physical	Plan	standards	60 - 70 3.4 N/mm2 (Minimmum)	CMTC CMTC	В	K	Р	W/Z		N	
.4	Tensile Strength Elongation	Mechanical			150% (Minimum)	смтс	B	к к	P	W/Z		N N	
.5	•	Weenanica			130% (Willinnun)	CIVITC	ь	ĸ	F		<u> </u>	IN	
Section:2. Me	etal Components Inspection	1	1	1		1				E			1
2.1	Metal fittings(Socket and ball)			Plant standard SQP-CI-01-1, PG Specification / Approved drawings GTSL- QA-07-02									
	Visual inspection	Physical	5%		Free fron defects	EMTR	A	J	U	W/Z		Y	
	Socket and ball coupling dimensions	Physical	5%		Conformance to gauges as per IS 2486	EMTR	A	J	U	w/z		Y	
	Dimensions and toleranaces	Physical	3%		Conformance to drawings	EMTR			U	W/Z		v	
	Failing mechanical load test	Mechanical	1/lot of 500 or part		oraningo		^	J	0	W/Z			
			thereof			EMTR							
a		-			>=120kN	EMTR	A	J	U	W/Z		Y	
b	160kN Galvanizing				>=160kN	EMTR	А	J	U	W/Z	E	Y	
	Galvanizing	1	1										
а	Mass of Zinc coating	Physical	1/lot of 1000 or part thereof		(600g/m2) 85 microns by Elcomter	EMTR	A	J	U	W/Z		Y	
b	Uniformity of Zinc coating	Chemical	1/lot of 1000 or part thereof		Min. 6 dips of I minute each	EMTR	A	J	U	W/Z		Y	
с	Adhesion test	Physical	1/lot of 1000 or part thereof		IS:2629	EMTR	A	J	U	w/z		Y	
d	Purity of Zinc used	Chemical	1/lot of 1000 or part thereof		Not less than 99.95% IS 209 & BSPTCL.S	EMTR	D		v	W/Z		~	
2.2	Metalurgical test					Lintt	5	-		11/2			
2.2.1	Ball fitting (Forging)										Е		
а	Chemical composition	Chemical	1/lot of 3000 or part thereof	En8 BS:970		TPL / CMTC	D/B	L/K	U	W/Z		Y	
	1.0-+				0.05.0.45%								
	1.Carbon 2.Manganese	-			0.35-0.45% 0.60-1.0%	1		1		1	-	1	
	3.Silicon	1			0.05-0.35%	1		1	1	1		1	
b	Grain size	Physical	1/lot of 3000 or part thereof		IS:4163 G.no.5-8	TPL / CMTC	D/B	L/K	U	w/z		v	
с	Inclusion Rating	Physical	1/lot of 3000 or part		IS:4748								
d	MPI	Visual	thereof 5/lot of 5000 or part	IS3703	Inclusion Rating no.2 No cracks		D/B	L/K	U	W/Z		Y	
e	Yeild stress	Mechanical	thereof 1/lot of 3000 or part thereof		38kg/mm²(Min)		D/B	L/K	U	W/Z		Y V	
f	Tensile strength	Mechanical	1/lot of 3000 or part thereof		61kg/mm ² (Min)		D/B D/B	L/K	U	W/Z		v	
g	%Elongation	Mechanical	1/lot of 3000 or part thereof		16% (Min)	TPL / CMTC	D/B	L/K	U	W/Z		Y	
h	Hardness	Physical	1/lot of 3000 or part thereof		175 - 210 BHN	TPL / CMTC	D/B	L/K	U	w/z		Y	
2.2.2	Socket fitting (Casting)										E	•	
	Chemical composition	Chemical	1/heat	SGCI Grade 500/7 IS:1865		TPL / CMTC	D/B	L/K	U	W/Z		Y	
	1.Carbon				3.55-3.75%				1	1			
	2.Manganese	1			0.40% (max)			1	1	1	L	1	
	3.Silicon				2.60-3.00%		L	I	1	1	I		

		FAOTUS		R STATE POWER TRANSMISSION COMPANY LIMITED									
	Manufacturer Name and Address		Customer BSPTCL	Vendor code	ITEM Composite long rod insulator (160kN and/or 120kN) applicable for 400kV System	M.Q.P.No - 32 Rev. 00						Valid From- 15.01.2016	
							Date -	06.01.2	016				Valid To- Till Revisio
S.No	Component/ Operation & Description of test	Type of check	Sampling plan with basis	Reference document for testing	Acceptance Norms	Format of Records	1	2		3 4	5	6	Remarks
	4.Phosphorous			looting	0.035%max			-		, ,	5		,
	5.Sulphur				0.02%max								
	6.Magnesium				0.045-0.055%								
b	o Microstructure	Physical	1/heat		At 100X, Graphite distribution more than 90% nodularity	TPL / CMTC	D/B	L/K	U	W/Z		Y	
c	c MPI	Visual	5/lot of 3000 or part thereof	IS3703	No cracks	TPL / CMTC	D/B	L/K	U	W/Z		Y	
