

SPECIFICATIONS FOR 22 KV PIN. INSULATORS: -

1. SCOPE: -

This specification covers 11KV Disc. type & 11KV/ 22KV Pin Type Insulators for 11/22KV H.T. over head power lines.

2. APPLICABLE STANDARDS: -

Except when they conflict with specific requirement in this specification, the insulators shall comply with the Indian Standard specification, IS-731/1971 and the latest version thereof. The insulators fittings shall comply with the Indian Standard specification IS-2486/Part-I/1993, IS-2486/Part.II/ 1989 or the latest version thereof.

3. DESCRIPTION: -

3.1 DISC.INSULATORS. :-

11KV Brown Glazed 'Disc' insulators conforming to IS-731/71 and subsequent amendment No. 1 to 5 for suspension or tension strings, ball and socket type having ball shank dia.16mm and minimum failing load of 70 KN along with phosphor bronze 'W' clips.

3.2 PIN INSULATORS:-

11/22KV Brown Glazed pin insulators confirming to IS-731/1971 and subsequent amendment No.1 to 5 to give rigid support to an over-head line and intended to be mounted vertically on supporting structure by GI Pin passing up inside this insulator with minimum failing loads 10 KN.

4. GENERAL REQUIREMENT: -

- i) The porcelain shall be sound and free from defects, thoroughly vitrified and smoothly glazed.
- ii) The glaze shall be brown in colour. The glaze shall cover all the porcelain parts of the insulator except those areas which serve as support during fixing or are left unglazed for the Purpose of assembly.

- iii) The design of the insulators shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. The porcelain shall not engage directly with hard metal.
- iv) Cement used in the construction of the insulators shall not cause fracture by expansion or lessen by contraction and proper care shall be taken to locate the individual parts correctly during cementing. The cement shall not give rise to chemical reaction with metal fitting and its thickness shall be as uniform as possible.

5. ELECTRICAL AND MECHANICAL CHARACTERISTICS: -

The electrical and mechanical particulars of 11KV Disc. and 11/22KV Pin insulators shall be as per the Guaranteed Technical Particulars shown in Annexure-A & B attached herewith, measured at the following standard atmospheric conditions.

1. Ambient temperature	20 Deg. C
2. Barometric pressure	1013 millibars
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 Disc. And Pin insulators shall be as per the values given in Guaranteed Technical Particulars shown in Annexure-A& B 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.** Ferrous parts of Disc. Insulators as per IS-2108/1977 shall be hot dip galvanized as per IS-2633/1986.
- 8.** As the insulators are to be used any where in Gujarat 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 given in Appendix-A & B attached.

9. TESTS: -

- i) All the tenderers must submit copies of type test certificates alongwith laboratory approved drawings for the products offered by them. The Certificates shall be from CPRI, ERDA, and Indian Institute of Science, Bangalore or any other Govt. recognized 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.9.1of 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-731/71 with amendment No.1 to 5 and certificate issued with each batch. 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-731/1971with latest amendment 1 to 5 and as mentioned in Cl.No.9.1 below.

9.1 TYPE TESTS: -

The following shall constitute the type tests (Cl.No.10.1.1 of IS-731/1971). However, the test voltage value shall be as per GTP enclosed.

- 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) 24 Hours mechanical failing load test (for disc. insulators only) or mechanical performance test.
- j) Electro mechanical failing load test (for disc. insulators only)
- k) Mechanical failing load test (for pin insulators only)
- l) Puncture test.
- m) Porosity test.
- n) Galvanizing test (for disc. insulators only)

The tests shall be carried out on the two samples in the order mentioned in the Cl.10.1.1 of IS-731/1971. All the tests shall be carried out in the same laboratory.

9.2. 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 firm's works only at firm's cost in presence of inspector deputed by PGVCL.

- a) Verification of dimensions and Visual examination.
- b) Temperature cycle tests.
- c) 24 Hours mechanical failing load test or mechanical performance test. (For disc. insulators only)
- d) Electro mechanical failing load test (for disc. insulators only)
- e) Mechanical failing load test (for pin insulators only)
- f) Puncture test.
- g) Porosity test.
- h) Galvanizing test (for disc. insulators only)

9.3. 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 (for type 'B' string insulators units only)
- c) Electrical routine test (for type 'B' string insulators and rigid insulators).

