Date:26.09.2013

TECHNICAL SPECIFICATION FOR (LT,11KV, 33KV) PORCELAIN PIN INSULATORS

1. SCOPE :

The specification provides for manufacture, testing before dispatch, supply and delivery of (LT/11KV/33KV) Porcelain Pin Insulators as per the particulars given in the "Schedule of Requirements" attached.

2. STANDARDS:

The (LT/11KV/33KV) Pin Insulators shall conform to the following standards with latest amendments if any. The tenders shall go through the IS thoroughly before making their offer. The material shall be for use in moderately hot and humid tropical climate, conducive to rust and fungus growth (A).

Sl.No.	Material	Indian Standards (amended up to date)
1	LT Pin Insulators	IS: 1445 -1977
2	11KV Pin Insulators	IS: 731 - 1971
3	33KV Pin Insulators	IS: 731 - 1971 IS: 2486 Part-II – 1989

3. GENERAL REQUIREMENT:

i) The porcelain shall be sound, free from defects thoroughly verified and smoothly glazed.

ii) The design of Insulator should be such that, stresses due to expansion or and contraction in any part of the insulator shall not lead to its deterioration. The porcelain shall not engage directly with hard metal for 11 KV and 33 KV pin insulators.

iii) The glaze shall be Brown in colour –except for the screw threads and the top portion on which the conductor is supported during firing which may be left unglazed, all other surfaces of the insulator shall be effectively glazed.

4. TYPE AND DIMENSIONS:

The dimensions and construction of (LT/11KV/33KV) Pin Insulators should be as per IS mentioned in clause (2) with latest issues thereof.

5. ELECTRICAL AND MECHANICAL CHARACTERISTICS : -

The electrical and mechanical particulars of (LT/11KV/33KV) Pin insulators shall be as per the Guaranteed Technical Particulars shown, measured at the following standard atmospheric conditions.

1. Ambient temperature	55 Deg. C
2. Barometric pressure	1013 mill bars
3. Absolute Humidity	11 Grams of water per cubic mtrs. Corresponding to 63% relative humidity at 20 Deg C.

6. BASIC INSULATION LEVELS: -

6.1 The test voltage of Pin insulators shall be as per the values given in Guaranteed Technical Particulars attached.

6.2 In this specification power frequency voltages are expressed as peak values divided by √2 and impulse voltages are expressed as peak values.

6.3 The withstand flashover voltages are referred to the reference atmospheric conditions.

7. As the insulators are to be used any where in A.P. State including the coastal area, the creepage distances of specified in GTP are minimum. However, the firm may offer insulators of higher creepage distance, but the mechanical and electrical parameters of their product shall be as per the mechanical and electrical requirement in GTP attached.

8. TESTS: -

i) All the tenderers must submit copies of type test certificates along with laboratory approved drawings for the products offered by them. The Certificates shall be from any NABL accredited laboratory, but not more than 5 years old as on date of opening the tender.

ii) Copy of type test certificate of each type offered must be submitted.

iii) The type test certificate shall be final and complete for all the tests as per the list of type tests given in specification Cl.No.8.1of the specification.

iv) Failure to submit the type test certificates as described above shall be liable for rejection of tender offer.

v) Routine test shall be carried out on every insulator as specified in IS in clause no.2 with latest amendments. Details of test result on each of the insulator supplied, has to be submitted to inspector for his perusal and verification.

vi) The insulators shall comply with the type tests as per IS in clause no.2 with latest amendments.

8.1 TYPE TESTS:

The following shall constitute the type tests. However, the test voltage value shall be as per GTP.

a) Visual examination.
b) Verification of dimensions.
c) Visible discharge test.
d) Impulse voltage withstand test (+ve wave & -ve wave)
e) Impulse voltage flashover test (+ve wave & -ve wave)
f) Dry and wet power frequency voltage withstands test.
g) Dry and wet power frequency flashover voltage test.
h) Temperature Cycle test.
i) Mechanical failing load test.
j) Puncture test.
k) Porosity test.
l) Galvanizing test.

8.2. **ACCEPTANCE TESTS: -**

From the offered lot, samples shall be drawn randomly as per the criteria given. The firm has to arrange for carrying out all following acceptance tests at firms works only at firm's cost in presence of inspector deputed by AP PDCL.

a) Verification of dimensions and Visual examination.
b) Temperature cycle tests.
c) Mechanical failing load test
d) Puncture test.
e) Porosity test.
f) Galvanizing test.