d	d 0.2% Proof stress	Mechanical	1/Heat	IS:1865	>320N/mm ²	TPL / CMTC	D/B	L/K	U	W/Z		Y	
e	Tensile strength	Mechanical	1/Heat	IS:1865	>500N/mm ²	TPL / CMTC	D/B	L/K	U	W/Z		Y	
f	f %Elongation	Mechanical	1/Heat	IS:1865	>7	TPL / CMTC	D/B	L/K	U	W/Z		Y	
g	Hardness	Physical	1/Heat	IS:1865	160 to 240 BHN	TPL / CMTC	D/B	L/K	U	W/Z	-	Y	
2.2.3							1.	1.	L.		E		
a.	. 1. Visual Examination 2.Dimensional verification	Physical Physical	100% 1% of the lot	IS: 3063 IS: 2486 Pt. IV	Confirms to IS:3063 Within limits given in IS:2486 Pt.IV	EMTR	A	J	U U	W/Z W/Z		Y Y	
	3.Hardness test	Physical	1 Sample at random	IS: 2486 Pt. IV	Not less than 152BHN	EMTR	A	J	U	W/Z		Y	
	4.Operational test	Physical	1 sample at random	IS: 2486 Pt. IV	As per IS:2486 Pt.IV	EMTR	A	J	U	W/Z		Y	
	5. Resistance to bending test	Physical	1 Sample at random	IS: 2486 Pt. IV	Dimensions as per IS:2486 Pt.IV	EMTR			U	W/Z		Y	
b.	. Chemical composition	Chemical	1/heat	S.S-304	13.2400 FLIV	TPL / CMTC	D/B	J L/K	u	W/Z		Y	
-	1.Carbon				0.08% Max				-				
	2.Silicone				1.00% Max								
	3.Manganese				2.00% Max								
	4.Phosphorous 5.Sulphur				0.04% Max 0.01% Max		_						
	6.Nickel				8.00-10.00%								
	7.Chromium				18.00-20.00%								
Section: 3 E	CR fibre glass reinforced epoxy re	sin core rod ins	pection	n		1			1			1	1
			Manufacture										
1.1	Boron content of Fribre Glass	Chemical	r's sampling plan	Manufacturer's test standard	Boran free	СМТС	в	к	U	W/Z		Y	
3.2	Visual inspection	Physical	100%		Transperent, uniform incolor. Be free from cracks, flaws air holes, foreign substance defects and air holes.	EMTR	A	J	U	w/z		Y	
3.3	Diameter tolerance, mm	Physical	2%/lot of 500 or part there after	BSPTCL specification/	24.00-24.10	EMTR	A	J	U	w/z		Y	
3.4	Length tolerance, mm	Physical	2%/lot of 500 or part there after	Approved drawing	0-+5	EMTR	A	J	U	W/Z		Y	
	Length tolerance, mm Dye penetration test, min	Physical	500 or part there after 5 specimens per lot of 500 or part		0-+5 IEC 61109 CI 5.4.1			J		W/Z			
3.5	Dye penetration test, min Water diffusion test(12kV)	Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of 500 or part	Approved drawing	IEC 61109 CI 5.4.1	EMTR	A	IJ	U			Y Y	
3.5	Dye penetration test, min	Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of	Approved drawing	IEC 61109 CI 5.4.1	EMTR		L		W/Z W/Z			
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring	Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of 500 or part	Approved drawing	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no		A	L		W/Z	E		
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test	Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of 500 or part	Approved drawing	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no	EMTR	A	L		W/Z W/Z	E		
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection	Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of 500 or part	Approved drawing	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover,no puncture occur Smooth surface.Free from cracks,seams,shrinks,air	EMTR EMTR	A	L L	U	w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring	Physical Electrical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2 %/ lot of 500 or part thereof 2 %/ lot of 500 or part thereof 2 %/ lot of 500 or part	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover,no puncture occur Smooth surface.Free from	EMTR	A	J		W/Z W/Z	E		