10. DRAWING AND CATALOGUES: -

The tenderer shall furnish catalogues, literature and detailed dimensional drawing of insulators offered showing section of the

insulators to show the method of construction connecting arrangement, length and type of threads etc.

The drawing shall be got approved by the User Department prior to commencing the bulk supply.

11. MARKING: -

11.1. Each insulator shall be legibly and indelibly marked to show the following.

- a) Name or trade mark of the manufacturer.
- b) Month and year of manufacturer.
- c) Minimum failing load.
- d) Country of manufacture.
- e) ISI Certification mark, if any.
- f) Word 'PGVCL' marked stickers to be provided on each insulator.

11.2. Marking on porcelain shall be printed and shall be applied before firing.

12. PACKING:-

- i) All insulators (without fittings) shall be packed in wooden crates suitable for easy but rough handling suitable for rail/road transport. Where more than one insulator is packed in a crate, wooden separators shall be fixed between the insulators to keep individual insulator in position, without movement within the crates. Disc. Insulators however, may be assembled in a string and then packed inside a crate, in above fashion.
- ii) The wooden crates shall be provided with steel hoop and bends for strength and durability to withstand rough handling. The bends shall have descriptive marking of the firm thereon.
- iii) The firm shall provide at his cost, lead seal and wire on each wooden crate to facilitate sealing by the inspector of PGVCL after acceptance of the lot.

13. INSPECTION: -

Party has to offer the materials for inspection duly packed in crates as mentioned in GTP. The inspection approval is valid for a period of 15 days from the date of inspection to enable the firm to despatch the materials by arranging transportation at destination allotted thereof within the said period. After this period of 15 days, the validity of the inspection will lapse. Thereafter, the inspection approval will be revalidated by competent authority on furnishing written application explaining therein the valid reasons for delay in affecting dispatches.

- 14.** The firm shall not dispatch the offered lot unless the same is inspected by the inspector of PGVCL & accepted by him after passing in all acceptance tests, and/or receipt of waiver of inspection in writing from competent authority of PGVCL.

Manufacturer's Name and Address.

Schedule for requirement of 11/22KV Pin & Disc. Insulators.

Sr. No	Description of materials	Quantity required.
1	<p>11KV Pin Insulators Brown Glazed porcelain Insulator confirming to IS-731/1971 Amendment 1 to 5 Type-B with 320mm minimum creepage distance and with lead/zinc thimble suitable for use with G.I.Forged pin having small steel heads as per IS-2486 (P.I)/1993 & IS-2486 (P.II)/1989 and revision with latest amendment if any.</p> <ul style="list-style-type: none"> - Confirming to REC Specification. - With minimum failing load of 10 KN. -Confirming to PGVCL specification attached herewith. 	
2	<p>11KV Disc Insulators Brown Glazed porcelain Insulator confirming to IS-731/1971 and subsequent amendment 1 to 5 for suspension and tension strings ball and socket type having pin ball. The minimum creepage distance shall be 320 mm. shank dia of 16 mm and minimum failing load of 7140 Kgs (70 KN) confirming to Company's specification attached herewith. The insulators shall have 'W' type phosphor Bronze security clips for ball sockets portion of insulators confirming to IS-2486 (P-III/1974). The insulators shall also confirm to PGVCL specifications attached herewith.</p>	
3	<p>22KV Pin Insulators Brown Glazed porcelain Pin Insulators confirming to IS-731/1971 Amendment 1 to 5 Type-B with 560mm minimum creepage distance and with lead/zinc thimble suitable for use with G.I.Forged pin having large steel head as per IS-2486 (P.I)/1993 & IS-2486 (P.II)/1989-second revision and conforming REC specification.</p>	

Type Test:-

1. The offers without type test certificate and certified drawing by Government approved laboratory will not be considered.
2. Party should submit his own design drawing with all dimensional details to be supported by type test certificate and attested drawings.

Signature of Tenderer:		Company's Round Seal:
Date:	Place:	