

MATERIAL SPECIFICATION CELL

TECHNICAL SPECIFICATION
OF
GUY STRAIN INSULATORS (STAY INSULATORS)

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TABLE OF CONTENTS

CLAUSE NO.	CONTENTS	PAGE NO.
1.00	SCOPE	3
2.00	SERVICE CONDITIONS	3
3.00	APPLICABLE STANDARDS	3
4.00	GENERAL REQUIREMENTS	3
5.00	TYPE OF INSULATORS	3
6.00	INSULATION CHARACTERISTICS	4
7.00	TESTS	4
8.00	TESTING FACILITIES	5
9.00	TYPE TESTS	5
10.00	MARKING	6
11.00	PACKING	6
12.00	INSPECTION	6
13.00	SCHEDULE	6
	GUARANTEED TECHNICAL PARTICULARS	7

TECHNICAL SPECIFICATION OF GUY STRAIN INSULATORS (STAY INSULATORS)

1.00 SCOPE:

This specification covers porcelain guy strain insulators for use in rural electrification system.

2.00 SERVICE CONDITIONS:

The insulators specified herein shall be suitable for outdoor use under the following climate conditions.

- | | |
|--|-----------------------|
| a) Maximum ambient temperature | 50° C |
| b) Maximum ambient temperature in shade | 45° C |
| c) Minimum temperature of air in shade | 35° C |
| d) Relative Humidity | 10 to 100 % |
| e) Maximum Annual rainfall | 1450 mm |
| f) Maximum wind pressure | 150 Kg/m ² |
| g) Maximum altitude above mean sea level | 1000 meters |
| h) Isoceraunic level | 50 days/year |
| i) Seismic level (Horizontal acceleration) | 0.3 g |
| j) Climate: Moderately hot and humid tropical climate conducive to rust and fungus growth. | |

3.00 APPLICABLE STANDARDS:

Except when they conflict with the specific requirements of this specification, the insulators shall comply with IS: 5300-1969 & the latest version thereof.

4.00 GENERAL REQUIREMENTS :

- 4.01 The porcelain shall be sound, free from defects, thoroughly vitrified and smoothly glazed.
- 4.02 The design of the insulators shall be such that the stresses due to expansion and contraction in any part of the insulator shall not lead to its deterioration.
- 4.03 The glaze shall be white in colour for designation A insulators & brown in colour for designation C insulators. The glaze shall cover the entire porcelain surface parts except those areas that serve as supports during firing.

5.00 TYPE OF INSULATORS:

- 5.01 The standard guy strain insulators shall be of designation 'A' and 'C' as per IS: 5300 -1969 & its latest revision.
- 5.02 The recommended type of guy strain insulators for use on guy wires of overhead lines of different voltage levels are as follows:

TECHNICAL SPECIFICATION OF GUY STRAIN INSULATORS (STAY INSULATORS)

Power line voltage	Designation of insulators
415/240 V	A
11000 V	C
33000 V	C (2 insulators to be used in series)

6.00 INSULATION CHARACTERISTICS:

The dimensions of guy strain insulators, basic insulation level, minimum creepage distance & mechanical strength etc. shall be as follows.

Sr No	Designation of insulator	Nominal System Voltage V(rms)	Length (mm)	Diameter (mm)	Cable hole Dia. (mm)	Min. failing load kN	Min. Creepage Distance (mm)	Dry one min. Power Frequency Withstand Voltage kV(rms)	Wet one min. Power Frequency Withstand Voltage kV(rms)	Drawing Ref. No. As per IS 5300-1969 amended upto date
1	2	3	4	5	6	7	8	9	10	11
1	A	415/240V	90	65	16±1.5	44	41	18	8	Fig. 1
2	C	11000V	140	85	25±1.5	88	57	27	13	Fig. 3

7.00 TESTS:

The insulators shall comply with the following routine, type and acceptance tests as per IS 5300-1969 amended upto date.

7.01 Type Tests:

- a) Visual examination
- b) Verification of dimensions
- c) Temperature cycle test
- d) Dry one minute power frequency withstand test
- e) Wet one minute power frequency withstand test
- f) Mechanical strength test
- g) Porosity test

7.02 Acceptance Tests:

(To be conducted in the following order):

7.02.1 The insulators, after having withstood the routine test shall be subjected to the following acceptance tests in the order given below:

- a) Verification of Dimensions
- b) Temperature cycle test
- c) Mechanical strength test
- d) Porosity test

7.02.2 The number of insulators to be selected at random from the lot shall be in accordance with the table 2 of IS : 5300-1969 which is reproduced below:

Lot size	First Sample Size
(1)	(2)
Up to 500	As agreed to between purchaser & supplier
501 to 800	12

TECHNICAL SPECIFICATION OF GUY STRAIN INSULATORS (STAY INSULATORS)

801 to 3200	16
3201 to 8000	18
8001 and above	20

7.02.3 The insulators selected in accordance with 7.02.2 above shall be divided into two equal parts and subjected to the tests indicated as below:

Tests	Part of sample
a) & b)	Both parts
c)	First part
d)	Second part

If more than one insulator fails to comply with any of the acceptance tests, the lot shall be rejected.