3.4 3.5 3.6 Section: 4 G 4.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 3 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from	EMTR EMTR	A	J J	U	w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G 1.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2 %/ lot of 500 or part thereof 2 %/ lot of 500 or part thereof 2 %/ lot of 500 or part	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover,no puncture occur Smooth surface.Free from cracks,seams,shrinks,air holes and rough edges. Smooth surface.Free from cracks,seams,shrinks,air	EMTR EMTR	A	J J J	U U	w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G 1.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (AI Alloy)	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks,seams,shrinks,air holes and rough edges. Smooth surface. Free from cracks,seams,shrinks,air holes and rough edges.	EMTR EMTR EMTR EMTR	A	J J J J J J	U U U	w/z w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G 1.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (AI Alloy) 1.Manganese	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges.	EMTR EMTR EMTR EMTR	A	J J J J J L	U U U	w/z w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (Al Alloy) 1.Manganese 2.Iron	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges.	EMTR EMTR EMTR EMTR	A	J J J J L	U U U	w/z w/z w/z w/z	E	Y	
3.5 3.6 Section: 4 G 1.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (AI Alloy) 1.Manganese	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges.	EMTR EMTR EMTR EMTR	A	J J J J L	U U U	w/z w/z w/z w/z		Y	
3.5 3.6 Section: 4 G	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (AI Alloy) 1.Manganese 2.Iron 3.Nickel 4.Zinc 5.Lead	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. 0.2-0.6% <=0.8% <=0.5% <=0.5%	EMTR EMTR EMTR EMTR	A	J J J J L L	U U U	w/z w/z w/z w/z		Y	
3.5 3.6 Section: 4 G 1.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (Al Alloy) 1.Manganese 2.Iron 3.Nickel 4.Zinc 5.Lead 6.Titanium	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover,no puncture occur Smooth surface.Free from cracks,seams,shrinks,air holes and rough edges. Smooth surface.Free from cracks,seams,shrinks,air holes and rough edges. 0.2-0.6% <=0.3% <=0.3% <=0.3% <=0.2%	EMTR EMTR EMTR EMTR	A	J J J J J J J	U U U	w/z w/z w/z w/z	E E 	Y	
3.5 3.6 Section: 4 G 4.1	Dye penetration test, min Water diffusion test(12kV) power frequency withstand voltage test rading Ring Visual inspection 1.Ring 2. Clamp for Grading ring Chemical Composition A) Ring (AI Alloy) 1.Manganese 2.Iron 3.Nickel 4.Zinc 5.Lead	Physical Electrical Physical Physical	500 or part there after 5 specimens per lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof 2%/ lot of 500 or part thereof	Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing BSPTCL specification/ Approved drawing IS:617-1994	IEC 61109 CI 5.4.1 IEC 61109 CI 5.4.2 Leakage current <=1 mA No external flashover, no puncture occur Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. Smooth surface. Free from cracks, seams, shrinks, air holes and rough edges. 0.2-0.6% <=0.8% <=0.5% <=0.5%	EMTR EMTR EMTR EMTR	A		U U U	w/z w/z w/z w/z		Y	