8.3. **ROUTINE TESTS: -**

The following tests shall be carried out as routine tests by firm on each insulator before offering the lot for inspection.

a) Visual examination.
b) Mechanical routine test
c) Electrical routine test

9. TEST CERTIFICATES:

The test shall be carried out as per the IS before dispatch and the test certificates shall be furnished for approval.

Copies of type test certificates of identical materials for each type with dimensional drawings shall invariably accompany the tender.

The type tests as specified in the IS should be carried out not later than 5 years from the date of opening of bid.

10. PACKING :

This shall be done in wooden crates suitable for rough handling.

11. GUARANTEED TECHNICAL PARTICULARS:

The technical particulars as specified in the IS shall be guaranteed and a statement of guaranteed particulars shall be furnished along with the tender as per the enclosed format, without which, the tender will be liable for rejection

12. SAMPLES :

Two Nos. sample of **(LT/11KV/33KV)** Pin Insulators shall invariably accompany the tender. Tenders for which samples are not received by the stipulated date will be rejected.

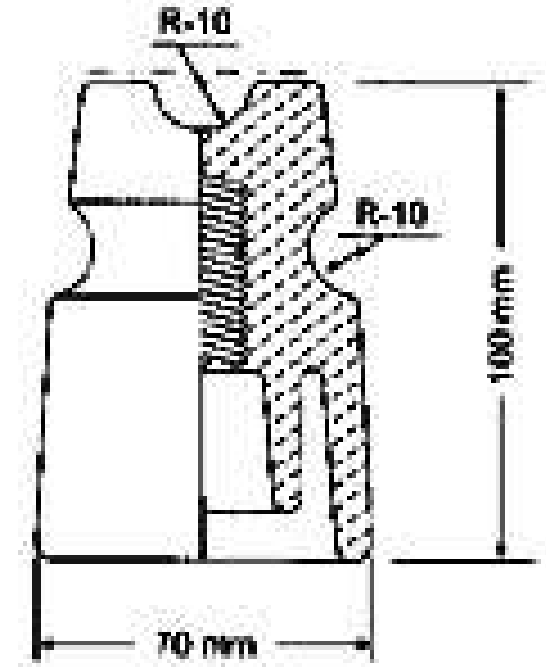
13. MARKING:

The Material shall be engraved with your trade mark, year of manufacture and **"AP PDCL"** name shall be legibly and indelibly marked on the insulator similar to the supplier name inscription on the insulator.
Marking on porcelain shall be printed and shall be applied before firing.

GUARANTEED TECHNICAL PARTICULARS:

Sl. No.	Characteristics		33KV Pin Insulators	11KV Pin Insulator s	LT Pin Insulators
1.	Maker's Name Address and Country	:			
2.	Type of insulator	:			
3.	Minimum failing load	:			
4.	Standard according to which the material shall confirm	:			
5.	Type of Glaze	:			
6.	DIMENSIONS (mm)	:			
	a). Overall height	:			
	b). Maximum Diameter of Insulator	:			
	c). Top	:			
	d). Neck	:			
7.	Creepage distance minimum	:			
8.	Working Voltage	:			
9.	Dry power Frequency 1 min. withstand Voltage	:			
10.	Wet power Frequency 1 min. withstand Voltage	:			
11.	Dry power Frequency Flashover Voltage	:			
12.	Wet power Frequency Flashover Voltage	:			
13.	Power Frequency puncture withstand Voltage	:			
14.	Impulse flash over voltage a). positive KV b). negative KV				
	Impulse withstand Voltage	:			
15.	Visible discharge test voltage	:			
16.	No. of threads per mm.	:			
17.	Type of threads	:			
18.	Thimble:	:			
	I). Type of material	:			
	II). Type	:			
19.	Net weight of insulator	:			
20.	Tolerance as per specification	:			
21.	Packing details	:			
	Making details Minimum failing load				
	I). Type of packing	:			
	II). No. of Insulators/crate	:			
	III). Weight of each packing approx in Kg	:			
22.	Marking details	:			
23.	Furnished drawing No./relevant information if any	:			

