

**WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY  
LIMITED  
(A Govt. of West Bengal Enterprise)**

Office of the Chief Engineer,  
Procurement & Contracts Department  
Vidyut Bhavan, 4<sup>th</sup>. floor,  
Bidhannagar, Kolkata - 700091.

**TECHNICAL SPECIFICATION**

**FOR**

**3 CORE X 400SQMM XLPE INSULATED ARMoured COPPER CABLE**

**SUITABLE FOR**

**NON-EFFECTIVELY EARTHED 33KV SYSTEM**



## TECHNICAL SPECIFICATION FOR

### 33 KV Grade 3 Core XLPE Insulated PVC sheathed Copper 400 Sqmm Cable for Non Effectively Earthed System.

#### 1. **SCOPE** :

- 1.1 The specification covers the design, manufacture, testing, supply and delivery in proper packed condition of 3 core, Copper Conductor, Cross-linked polyethylene (XLPE) insulated, PVC sheathed, Armoured, screened Power Cables.

#### 2. **DEVIATION** :

Normally the offer should be as per Technical Specification without any deviation. But any deviation felt necessary to improve performance, efficiency and utility of equipment must be mentioned in the 'Deviation Schedule' with reasons duly supported by documentary evidences and advantages of such deviation. Such deviation suggested may or may not be accepted. But deviations not mentioned in 'Deviation Schedule' will not be considered afterwards.

#### 3. **LOCATION** :

- 3.1 The Cables may be laid buried directly in ground at a depth of one meter in average, anywhere in West Bengal and terminated for outdoor connection to a power transformer or to overhead lines.
- 3.2 The Cables may also be laid within covered cable trenches, in cable racks or open air ladder trays etc. for certain portions of lengths.

#### 4.0 **SYSTEM DETAILS** :

- |     |                                      |    |   |
|-----|--------------------------------------|----|---|
| 4.1 | Voltage grade (KV) of cable required | :: | <b>19/33</b>  |
| 4.2 | Service Voltage                      | :: | 33 KV   |
| 4.3 | Highest Voltage                      | :: | 36 KV   |
| 4.4 | Earthing System                      | :: | Delta connected system earthed through Earthing transformer |
| 4.5 | B.I.L. For Cable                     | :: | 170 KV for 33 KV Grade                                      |
| 4.6 | Fault Level (Maxm.)                  | :: | See Clause 7.06   |
| 4.7 | Frequency                            | :: | 50 C./S   |

#### 5.0 **WEATHER CONDITION** :

- 5.1 Monsoon prevails generally from the month of June to October with showers sometimes heavy, acidic, smoky, industrial and foggy.
- 5.2 Maximum ambient temperature :: 50 degree C.
- 5.3 Minimum ambient temperature :: 4 degree C
- 5.4 Thermal resistance of soil :: 150 degree C-Cm/Watt
- 5.5 Maximum Daily average ambient temp :: 40 degree C



- 5.1 Monsoon prevails generally from the month of June to October with showers sometimes heavy, acidic, smoky, industrial and foggy.
- 5.6 Maximum relatively humidity :: 100.00%
- 5.7 Average rainfall per annum :: 200 cm
- 5.8 Maximum height above the Sea level :: 1000 Meters

## 6.0 STANDARDS:

6.1 The Cable shall conform to the following standards to the extent of WBSEDCL's requirement is fulfilled.

- 1) IS: 7098 (Part-II) : Specification for cross-linked polyethylene Insulated PVC (2011) and its latest amendment Sheathed Cables for working Voltages from 3.3 KV up to and including 33 KV
- 2) IS:8130-1984 : Specification for Conductors for insulated electric cables and flexible cords
- 3) IS:5831-1984 : PVC insulation & sheath of electric cables
- 4) IS: 3975-1970 : Armour for cables (for 3 Core)
- 5) IS:10810-1984 : Methods of test for Cables.
- 6) IS:10418-1982 : Cable Drums for Electric Cables.

6.2 The cable, joints, outdoor termination and their accessories and fittings may conform to other Indian and/or equivalent Standards or important publications to improve upon their performance, but shall not fall short of the requirement of this specification. The tenderer shall clearly indicate such standards in their offers.