	BIHAR STATE POWER TRANSMISSION COMPANY LIMITED MANUFACTURING QUALITY PLAN For composite Long Rod Polymer Insulators upto 400kV and upto 160KN													
	MANUF	ACTURI		ITY PLAN For composite Long Rod Polymer Insulators upto 400kV and upto 160									N	
	Manufacturer Name and Address		Customer Vend BSPTCL	Vendor code	ITEM Composite long rod insulator (160kN and/or 120kN) applicable for 400kV System	M.Q.P.No - 32 Rev. 00 Date - 06.01.2016						Valid From- 15.01.2016 Valid To- Till Revisid		
			Sampling				Date -	06.01.2	016	1	1	1	valid 10- Till Revi	
.No	Component/ Operation & Description of test	Type of check	plan with basis	Reference document for testing	Acceptance Norms	Format of Records	1	2	: :	3 4	5	e	Remarks	
	Chemical Composition	Chemical	1/lot of 500 or part thereof	IS:1865 Grade:500/7		TPL	D	L	U	W/Z		Y		
	B) Clamp for Grading ring (Cast S	Steel)		•										
	1.Carbon				3.55-3.75%									
	2.Manganese				0.40% (max)									
	3.Silicone 4.Phosphorous				2.60-3.00% 0.035%max									
	4.Phosphorous 5.Sulphur				0.035%max									
	6.Magnesium				0.045-0.055%									
	0.Magnesium		2 % /lot of		0.043-0.03370									
3	Dimensions(Ring & Clamp for	Physical	500 or part		Conformance to drawings									
	Grading ring)	-	thereof		-		A	J	U	W/Z		Y		
4	Clamp Galvanising													
	1. Mass of Zinc coating	Physical	5/lot of 1000 or part thereof		(600 g/m ²) 85 microns by Elcometer	EMTC	А	J	U	W/Z		Y		
			3/lot of 1000				1	1	1		1	1	1	
	2. Uniformity of Zinc coating	Chemical	or part thereof		Min 6 dips of 1 minute each	EMTC	A	J	U	W/Z		Y		
	3.Adhesion test	Physical	1/lot of 1000 or part		IS:2629		1	1	1		1	1		
			thereof			EMTC	A	J	U	W/Z		Y		
	4. Purity of Zinc used	Chemical			Not less than 99.95% IS 209 & BSPTCL.S	CMTC	D		v	W/Z		v		
	ESS INSPECTION						U	15	v	11/2			1	
									1		1			
1	Modification of silicon rubber compound	Physical	Once/day	BSPTCL specification/ Approved drawing		QC-Working & Check Records								
	Silicone rubber compound				+/- 50g / roll		A	J	s	W		N		
	Pigment(Titanium dioxide)				+/- 1g		A	J	S	W		Ν		
	Rodent Repellant Chemical				+/- 0.1g		А	J	S	W		Ν		
2	Open mixing	Physical	Once/day	BSPTCL specification/ Approved drawing		QC-Working & Check Records								
	1. Roller gap				6 - 8mm	de Henning d eneek heestad	А	L	s	w		N		
	2. Weight tor each roll of the silicone rubber compound		Once/day	BSPICE specification/	15 - 20kg		A	J	s	w		N		
.3	Resting placement	Physical	,	Approved drawing		QC-Working & Check Records	A	J	s	w		N		
	1. Resting time		1		>=24 hours									
4	Modified silicone rubber		Once/day	Approved drawing	Plant Standard									
o physics!	compound inspection		or compared		SQP-CI-02-1	QC-Working & Check Records	А	J	5	W	1	N	1	
e priysical	and electrical properties of modified Tear Resistance	d silicone rubb Physical		ASTM D 624 Die-B	>=9N/mm	EMTR	А	Tr.	s	W	1	N		
	Hardness (Shore-A)	Physical Physical	500 gms per	ASTM D 624 Die-B ASTM D 2240	>=9N/mm 65+/-5	1	A	J	S	W	-	N	1	
	Dielectric strength in kV/mm	Electrical	lot 500kgs or part	ASTM D 2240	15 Min.	1	A	J	s	W	1	N	1	
	Tracking & Erosion	Electrical	thereof	IEC 60587	1A4.5	1	A	J	s	w	1	N	İ	
	DC Volume Resistivity	Electrical]	ASTM D 257	1.0 x 10 ¹³]	A	J	S	W		Ν		
	Tensile Strength	Physical	1	ASTM D 412	3.5N/mm ²		A	J	S	W		Ν		
	Elongation at break(%)	Physical		ASTM D 412	150 (Min)		A	J	S	W		Ν		
5	Injection Moulding Process					1	_	-	_	_	_	_		
