

TECHNICAL SPECIFICATIONS FOR 33 KV PORCELAIN POST INSULATORS
SUITABLE FOR 33 KV OVERHEAD POWER LINES

1. SCOPE:

This Specification covers the details regarding design, manufacture and supply of the porcelain post insulators for use on 33 KV overhead Power Lines.

2. GENERAL REQUIREMENT:

- 2.1 The porcelain shall be sound, free from defects, thoroughly vitrified and smoothly glazed.
- 2.2 The glaze shall be BROWN in colour. The glaze shall cover all the porcelain parts of the insulators except those areas, which serve as supports during firing or are left unglazed for the purpose of assembly.
- 2.3 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.
- 2.4 Cement used in the construction of the Insulator shall not cause fracture by expansion or loosening 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 fittings and its thickness shall be as uniform as possible.

3. MARKING:

- 3.1 Each insulator shall be legibly and indelibly marked to show the following:-
 - (a) Name and trade mark of the manufacturer.
 - (b) Month and year of manufacture.
 - (c) Minimum failing load in KN (except in case of 33 KV Post Insulators).
 - (d) PROPERTY OF PVVNL-MEERUT.
- 3.2 Insulators may also be marked with ISI certification marks.
- 3.3 Marking on porcelain shall be printed and shall be applied before firing.

4. PACKING:

- 4.1 All Insulators shall be packed in wooden crates suitable for easy but rough handling and acceptable for rail/road transport. Where more than one insulator are packed in a crate, wooden separators shall be fixed between the insulators to keep individual insulators in position without movement within the crate.
- 4.2 33 KV Post Insulators (2×22 KV pedestal types)

4.2.1 **Applicable Standard:**

Unless otherwise stipulated in this specification the insulators shall comply with the IS: 2544.

4.2.2 **Classification:**

These Insulators shall conform to Type-B of IS: 2544.

4.2.3 Precaution shall be taken during design and manufacture to avoid retention of water in the recesses of metal fittings. Also shapes which do not facilitate easy cleaning by normal method shall be avoided.

4.2.4 The threads of the tapped holes in the Post Insulators metal fittings shall be cut after giving anticorrosion protection and shall be protected against rust by greasing or other similar means; all other threads shall be cut before giving anticorrosion protection. The tapped holes shall be suitable for bolts with threads having anticorrosion protection and shall conform to IS: 4218 (Part-I to IV). The effective length of thread shall not be less than the nominal diameter of the bolt.

4.2.5 The post insulator unit shall be assembled in a suitable jig to ensure the correct positioning of the top and bottom metal fittings relative to one another. The faces of the metal fittings shall be parallel and at right angles to the axis of the insulators and corresponding holes in the top and the bottom metal fittings shall be in a vertical plane containing the axis of the insulators.

4.2.6 The cap and pedestal shall be of malleable cast iron properly cemented. The malleable cast iron parts shall be hot dip galvanized as per IS: 2629 and shall also fulfil requirements of IS: 2633 in respect of uniformity, thickness and weight of Zinc coating. The galvanising shall be uniform so as to give smooth surface finish. The top metal cap shall be provided with 4 nos. tapped holes of 12 mm dia and 16 mm depth having with worth threads .The base of the pedestal shall be provided with 4 nos. holes of 15 mm dia & 76 mm PCD. The thickness of the base shall not be less than 11 mm.

4.2.7 **The Basic Insulation Level:**

The basic insulation levels of the insulators (2×22 KV pedestal type) are given as under in the following table:

Table – ‘A’ (IS: 2544- Table-1)

Highest System voltage KV (rms)	Visible discharge test KV (rms)	Wet power frequency with stand units KV (rms)	Power frequency puncture with stand test on test KV (rms)	Impulse voltage withstand KV (rms)
1	2	3	4	5
36	27	75	1.3 times the actual dry flashover voltage of the unit	170

- (a) In this specification power frequency voltage are expressed as Peak value divided by $\sqrt{2}$ and impulse voltage are expressed as peak values.
- (b) The withstand and flashover voltage are referred to the reference atmospheric conditions specified in IS: 2544.

4.2.8 **Mechanical Characteristics:**

The minimum mechanical strength value of the outdoor pedestal post insulators shall not be less than the value specified below: -

Centilever strength: -	(i) Upright	450 Kg.
	(ii) Inverted	340 Kg.

4.2.9 **Creepage Distance:**

The minimum creepage distance shall be 760 mm as specified for PA 170 Post Insulator in Table '5' of IS: 5350 (Para-III 1971).

4.2.10 **Tests:**

The insulators shall comply to all type routine and acceptance test as per latest edition of IS: 2544. Supplier shall furnish attested Photostat copy of the latest type tests certificates for all the test in accordance with the ISS from Govt. Test house/recognized laboratory of repute along with the Drawings duly certified by the Testing authorities.