## 7.0 ELECTRICAL CHARACTERISTICS & PERFORMANCE:

### 7.01 Description of Cables:

a) 19/33 KV Grade:

Stranded compacted circular un-tinned annealed copper ( The conductors shall be made from high conductivity copper rods complying with IS : 613-1964) Conductor, shielded with black extruded semi-conducting compound XLPE insulated, core shielded with black extruded semi-conducting compound, black semi-conducting tape and a copper tape, coloured strips having Red, Yellow & Blue for core identification, shielded cores laid up with fillers, binder taped and **Black extruded PVC (Type ST-2) inner sheath**, single layer of galvanized **flat steel strip armoured** and **Green extruded PVC (Type ST-2), overall sheathed**, conforming generally to IS:7098(Part-II) and its latest amendments.

7.02 Voltage Grade: 19/33KV (For 33 KV System)

7.03 Size of Cable : 400 sq.mm.

7.04 Service Voltage : 33 KV



- 7.05 Maxm. Conductortemp. : 90 degree C at maxm. continuous current.
- 7.06 Permissible Maxm. Short Ckt. Current **57.2 KA ( Calculation must be enclosed by the bidder)**  
for conductors for 1 sec  
Permissible Maxm. Combine Earth fault **12KA( Calculation must be enclosed by the bidder)**  
Current including Copper tapes & Armour  
for 1 Sec (combining 3 cores)
- 7.07 Maximum Permissible : 130° C.  
emergency overload temp.  
at 25% overload to 100 hrs.  
per year or 500 hrs. in life  
of Cable
- 7.08 Maxm. Permissible short : 250° C  
circuit Temperature
- 7.09 Conductor Material : The conductors shall be made from high conductivity copper rods complying with IS : 613-1964\*. The conductors shall consist of un-tinned annealed copper. The conductors shall be solid, circular, compacted, stranded or bunched as required. The conductor shall be clean, reasonably uniform in size and shape, smooth and free from harmful defects.
- 7.10 Conductor screening : Extruded, cross linked, semi-conducting compound of **1.0 mm.(minimum)** thickness.
- 7.11 Insulation : XLPE of thickness, **8.8 mm. (Nominal)**.
- 7.12 Insulation Screening : :: Combination of black extruded bonded type semi-conducting compound (**0.5mm Minimum**) & semi-conducting tape as the non-metallic part and are easily removable during jointing & termination operations.  
Annealed copper **50 X 0.06 mm (minimum)** thick tape (with 100% coverage) lapping as metallic part (Minimum 10% Overlapping).
- 7.13 Inner Sheathing : Black extruded PVC Type ST-2 compound and thickness as per ISS
- 7.14 Armouring : Single layer of galvanized flat steel strips as per IS. Armour Coverage Percentage for cables shall be **minimum 90%** as per IS: 7098: (Part-2) 2011 with Amendment no. 1 March 2015.
- 7.15 Overall Sheathing : Coloured PVC Type ST-2 compound to IS:5831, extruded for both 33 KV (**green**) .Thickness shall be as per ISS.
- 7.16 Approx length of Cable in a : 250 meters with a tolerance of  $\pm 5\%$  per drum. However the  
Drum & tolerance in  
quantity. tolerance shall be restricted upto  $\pm 2\%$  on the quantity mentioned per lot in the delivery schedule of purchase order except the last lot.  
But **overall tolerance limit of the total delivered quantity** shall be **minus (-) 1%** against item wise purchase ordered quantity for each Purchase Order and the same shall be taken care of **while offering last lot of inspection.**
- 7.17 End Sealing : H.S. Caps (See Clause 8.11) (Heat Shrinkable)
- 7.18 Max. tan-delta at room : 0.004  
a) temp., at nominal Phase to  
Neutral Voltage ( $U_0$ )
- b) Maxm. Increment of tan- : 0.002  
delta between 0.5  $U_0$  to 2  
 $U_0$  at room temp
- 7.19 Partial Discharge Value( At : 10 pc (max.) at (Routine test ) and 5 PC at Acceptance test.  
Test voltage 1.73  $U_0$ )
- 7.20 Impulse Tests : **170 KV for 33 KV** as per IS: 7098 (Part-II)/ 2011.