5.1	Bonding agent applying on core rods	Physical	10/shift	Standard quality plan	Standard quality plan	Check sheet PS-CI-03/1								
		l	l	Doc.No:QP-CI-02	Doc.No:QP-CI-02		A	J	S	W	-	N		
5.2	Injection	Physical		Standard quality plan	Standard quality plan	Check sheet PS-CI-04/1								
		L		Doc.No:QP-CI-02	Doc.No:QP-CI-02		A	J	S	W		Ν	ļ	
а	Fixed platen Temperature		1 time/shift	155+/-5 deg.C	155+/-5 deg.C									
	(set value)						A	J	s	w	\vdash	N		
b	Movable Platen Temperature (set value)		1 time/shift	155+/-5 deg.C	155+/-5 deg.C		A	J	s	w		N		
	Curing time(set value)		1 time/shift	640 to 660 Sec	640 to 660 Sec				s	w				

MANUF Manufacturer Name onent/ Operation & ption of test			ITY PLAN For o	Composite Long Ro	d Polymer Insulator ITEM Composite long rod insulator (160kN and/or 120kN)	M.Q.P			nd up	to 1	60KI	
onent/ Operation & ption of test	Type of	Sampling plan with		Vendor code	Composite long rod insulator		No - 32					
ption of test		plan with		Compos (160kN a	(160kN and/or 120kN) applicable for 400kV System	M.Q.P No - 32 Rev. 00						Valid From- 15.01.2016
ption of test						Date -	06.01.2	016		1		Valid To- Till Rev
on Volume		L	Reference document for testing	Acceptance Norms	Format of Records	1	2	2 3	4	5	6	Remarks
		1 time/shift	The set value may be adjusted according to different moulds/Machines. 88- 258mm	The set value may be adjusted according to different moulds/Machines. 88- 258mm		A	J	s	w		N	
finished products inspection		10%	Standard quality plan Doc.No:QP-CI-02	Standard quality plan Doc.No:QP-CI-02	Check sheet PS-CI-05/1	A	J	s	w		N	
inspection ickness of sheath	Physical	10%	Clause 8.2 IEC 61109 / Approved drawing	Clause 8.2 IEC 61109 / Approved drawing		A	J	s	w		N	
removing Process bearance	Physical	100%	Standard quality plan Doc.No:QP-CI-02	No flash remains. No hurt to the surface of weather sheds	Check sheet PS-CI-05/1	A	J	s	w		N	
tting crimping process												
I and 160kN ression Pressure I: I:		100%	Standard quality planDoc.No:QP-CI-02	235 to 305 kgf/sq.cm	Check sheet PS-CI-05/2	A	J	S	W		N	
ANCE TEST		ı									L	
e test	r	.	1		EMTR	۵	1	9	W/Z	1	N	T
ication of composite	Physical	100%	IEC61109 CI 8.1	IEC61109 CI 8.1		~	Ĵ	0	11/2			
inspection	Physical	100%	IEC61109 CI 8.2	IEC61109 CI 8.2	EMTR	A	J	S	W/Z		N	
est anical routine test	Mechanical	100%	IEC61109 CI 8.3	IEC61109 CI 8.3(To withstand 50% of SML for 10s.)	EMTR	A	J	s	W/Z		N	
tance Test	Physical	IEC61109 CI 7.1	BSPTCL specification/ Approved drawing	IEC61109 CI 7.2	EMTC	A	J	U	W/Z		Y	
nising Test s of zinc coating	Physical	IEC61109 CI 7.1	BSPTCL specification/ Approved drawing	(600gm/sq m) 85 microns by Elcometer	EMTC	A	J	U	W/Z		Y	
ation of the specified anical load	Mechanical	IEC61109 CI 7.1	IEC61109 CI 7.4	IEC61109 CI 7.4	EMTC	A	J	U	W/Z		Y	
ation of the locking system	Physical	IEC61109 CI 7.1	IEC60383. BSPTCL Approved drawing/ Specification	IEC61109 cl 7.3	EMTC	A	J	U	W/Z		Y	
ery of hydrophobicity	Electrical	On 2 samples from one insulator of each rating per offered lot	BSPTCL specification/ Approved drawing	BSPTCL specification. Clause 2.2 Annexure-A	EMTC	A	IJ	U	W/Z		Y	
		On 1 sample(one from any shed of each	BSPTCL specification/ Approved drawing	Min. 30% by	ЕМТС	A	J	U	W/Z		Y	