If one insulator fails to comply with any of the tests, a fresh quantity equal to twice the first quantity shall be subjected to retesting. The retesting shall comprise the test in which the failure occurred preceded by those test which may be considered to have influenced the results of the original tests. If no failure occurs in the re-test, the lot shall be accepted.

7.03 Routine Tests:

i) Visual Examination

8.00 TESTING FACILITIES:

8.01 The tenderer must clearly indicate what testing facilities are available in the works of the manufacturer and whether the facilities are adequate to carry out all the routine as well as type tests. These facilities should be made available to M.S.E.D.C.L's Engineers, if deputed to carry out or witness the tests. If any tests cannot be carried out at the manufacturer's works, the reasons should be clearly stated in the tender.

9.00 TYPE TESTS:

The tenderer shall furnish detailed type test reports of the offered insulators as per clause 7.01 of this Specification. All the above Type Tests shall be carried out at laboratories, which are accredited, by the National Accreditation Board of Testing and Calibration Laboratories (NABL) of Government of India to prove that the insulators offered meet the requirements of the specification. These type tests should have been carried out within ten years prior to the date of opening of the tender.

The detailed Type Test Reports along with the relevant oscillograms/certified drawings etc. are to be submitted along with the offer.

The purchaser reserves right to demand repetition of some or all the Type Test in presence of purchaser's representative at purchaser's cost. For this purpose, the tenderer shall quote unit rates for carrying out each Type Test. However, such unit rates will not be considered for evaluation of the offer. In case the unit fails in the Type Tests, the complete supply shall be rejected.

The successful tenderer shall take approval of Type Test from CE (Testing), MSEDCL, Prakashgad, Bandra, Mumbai as per tender conditions.

TECHNICAL SPECIFICATION OF GUY STRAIN INSULATORS (STAY INSULATORS)

10.00 MARKING:

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

- a) Name of trademark of the manufacturer
- b) Year of manufacture
- c) ISI certificate, mark, if any.
- d) 'MSEDCL' Marking.

Marking on porcelain shall be applied before firing.

11.00 PACKING:

All insulators shall be packed in suitable double gunny bags and shall be transported by road.

12.00 INSPECTION

The inspection may be carried out by the MSEDCL at any stage of manufacture. The successful Tenderer shall grant free access to the MSEDCL's representative at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the MSEDCL, shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective. The supplier shall keep the MSEDCL informed in advance, about the manufacturing programme so that arrangement can be made for inspection.

13.00 SCHEDULE:

The tenderer shall fill in the following schedule which form part of tender Specification & offer. If the schedule is not submitted duly filled in with the offer, the offer shall be liable for rejection.

SCHEDULE 'A' – GUARANTEED TECHNICAL PARTICULARS

TECHNICAL SPECIFICATION OF GUY STRAIN INSULATORS (STAY INSULATORS)

SCHEDULE - 'A'
GUARANTEED TECHNICAL PARTICULARS
LT/HT GUY STRAIN INSULATOR

Sr. No.	Particulars	MSEDCL Requirement		To be offered by Bidder
1.	Type of guy strain insulator	L.T. guy strain insulator (designation A)	H.T. guy strain insulator (designation C)	Text
2.	Are insulators manufactured as per IS 5300-1969 & latest revisions thereof	Yes		Text
3.	Type of material used in manufacture of the insulator	Porcelain		Text
4.	Colour of the guy strain insulator	White for designation A	Brown for designation C	Text
5.	Porcelain used in the manufacture is sound, free from defects, thoroughly vitrified and smoothly glazed	Yes		Text
6.	The dimensions of the insulators are as per specified drawings of the specification	Yes		Text
7.	Designation of insulator as per IS:5300-1969	Designation A	Designation C	Text
8.	Minimum failing load of Guy Strain insulator (kN)	44 kN	88 kN	Text
9.	Creepage distance (Min.) for Guy strain insulator (mm)	41mm	57mm	Text
10.	Cable hole diameter (mm)	16mm	25 mm	Text
11.	Insulator suitable for use with Power line voltage V (rms)	415/240V	11000V	Text
12.	Dry One Minute Power frequency withstand voltage kV (rms)	18 kV(rms)	27 kV(rms)	Text
13.	Wet One Minute Power frequency withstand voltage kV (rms)	8 kV(rms)	13 kV(rms)	Text
14.	Whether marking on the insulator is as per specification	Yes		Text
15.	Weight of insulator (kg)	Mfg. to give details		Text
16.	Whether insulators are type tested for the type tests as per specifications & relevant IS and Type Test Reports enclosed	Yes		Text
17.	Any other particulars which the bidder may like to give	Mfg. to give details		File