- 7.21 H.V. Tests between Conductors & Screen/Armour : **63 KV (rms)** for 33 KV for 5 minutes as per IS7098 (Part-II): 2011.
- 7.22 Maximum D.C Resistance per KM : As per relevant I.S.S

## 8.0 **CABLE CONSTRUCTION:**

- 8.1 XLPE Underground Cable is to be manufactured in catenary continuous vulcanization process at controlled elevated temperature and pressure in inert atmosphere with use of suitable materials for Conductor screening, XLPE main insulation and insulation screening. The cable to be manufactured through Triple Extrusion method and Cured in Dry Nitrogen atmosphere and to be cooled in CCV line. The XLPE Cable in this specification does not have any metal sheath and the short circuit rating of the cable will depend on the conductivity and continuity of the strands of the armour wires which shall be ensured by guarding against corrosion.

## 8.2 **CONDUCTOR SCREEING:**

A semi-conducting cross-linked polyethylene (XLPE) screening shall be extruded over the conductor to act as an electrical shield which together with the elimination of the so called "Skin Effect" prevents to a great extent air ionization on the surface of the conductor.

## 8.3 **INSULATION:**

The main insulation of the Cable shall be extruded unfilled, chemically cross-linked polyethylene (XLPE) inert gas cured satisfying the requirement of IS: 7098(Part-II).

## 8.4 **INSULATING SCREEN:**

The screen shall be made up as given in 7.12. The metal screen eliminates tangential stress of rotating electrostatic field surrounding the conductor and uniform electrical stress in the insulation.

The semi-conducting polyethylene (XLPE) screen shall be extruded over the main polyethylene insulating wall to prevent partial discharge at the surface of the insulation. The copper tape shall be wrapped over the semi conducting tape or extrusion as mentioned earlier for 3 core cables. The metal screen so formed around the cores shall be in contact with one another as the cores are laid up at triangular configuration. Conductor screening, insulation and insulation screening shall be extruded in triple extrusion processes so as to obtain continuously smooth interfaces.

- 8.5 The mechanical and chemical properties of the materials for semi conducting screens are much more important than their electrical properties, but for obtaining the high overall degree of electrical properties of an E.H.V. cable, the inner and outer semi conducting screens and the main polyethylene insulation between the screens shall be simultaneously extruded during the manufacturing process known as "triple extrusion". The advantages are:

- The partial discharge level at the surface of the insulation is brought to a minimum.
- There will be no displacement of the semi conducting screen and insulation during expansion and contraction due to load cycles and bending.
- The semi conducting screens are easily removable during jointing and termination operations.

## 8.6 **LAYING UP:**

The phase identification of the cores shall be by colour **strip** as per I.S.S. for 3 core cables only.



**Core Colour**

Red  
Yellow  
Blue

The screened cores shall be laid up with interstices filled with PVC fillers and taped with a binder tape as to obtain a reasonably circular cable.

8.7 **INNER SHEATH:**

The cable core shall be supplied with bedding of PVC (inner sheath) in the form of extruded PVC sheath for 33KV cables. **Black extruded PVC (Type ST-2) inner sheath** shall be used (Thickness 0.70 mm) .

8.8 **ARMOUR:**

The cable shall be Steel strip armoured in case of 33 KV 3 Core cables to ensure an adequate return path for the flow of fault current and also to provide suitable mechanical protection. The Steel Strips of required size in requisite number as per para 7.14 shall be laid closely in the spiral formation to protect the circumference of the cable fully and to provide adequate cross sectional area for flow of maximum fault current within limits of specified temperature rise and duration of fault. The direction of the lay of the armour shall be opposite to that of the cable cores. Armour Coverage Percentage for cables shall **not be less than 90%** as per IS: 7098: (Part-2) 2011 with its Amendment no. 1 March 2015.

8.9 **OUTER SHEATH:**

A reliable serving shall be necessary for maintaining conductivity of the armour particularly under corrosive condition in the form of jacket. The cable shall therefore be finished with an extruded PVC over sheath of thickness as per para 7.15.

The quality of PVC over sheath (Jacket) shall be ensured for service reliability against moisture intrusion and shall conform to type ST-2 of IS:5831.