		of hydrophobicity Electrical	of hydrophobicity Electrical On 1 samples from one insulator of each rating per offered lot On 1 sample(one from any shed of each	Specification On 2 Specification/ Samples From one insulator of each rating per offered lot On 1 BSPTCL specification/ Approved drawing per offered Iot BSPTCL specification/ Approved drawing per offered Iot BSPTCL specification/ Approved drawing sample(one from any shed of each	Specification of hydrophobicity On 2 samples From one insulator of each rating per offered lot BSPTCL specification/ Approved drawing On 1 sample(one from any shed of each insulator) BSPTCL specification/ Clause 2.2 Annexure-A Non 1 sample(one from any shed of each insulator) BSPTCL specification/ Approved drawing Non 1 sample(one from any shed of each insulator) BSPTCL specification/ Approved drawing Min. 30% by Min. 30% by	Specification 0n 2 BSPTCL specification/ samples from one insulator of each rating per offered lot EMTC 0f hydrophobicity Electrical On 2 from one each rating per offered lot BSPTCL specification/ BSPTCL specification. Clause 2.2 Annexure-A EMTC 0 n 1 sample(one from any shed of each insulator)of BSPTCL specification/ Approved drawing insulator)of BSPTCL specification/ Min. 30% by EMTC	Specification EMTC A of hydrophobicity Electrical Samples from one insulator of each rating per offered lot Approved drawing Approved drawing BSPTCL specification. Clause 2.2 Annexure-A EMTC A n of content of On 1 sample(one from any shed of each insulator) BSPTCL specification/ Clause 2.2 Annexure-A BSPTCL specification. Clause 2.2 Annexure-A A	On 2 samples of hydrophobicity On 2 Electrical Specification/ Approved drawing her offered lot BSPTCL specification/ BSPTCL specification. Clause 2.2 Annexure-A EMTC A J of hydrophobicity Electrical On 1 each rating per offered lot BSPTCL specification. Clause 2.2 Annexure-A EMTC A J n of content of Physical BSPTCL specification/ hours and shed of each insulator)of BSPTCL specification. Approved drawing her offered insulator)of EMTC A J	On 2 samples of hydrophobicity On 2 Electrical BSPTCL specification/ Approved drawing from one insulator of each rating per offered lot BSPTCL specification. Clause 2.2 Annexure-A EMTC A J U 0 f hydrophobicity Electrical BSPTCL specification/ each rating per offered lot BSPTCL specification. Clause 2.2 Annexure-A BSPTCL specification. Clause 2.2 Annexure-A A J U n of content of Physical BSPTCL specification/ Approved drawing insulator/of BSPTCL specification/ Approved drawing insulator/of BSPTCL specification. Min. 30% by EMTC A J U	On 1 soft per offered of content of On 1 Physical BSPTCL specification/ Approved drawing how for the specification/ ach rating per offered ot EMTC A J U W/Z 0 f hydrophobicity Electrical On 1 sample(one from any shed of each insulator) of BSPTCL specification/ Clause 2.2 Annexure-A EMTC A J U W/Z	of hydrophobicity Characteristic constraints Specification/ (Approved drawing per offered lot SPTCL specification/ Approved drawing EMTC A J U W/Z 0 f hydrophobicity Electrical Electrical BSPTCL specification/ each rating per offered lot BSPTCL specification. Clause 2.2 Annexure-A EMTC A J U W/Z 0 n 1 sample(one from any shed of each insultor)of BSPTCL specification/ Approved drawing from any shed of each insultor)of BSPTCL specification/ Approved drawing from any shed of each insultor)of Min. 30% by EMTC A J U W/Z	of hydrophobicity On 2 samples insultor of each rating per offered tot On 2 Approved drawing EMTC A J U W/Z Y Of hydrophobicity Electrical On 1 sample(one from any shed of each BSPTCL specification/ BSPTCL specification, Clause 2.2 Annexure-A EMTC A J U W/Z Y

