

C-12 C-20 C-34
Manoj K. Astogi
Addl. GM (Q.E.CT)

	Manufacturer Name and Address M/S Bharat Heavy Electricals Limited Insulator Plant, Jagdishpur Dist. BULDAHUR (UP) PIN- 227617	Customer POWERGRID	Vendor Code 24 DD 49	ITEM DISC INSULATOR UP TO 210 KN (ALUMINA BODY & QUARTZ BODY)	QP NO. INB 151 REV No. P3 Date: 30.01.2013	Valid from: 01.02.2013 Valid Upto: 31.01.2016
--	--	------------------------------	-------------------------	---	--	--

Section I METAL COMPONENT INSPECTION (after Galvanising)

Sl. No.	Component / Operation & Description of test	Type of Check	Quantum of Check / Sampling Plan with basis	Reference Document for Testing	Acceptance Norms	Format of Records	Applicable codes						Remarks
							1	2	3	4	5	6	
2.04	GALVANISING (CAPS & PINS) (From Power Grid Approved Sources)												
(a)	Visual inspection	Visual	100% by Comp. Mfgr. (galvaniser) & IS 2500 (Part 1) AQL 0.65% by EM	BHEL Plant Standard JP-TP-10	Free from flux, ash & dross inclusions, bare black spots, pimples, lumpiness & runs, rust stain, bulky white deposits & blisters	Comp. Mfgr's TC / Equipment Mfgr's TC	B	K	P	W	-	N	
(b)	Gauge checking	Physical	100% by Comp. Mfgr. (galvaniser) & IS 2500 (Part 1) AQL 0.65% by EM	BHEL Drawing	Conformance to gauges	Comp. Mfgr's TC / Equipment Mfgr's TC	B	K	P	W	-	N	
(c)	Uniformity of Zn Coating	Physical	3 samples / 1000 or part thereof each by Comp. Mfgr. (galvaniser) & BHEL	BHEL Plant Standard JP-TP-10 IS-2629	Withstand 6 successive dips of one minute duration each and reveal no adherent red deposit of copper upon the base metal	Comp. Mfgr's TC / Equipment Mfgr's TC	B	K	P	W	-	N	
(d)	Mass of Zn Coating	Physical	3 samples / 1000 or part thereof each by Comp. Mfgr. (galvaniser) & BHEL	IEC-60383 / IS-6745	Mfn. 610 gms/m ²	Comp. Mfgr's TC / Equipment Mfgr's TC	B	K	P	W	-	N	
(e)	Adhesion Test	Physical	1 sample / 1000 or part thereof each by Comp. Mfgr. (galvaniser) & BHEL	IS-2629 (Cl. 6.4.2)	IS-2629 (Cl. 6.4.2)	Comp. Mfgr's TC / Equipment Mfgr's TC	B	K	P	W	-	N	
(f)	Purity of Zinc	Chemical	1 Sample / lot of ingot	Powergrid Specn. IS-209	99.95%	Comp. Mfgr's TC	B	K	P	W	-	N	

clw

POWERGRID CORPORATION OF INDIA LIMITED
MANUFACTURING QUALITY PLAN

	Manufacturer Name and Address M/S Bharat Heavy Electricals Limited Insulator Plant, Jagdishpur Distt: SULTANPUR (UP) PIN - 227817	Customer POWERGRID	Vendor Code 24 DD 49	ITEM DISC INSULATOR UP TO 210 KN (ALUMINA BODY & QUARTZ BODY)	QF NO. INB 151 REV No. P3 Date : 30.01.2013	Valid from : 01.02.2013 Valid Upto : 31.01.2016
---	--	-------------------------------------	--------------------------------	--	---	--