The colour of the outer sheath shall be as follows :

For 33 KV Cable : **GREEN**

**The sheaths shall be protected against white ants, vermin and termites by suitable, reliable and durable measures.**

The supplier shall suggest suitable materials for use, in the event of damage to the over sheath to prevent passage of moisture along the cable.

8.10 **CABLE IDENTIFICATION:**

The following shall be embossed on the outer sheath of the cable throughout the length of cable at 1.0 meter spacing for identification.

- a) Manufacturer's Name or Trade Mark.
- b) Type of Cable / Cable Code
- c) Voltage Grade.
- d) Type of insulation i.e. XLPE.
- e) Nominal section & Material of conductor and number of cores.
- f) Month & Year of manufacture.
- g) Inscription for length of cables at 1.0 meter interval on outer sheath by printing/ engraving.
- h) Name of the purchaser : WBSEDCL
- i) Marking "Electric".

8.11 **SEALING OF CABLE ENDS :**

The cable ends of cable in the wooden/ steel drum for delivery shall be sealed with heat shrinkable caps.



**9.0 DRUMS:**

The Cable shall be packed in non-returnable wooden. Non-returnable Steel Drum may also be accepted in place of non-returnable Wooden Drum without implication of additional cost.

9.1 The following information shall be marked on each drum.

- a) **Drum identification No.**
- b) **Manufacturer's Name, Trade Name/Trade Mark, if any.**
- c) IS reference i.e 7098 (part-II)/2011
- d) Nominal sectional area of the conductor of the cable.
- e) No. of Cores.
- f) Type of Cable and Voltage Grade with Cable Code.
- g) Colour of outer sheath
- h) Length of the Cable in Cable Drum.
- i) Direction of rotation of Drum (by means of an arrow)
- j) Approximate Weight : Tare : Gross
- k) Month & Year of Manufacture.
- l) Purchase Order No. & date
- m) Month of Delivery
- n) Name of the Purchaser : WBSEDCL

Drums shall be proofed against attack by white ants or termite conforming to IS : 10418. The Drums may also be marked with ISI Certificate Mark, if applicable.

**9.2 Safe Pulling Force: 50 N/mm<sup>2</sup> (for Conductor)****10.0 Tests to be performed as per IS: 7098 (Part-II)/2011 & IS:8130/1984 and its amendments.**

**10.1A Type Test:** All the tests mentioned below are to be made as per details given in IS:10810. The party shall submit Type Test report from CPRI or ERDA or Any NABL accredited third party LAB as per IS:7098/II/2011 and its latest amendment and other relevant IS/ IEC for each offered item of identical type, voltage grade, size, material and design, carried out within **5 years from** the due date of opening of tender. Type Test Certificate should bear NABL Logo. Accreditation of NABL LAB should be displayed in the official website of NABL

- a) Tests on conductor
  - i) Annealing Test (for Copper) as per IS:8130-1984)
  - ii) Resistance Test. ( IS 8130)
- b) Tests for armouring Wires strips. IS 3975
- c) Test for thickness of insulation and sheath
- d) Physical test for insulation.
  - i) Tensile strength and elongation at break.
  - ii) Ageing in air oven.
  - iii) Hot test.
  - iv) Shrinkage test
  - v) Water absorption (Gravimetric)
- e) Physical tests for outer sheath
  - i) Tensile strength and elongation at break.
  - ii) Ageing in air oven.
  - iii) Shrinkage test.
  - iv) Hot deformation.
  - v) Heat shock.



- vi) Loss of mass in air oven.
- vii) Thermal stability.
- f) Test on Extruded Semiconducting Screen
  - a) Test for strippability of semiconducting strippable insulation screen
  - b) Volume Resistivity.
- g) Partial discharge test.
- h) Bending test.
- i) Dielectric power factor test.
  - i) As a function voltage.
  - 1) As a function of temperature.
- j) Insulation resistance (Volume resistivity) Test.
- k) Heating cycle test.
- l) Impulse with stand test.
- m) High voltage test.
- n) Flammability test.
- o) Thermal ageing test for complete cable.

10.1B The following tests on screened cable shall be performed successively on the same test sample of completed cable, not less than 10m. in length between the test accessories.