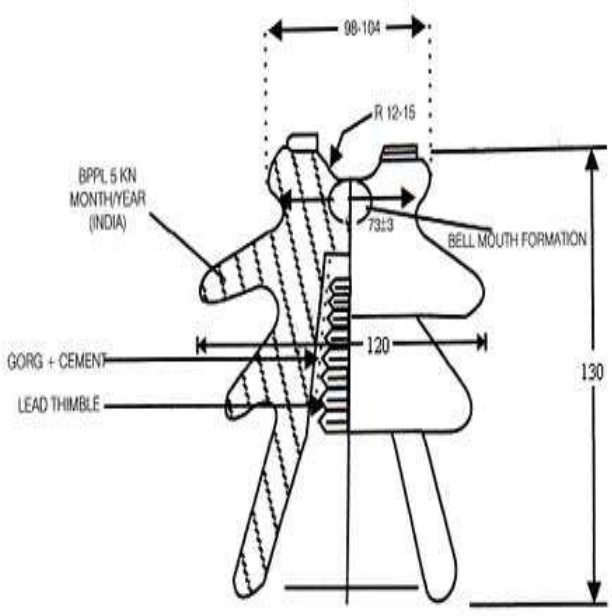
LT PIN INSULATORS



HC - LV - T-70X100

Type of Insulators	Type I
Standards to which insulators will conform	IS: 1445/1977 Latest amendment
Dimensions	70 mm X 100 mm
Color of Glaze	Brown
Dry Power freq. Withstand voltage (KV)	23 KV
Wet Power freq. Withstand voltage (KV)	10 KV
Puncture Withstand Voltage	1.3 x Actual Dry Power Frequency Voltage
Minimum failing Load (KN)	3.5 KN
Temp Cycle test (as per ISS)	As per clause 7.8 of IS 1445
Porosity test (as per ISS)	As per clause 7.11 of IS 1445
Furnished drawing no.	BPPL-LT-05

11KV PIN INSULATOR



Description	11KV B/M
Type of Insulators	B Type
Nominal System Voltage (KV)	11 KV
Highest System Voltage (KV)	12 KV
Minimum failing load (KN)	5 KN
Standard specification to which material shall conform	As per IS: 731. (1971)
Dimensions (mm)	
(a)Over all height	130 mm
(b)Diameter of Insulator	120 mm
(c)Groove diameter:	
(i)Top	98-104
(ii)Neck	73 (±) 3
Creep age distance (mm)	230 mm
Dry power frequency 1 Min. Withstand Voltage (KV)	45 KV
Wet power frequency 1 Min. Withstand Voltage (KV)	35 KV
Dry power frequency flashover voltage (KV)	50 KV
Wet power frequency flashover voltage (KV)	40 KV
Power frequency puncture withstand voltage (KV)	105 KV
Impulse flashover voltage:	
(a)+ Ve (KV)	95 KV
(b)- Ve (KV)	95 KV
Impulse withstand voltage (KV)	75 KV
Visible discharge test voltage (KV)	9 KV
Thimble:	
(i)Type of material.	Lead
(ii)Type	As per IS-2486 (PT.II)
Furnished drawing no./other relevant information if any.	BPPL-12-R

33KV PIN INSULATORS

Description	33KV CD-720
Type of Insulators	B Type
Nominal System Voltage (KV)	33 KV
Highest System Voltage (KV)	36 KV
Minimum failing load (KN)	10 KN
Standard specification to which material shall conform	As per IS: 731. (1971)
Dimensions (mm)	
(a)Over all height	240 mm
(b)Diameter of Insulator	240 mm
(c)Groove diameter:	
(i)Top	125
(ii)Neck	100
Creep age distance (mm)	720 mm
Dry power frequency 1 Min. Withstand Voltage (KV)	100 KV
Wet power frequency 1 Min. Withstand Voltage (KV)	75 KV
Dry power frequency flashover voltage (KV)	110 KV
Wet power frequency flashover voltage (KV)	85 KV
Power frequency puncture withstand voltage (KV)	180 KV
Impulse flashover voltage:	
(a)+ Ve (KV)	200 KV
(b)- Ve (KV)	210 KV
Impulse withstand voltage (KV)	170 KV
Visible discharge test voltage (KV)	27 KV
Thimble:	
(i)Type of material.	Lead
(ii)Type	As per IS-2486 (PT.II)
Furnished drawing no./other relevant information if any.	BPPL-21-E