Section : METAL COMPONENT INSPECTION

Sl. No.	Component / Operation & Description of test	Type of Check	Quantum of Check / Sampling Plan with basis	Reference Document for Testing	Acceptance Norms	Format of Records	Applicable codes						Remarks
							1	2	3	4	5	6	
2.05	BALL PIN ZINC SLEEVING												
(a)	(If applicable) Unfused area of surfaces (Visual Exam of longitudinal section)	Visual	1 sample / 1000 of lot or part thereof each by Comp. Mfr. (Galvaniser) & BHEL	Power Grid Specn.	Power Grid Specn.	Comp. Mfr's TC / Equipment Mfr's TC	B K A	P J	W S	W	-	-	
(b)	Visual inspection for Blow holes on surface, deformation of sleeve, flesh on Head and Ball side (longitudinal section)	Visual	1 sample / 1000 of lot or part thereof each by Comp. Mfr. (Galvaniser) & BHEL	Power Grid Specn.	Satisfactory	Comp. Mfr's TC / Equipment Mfr's TC	B K A	P J	W S	W	-	-	
(c)	Dimensional check including thickness	Physical	1 sample / 1000 of lot or part thereof each by Comp. Mfr. (Galvaniser) & BHEL	Drawing	No deviation	Comp. Mfr's TC / Equipment Mfr's TC	B K A	P J	W S	W	-	-	
(d)	Purity of Zinc of the sleeve	Chemical	1 sample per Consignment	Power Grid Specn.	99.8% minimum	Comp. Mfr's TC	B K	P	W	W	-	-	
(e)	Foreign Material	Physical	1 sample per lot each by Comp. Mfr. (Galvaniser) & BHEL	Power Grid Specn.	Free from foreign mat.	Comp. Mfr's TC	B K	P	W	W	-	-	
(f)	Load / Mallet test	Physical	1 sample per lot each by Comp. Mfr. (Galvaniser) & BHEL	Power Grid Specn.	Sleeve should not loosen.	Comp. Mfr's TC / Equipment Mfr's TC	B K A	P J	W S	W	-	-	

CLW

229 CB3 C-11
Manoj Rastogi
Addl. GM (Q,E,C,T)

POWERGRID CORPORATION OF INDIA LIMITED
MANUFACTURING QUALITY PLAN

Manufacturer Name and Address		Customer	Vendor Code	ITEM	OP NO. IN B 1 S 1 REV No. P3 Date: 30.01.2013		Valid from : 01.02.2013 Valid Upto : 31.01.2016	
M/S Bharat Heavy Electricals Limited Insulator Plant, Jagdishpur Distt: SULTANPUR (UP) PIN - 227817		POWERGRID	24 DD 49	DISC INSULATOR UP TO 210 KN (ALUMINA BODY & QUARTZ BODY)				
Section : METAL COMPONENT INSPECTION								
Sl. No.	Component / Operation & Description of test	Type of Check	Quantum of Check / Sampling Plan with basis	Reference Document for Testing	Acceptance Norms	Format of Records	Applicable codes	Remarks
							1 2 3 4 5 6	
2.06	SECURITY CLIPS STAINLESS STEEL (SS)							
(a)	Visual Inspection a) Surface cracks or incipient cracks b) rough surface (orange peel surface), blisters	Visual	IEC:60372 (Table 1, Cl No. 12) by BHEL	BHEL Plant Standard JP:PS:1100/MEBNT JP:PS:1200/MEBNT	No. of defects - Max. K at AQL-1.5% No. of defects - Max. K at AQL-6.5% (Where K = acceptance number)	Equipment Mgr's TC	A J S W - N	E
(b)	Verification of dimensions	Physical	IEC:60372 (10 nos. per 10000 or part thereof) by BHEL	BHEL Drawing	Conformance to BHEL drawing	Equipment Mgr's TC	A J S W - N	
(c)	Verification of Resistance to Bending	Physical	IEC:60372 (10 nos. per 10000 or part thereof) by BHEL	BHEL Plant Standard JP:PS:1100/MEBNT JP:PS:1200/MEBNT	No cracks on flat surface when bent at about 75° from vertical position	Equipment Mgr's TC	A J S W - N	
(d)	Hardness test	Physical	IEC:60372 (10 nos. per 10000 or part thereof) by BHEL	BHEL Plant Standard JP:PS:1100/MEBNT JP:PS:1200/MEBNT	Average of 3 measurements on flat surface of each sample > 150 HV	Equipment Mgr's TC	A J S W - N	
(e)	Chemical composition Carbon (C) Silicon (Si) Manganese (Mn) Phosphorous (P) Sulphur (S) Nickel (Ni) Chromium (Cr)	Chemical	2 No. / lot of 10000	STAINLESS STEEL BHEL Plant Standard JP:PS:1200/MEBNT	0.08% max. 1.0% max. 2.0% max. 0.045% max. 0.03% max. 8.0 to 12.0 % 18 to 20 %	Equipment Mgr's TC	D L V W - N	

clw

228 C32
Mastan
Manoj Rastogi
Addl. GM (Q.E.C.T)
C-10

BHARAT HEAVY ELECTRICALS LIMITED
INSULATOR PLANT, JAGDISHPUR

GENERAL QUALITY PLAN FOR INSULATORS

Document No.

