

[EQ. TO SOR 2025-2026 CAT-III]

5. TECHNICAL  
SPECIFICATIONS FOR  
LT XLPE CALBE

## TECHNICAL SPECIFICATIONS FOR LT XLPE CABLE

### 1.0 SCOPE OF WORK

- 1.1 This section shall cover supply, laying, testing and commissioning of medium voltage XLPE cables.
- 1.2 This specification gives the general requirement of cables. However, it is the responsibility of the vendor to take the joint measurement and obtain client's approval before the placement of orders to the main supplier / manufacturer.

### 2.0 CODES & STANDARDS

- 2.1 The following standards and rules shall be applicable :

Sr. No	Item	Relevant IS	Relevant IEC
1	XLPE insulated electric cables (heavy duty).	IS : 7098 Part I	
2	Recommended current ratings for cables.	IS : 3961	
3	Aluminium conductors for insulated cables	IS : 8130	Indian Electricity Act and Rules.

### 3.0 DESIGN BASIS & SITE CONDITIONS

- 3.1 All equipment and materials will be selected and rated for use at the following site conditions.

Site conditions			
Location : Gujarat		Site altitude 81M above mean sea level	
Ambient temperature		Relative humidity	
Maximum 45 ° C		Maximum 85 %	
Minimum 13 ° C		Minimum 25 %	
Design 50 ° C		Design 90 % at 50 ° C	
Seismic factor Zone III as per IS:1893		Rainfall 618mm/year	
Environmental Tropical conditions		Location of Equipment Indoor	
Electrical system data :			
Power supply for Equipment			
Voltage 415 V ± 5 %		Frequency 50 Hz ± 3 %	
Permissible combined voltage & frequency variation	± 6	System design faults level (Symmetrical)	15 kA for 1 sec. max.
System earthing LV side neutral solidly earthed		Wiring 3 phase, 4 wire on 415V system	

ply	
Power supply	240V AC, 1-Ph, 50Hz
Control Supply	-----
Space heater power supply	240V AC, 1-Ph, 50Hz
Illumination power supply	240V AC, 1-Ph, 50Hz
Plug-socket power supply	240V AC, 1-Ph, 50Hz

4.0

#### TECHNICAL REQUIREMENTS

4.1

#### GENERAL CONSTRUCTIONAL FEATURES

4.1.1

The medium voltage cables shall be supplied, laid, connected, tested and commissioned in accordance with the drawings, specifications, relevant Indian

---

Standards specifications, manufacturer's instructions. The cables shall be delivered at site in original drums with manufacturer's name, size, and type, clearly written on the drums.

4.2 MATERIAL :

Medium voltage cable shall be XLPE insulated. PVC sheathed, aluminium or copper conductor, armoured conforming to IS: 7098 Part I.

4.2.1 Type:

The cables shall be circular, multi core, annealed copper or aluminium conductor, XLPE insulated and PVC sheathed, armoured or unarmoured.

4.2.2 Conductor:

Uncoated, annealed copper / aluminium, of high conductivity upto 4 mm.<sup>2</sup> size, the conductor shall be solid and above 4 mm.<sup>2</sup>, conductors shall be concentrically stranded as per IEC : 228.

4.2.3 Insulation:

XLPE rated 70° c. extruded insulation

4.2.4 Core Identification:

Two core	:	Red and Black
Three cor	:	Red, Yellow and Blue
Four core	:	Red, Yellow, Blue and Black
Single core	:	Green, Yellow for earthing

Black shall always be used for neutral.

4.2.5 Assembly:

Two, three or four insulated conductors shall be laid up, filled with non-hygroscopic material and covered with an additional layer of thermoplastic material.

4.2.6 Armour:

Galvanised steel flat strip / round wires applied helicaly in single layers complete with covering the assembly of cores.

For cable size upto 25 Sq. mm. : Armour of 1.4 mm dia G.I. round wire

For cable size above 25 Sq. mm. : Armour of 4 mm wide 0.8 mm thick G.I strip

4.2.7 Sheath:

XLPE 70 deg.c. rated extruded.

Inner sheath shall be extruded type and shall be compatible with the insulation provided for the cables.

Outer sheath shall be of an extruded type layer of suitable PVC material compatible with the specified ambient temp. 50 deg. C and operating temperature of cables. The sheath shall be resistant to water, ultraviolet radiation, fungus, termite and rodent attacks. The colour of outer sheath shall be black.

Sequential length marking required at every 1.0 mtr. interval on outer sheath

Vendor has to furnish resistance / reactance / capacitances of the cable

4.2.8 Rating:

Up to and including 1100 Volts.

5.0 DRAWINGS & INFORMATION

5.1 Contractor shall submit the as built drawing of the cable laying drawing.

5.2 HANDINGOVER DOCUMENTS

The supplier shall submit following:

1. Data sheet indicating results of tests

## 2. Test reports

### 6.0

#### INSPECTION AND TESTING

- 6.1 All cables shall be adequately protected against any risk of mechanical damage to which they may be liable in normal conditions of handling during transportation, loading, unloading etc.

The cable shall be supplied in single length i.e. Without any intermediate joint or cut unless specifically approved by the client.

The cable ends shall be suitably sealed against entry of moisture, dust, water etc. with cable compound as per standard practice.

- 6.2 Finished Cable Tests at Manufacturer's Works:  
The finished cables shall be tested at manufacturer's works. Following routine tests for each and every length of cable and copy of test results shall be furnished for each length of cable alongwith supply. If specified, the cables shall be tested in presence of client's representative.

- 6.2.1 Voltage Test:  
Each core of cable shall be tested at room temperature at 3 KV A.C. R.M.S. for duration of 5 minutes.

- 6.2.2 Conductor Resistance Test:  
The D.C. Resistance of each conductor shall be measured at room temperature and the results shall be corrected to 20° c. to check the compliance with the values specified in IS 8130 - 1976.

- 6.3 Cable Test Before and After Laying of Cables at Site

- 6.3.1 Insulation Resistance test between phases and phase to Neutral and phase to earth.  
6.3.2 Continuity test of all the phases, neutral and earth continuity conductor.  
6.3.3 Sheathing continuity test.  
6.3.4 Earth resistance test of all the phases and neutral.

### 7.0

#### METHOD OF MEASUREMENT

- 7.1 The cables will be measured in meters. The unit rate shall include cutting the cable into required lengths, packing, loading, unloading, insurance, transportation, delivery to stores/site as per work order, stocking in stores, testing of cables at stores etc. of medium voltage cable. Total quantity in meters shall be measured lug to lug basis.

### 8.0

#### TRANSPORT, DELIVERY AND STORAGE

- 8.1 The cable shall be supplied in the actual length as per detailed purchase order  
8.2 The cable shall be dispatched at client's stores or at site as per detailed instructions given by client at later stage.  
8.3 The cable shall be loaded from the main vendor's store and properly stacked as per instruction of client's local representative. All such labour and transportation charges shall be clearly mentioned in the offer.

### 9.0

#### GUARANTEE OF PERFORMANCE

- 9.1 The quotes values of parameters shall be within given tolerance for given period of service life.