	BIHAR STATE POWER TRANSMISSION COMPANY LIMITED													
	MANUFACTURING QUALITY PLAN For composite Long Rod Polymer Insulators upto 400kV and upto 160KN													
	Manufacturer Name	and Address and Address and Address BSPTCL Vendor code ITEM Composite long rod insulator (160KN and/or 120KN) Rev. 00 applicable for 400KV System							Valid From- 15.01.2016					
							Date -	06.01.2	016				Valid To- Till Revision	
S.No	Component/ Operation & Description of test	Type of check	plan with basis	Reference document for testing	Acceptance Norms	Format of Records	1	2	:	3 4	4 6	5 6	Remarks	
7.1	Verification of soundnes of packing	Visual	100%	BSPTCL specification/ Approved drawing	BSPTCL specification/ Approved drawing	EM Rcord	A	J	S	W		N		
7.2	Marking destination details as per BSPTCL norms	Visual	100%	BSPTCL specification/ Approved drawing	BSPTCL specification/ Approved drawing	EM Rcord	A	J	S	W		N		
7.3	Verifivation of Dispatch Clearance/ Instructions/PACKING LIST	Verification	100%	Dispatch Clearance/ Instructions	Dispatch Clearance/ Instructions	EM Rcord	A	J	S	W		Ν		



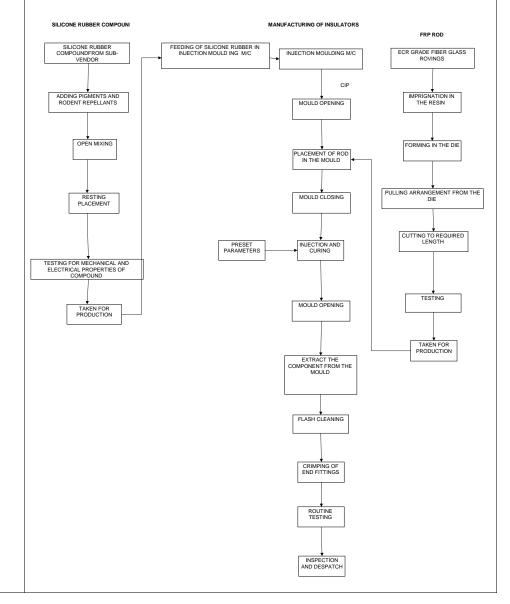
BIHAR STATE POWER TRANSMISSION COMPANY LIMITED

MANUFACTURING QUALITY PLAN -- For composite Long Rod Polymer Insulators upto 400kV and upto 160KN Manufacturing Quality plan -- For composite Long Rod Polymer Insulators upto 400kV and upto 160KN Customer Vendor code ITEM Manufacturer Name and Address Composite long rod insulator M.Q.P No - 32 (160kN and/or 120kN) BSPTCL Rev. 00 applicable for 400kV System Valid From- 15.01.2016 Valid To- Till Revision Date - 06.01.2016 CODE DESCRIPTION Code 1: Indicate place where testing is planned to be Code 2: Indicate who has to perform the tests i.e Testing performed i.e inspection location 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 works The Third Party D. At independent Laboratory M. The Turn Key Contractor E. At the Turn Key Contractor's Location Dispatch Clearance/ Instructions F. Not specified Code 3: Indicate who shall witness the test i.e Witnessing Code 4: Review of Test Reports / Certificates Agency Component Manufacturer itself W. By Equipment Manufacturer. O. Component Manufacturer and Equipment Manufacturer X. By Contractor during Product/Process Inspection Y. By BSPTCL during Product/Process Inspection R. Component Manufacturer and Equipment Manufacturer and Contractor S. Equipment Manufacturer himself Z. By Contractor or BSPTCL during Product/Process Inspection T. Equipment Manufacturer and Contractor U. Equipment Manufacturer, Contractor and BSPTCL V. Third Party. Code 5: Whether specific approval of sub-vendor / Code 6: Whether test records to be submitted after final inspection for issue component make is envisaged? of Dispatch Clearance/ Instructions Y. Yes Envisaged E. N. No N. Not Envisaged



MANUFACTURING QUALITY PLAN -- For composite Long Rod Polymer Insulators upto 400kV and upto 160KN

PROCESS FLOW CHART FOR- Composite Long Rod Polymer Insulators upto 400kV and upto 160KN



	BIHAR STATE POWER TRANSMISSION COMPANY LIMITED										