Section No.

Sec. Rev. No.

Sec. Rev. Date

Page

: QAC: 306

: 06

: 07

: 05.04.07

: 4 of 4

Remarks

GALVANISING (CAPS & PINS)

Sl. No.	Component Opn./Stage	Characteristic / Tests	Quantum of check	Type of check	Reference Document	Acceptance Norms	Record Format	Testing Agency	Remarks
6.3.10		Chemical analysis (only for MCI caps)	1 No./Heat	Chemical test	JP:PS:12-0001 / NT	P = 0.15 % max	Vendor insp- action report	Vendor	
6.4									
6.4.1		Visual examination	100% by Vendor and 10 % by BHEL (Min. 50)	Visual examination	JP:TP:012	Free from surface defects	Galvaniser inspection report/QAC:4101	Galvaniser / Quality	Rejected lots may be reoffered after segregation/rework/retest
6.4.2		Gauge Checking	100% by Vendor and 10 % by BHEL (Min. 50)	Gauge check	IS:2486	Conformance to gauges	-Do-	-Do-	Rejected lots may be reoffered after segregation/rework/retest
6.4.3		Uniformity of zinc coating (dip test)	3 Nos./1000 by vendor & BHEL	Chemical test	JP:TP:012 IS:2633	Min. 6 dips for all samples	Galvaniser inspection report QAC:4106	Do	Galvaniser shall submit inspection/test reports
6.4.4		Mass of zinc	3 Nos./1000 by vendor & BHEL	Measurement	IS:6745 JP:TP:012	Min. 610 gms/m ²	-Do-	-Do-	
6.4.5		Zinc sleeve (Where applicable) (i) Strength (ii) Dimension	5 Nos. per consignment 2 No. / 1000 (Min 5)	Measurement	JP:TP-13/GEN As per drg.	JP:TP-13/GEN Conformance to drg.	Do	Do	
6.5									
6.5.1		SECURITY CLIPS							
6.5.2		Visual examination	100% by Vendor and As per IEC:372 Part II by BHEL	Visual examination	JP:PS:1100 / MEBNT or 1200/MEBNT	JP:PS:1100/MEBNT or 1200 / MEBNT	Vendor insp- action report QAC:4101	Vendor / Quality	(i) Vendor shall submit inspection/test reports / mill certificate.
6.5.3		Dimension	10 Nos. / 10000 by Vendor & BHEL	measurement	IEC 372 JP:PS:1100 / MEBNT or 1200/MEBNT	IEC 372 JP:PS:1100/MEBNT or 1200 / MEBNT	Do	Do	
6.5.4		Resistance to bending	10 Nos. / 10000 by Vendor & BHEL	Visual examination	JP:PS:1100 / MEBNT or 1200/MEBNT	IS:2486 / IEC 372 JP:PS:1100/MEBNT or 1200 / MEBNT	Do	Do	
6.5.5		Hardness	10 Nos. / 10000 by Vendor & BHEL	metallurgical	IS:2486/IEC372 JP:PS:1100 / MEBNT or 1200/MEBNT	JP:PS:1100/MEBNT	Do	Do	
6.5.6		Chemical analysis (Tin & P for PB)	1 Nos. / consignment	Chemical test	JP:PS:1100 / MEBNT	JP:PS:1100/MEBNT	Vendor insp- action report QAC:4103	Do	
		Chemical analysis (for SS)	Each consignment	Record verification	JP:PS:1200 / MEBNT	JP:PS:1200/MEBNT	Vendor test report/ Mill TC	Do	

Prepared by :
 (Horang Singh)
 Section Incharge (Quality)

Approved by:

CONTROLLED
 COPY NO. 17