		QUALITY PL	AN For co	omposite Long Rod Po	lymer Insulators upto 400kV and	upto 160KN					
	Manufacturer Name and Address	<u>Customer</u> BSPTCL	Vendor code	ITEM Composite long rod insulator (160kN and/or 120kN) applicable for 400kV System	M.Q.P No - 32 Rev. 00 Date - 06.01.2016	Valid From- 15.01.2016 Valid To- Till Revision					
GENERAL	NOTES:										
NOTE:		-	-								
 BSPTC test pro 	QP should be read in conjunction with BSPT CL specification shall include provisions of lett ocedures as applicable to the specific contract of any contradiction between the manufactur	tter of award, BS ct.	SPTCL approved	drawings/techical data sheet/B	30M/ guarenteed technical particulars/test s	chedule/					
a. BSP	PTCL specification	-		-							
b. This	Manufacturing Quality Plan										
	ufacturer's Plant Standards.										
4. It shall I											
	anufacturer shall ensure that their, as well as, le to National/International standards. Calibra			5		d certificates					
6. In case	e of any tests being carried out at third party la	aboratory, such	laboratory/facility	/ should be NABL accredidated	d / acceptable to BSPTCL.						
7. All main	n raw material/bought-out items should be pro	ocured from BSF	TCL approved s	source only.							
	nufacturer shall maintain proper co-relation(c		• •	st certificates from the raw mat	terial stage to finished product						
9. Manufac	nd the records should be available during ins cturer shall show the approval of BSPTCL Er final inspeection.			c Type Tests including special	test if any as per BSPTCL specification, at t	he					
10. All pack	king cases / crates should be marked with BS	SPTCL LOA det	ails, name of pro.	ject,item description and uniqu	e number marked on the cartons / crates/ c	ases.					
11. One co	opy of the test report, Dispatch Clearance/ Ins	structions shall t	be sent alongwith	the consignment to every desi	tination.						
12. Inspecti	tion of spare items ordered by BSPTCL shall	also be governe	ed by the provisio	ons of this MQP.							
,	terial rejected during BSPTCL Inspection sha to BSPTCL inspector for verification of marki	,	· · ·	3 ,7	· · · · · · · · · · · · · · · · · · ·	and					
15. Each ins thick spo	nufacturer shall align their Quality System an sulator shall be legibly and indelibly marked v oot of suitable quality of paint shall be marked . Paint shall not have deteriorating effect on p	with the trade ma d on socket of ea	ark of manufactur ach insulator of pa	irer, month and year of manufa	cture and the name of BSPTCL. One 20mm	1					
16. The gua	arenteed Electro-Mechanical Strength shall b	e indicated in k	۱.								
	ulators offered shall be in packed condition ir / crates / cases.	1 cartons / crates	3 / cases at the ti	me of final inspection. Offered	list will describe the unique numbers marke	d on the					
	_ may review the effective implementation of along with corrective & preventive measures	•	•		ion. In case any violation in process or proce	ess parameters are observed,					
19. The out -	-sourced activity shown in the process flow d	Jiagram ahall als	o be in the ambi	t of process-inspection by BSP	PTCL						
20. Any addi	lition / change in vendor / design / process sh	all call for review	<i>w</i> by BSPTCL an	d change in MQP, if necessary	y						
	I AND TYPE TEST: ALL DESIGN AND TYPE ID TYPE TEST BY BSPTCL OR WAIVAL TH										