- a) P.D. Test.
- b) Bending Test followed by P.D. Test.
- c) Dielectric power factor as a function of voltage.
- d) Dielectric power factor as a function of temperature.
- e) Heating cycle test followed by dielectric power factor as a function of voltage and P.D. tests.
- f) Impulse withstand test and
- g) High voltage test as per para 7.21 and if sample fails in that test then provision of one more sample shall be taken as per relevant IS

10.2 **Acceptance Test:** The following shall constitute Acceptance Tests:

- a) Annealing Tests (for copper)
- b) Conductor resistance test.
- c) Test for thickness of insulation (eccentricity) and sheath.
- d) Hot set test for insulation.
- e) Tensile strength and elongation at break test for insulation and outer sheath.
- f) P.D. test (for screened cables) only on full drum length.
- g) High Voltage test (4 hours Test as per IS 7098 (Part 2):2011 Section 20.7.1 with latest amendment no. 2 April 2022 & 5 min test on all samples as per Section 20.7.2 of the said IS.)
- h) Insulation resistance (VOLUME RESISTIVITY) TEST
- i) Test for cross linking for extruded semiconducting screen.
- j) Visual and length checking in 01 (one) drum of offered lot.

10.3 **ROUTINE TESTS:**

The routine test shall be carried out on all cables manufactured in accordance with this specification.

The following routine tests shall be made on cable length as specified in the ISS.

- a) Conductor resistance test.
- b) Partial discharge test on full drum length.



- c) High voltage test as per para 7.21

#### 10.4 **TEST WITNESS:**

1. All Tests shall be performed in presence of Purchaser's representative if so desired by the Purchaser.
2. The contractor, shall give at least fifteen (15) days advance notice for witnessing such tests.

#### 11. **TEST CERTIFICATE:**

- 11.1 Certified copies of all routine tests carried out at Works shall be furnished in Six (6) copies for approval of the purchaser.
- 11.2 The cables shall be dispatched from Works only after receipt of Purchaser's written approval of shop test reports.
- 11.3 Type Test Certificates of the Cable offered shall be furnished. Otherwise the cable shall have to be type tested on similar rating as per Clause – 10 free of any charges to prove the design.

#### 12. **DESCRIPTIVE LITERATURES, TEST RESULTS ETC.:**

The following details for the cable shall be submitted with bid.

- a) Manufacturer's Catalogue giving cable construction details and characteristics.
- b) Manufacturing process in detail for cables highlighting the steps to control.
  - i) Contamination.
  - ii) Formation of water trees.
  - iii) Effects of byproducts of cross-linking.
  - iv) Stress control etc.
- c) Cross section drawing of the cable.
- d) Cable current ratings for different types of installation inclusive of all de rating factors due to ambient temperature, grouping etc.
- e) Over-Load characteristics of the cable without endangering the normal life and electrical quality of the insulation.
- f) Complete technical data of the cables.
- g) List of Customers to whom the Cable of similar rating have been supplied.
- h) Copy of Type Test Report carried out within last 5 years from the due date of opening of Tender on similar type of Cable in a NABL accredited/Govt. approved Test House or Laboratory is to be submitted along with the tender otherwise tender may be rejected.

**Type Test (after placement of order):** Besides submission of Type Test Report carried out within last 5 years as per tender specification, type test at the discretion of the ordering authority shall have to be arranged by the successful contractor from any lot offered for inspection sample chosen at random after successful routine test by our inspection team as per relevant ISS from CPRI/NABL accredited/Govt. recognized Test House or Laboratory in presence of WBSEDCL's representative.

However the necessary cost of the type test charges will be reimbursed to the party on production of necessary supporting documents.

Valid Calibration Certificate of instruments/equipment used for Testing purpose conducted by NABL accredited Laboratory provided the certificate bears an accreditation body logo. For testing equipment where NABL accreditation is not available, calibration certificate from educational institutions like IIT's, NIT's, J.U., C.U., B.H.U. only can be accepted provided they demonstrate traceability.



j) Documents to be submitted at the time of physical delivery at consignee stores :  
The following documents are to be submitted by the venders to the consignee stores at the time of dispatch to stores by the venders:

- a) Copy of Purchase Order
- b) Copy of dispatch instruction
- c) Inspection Test certificate
- d) Guarantee certificate
- e) Proforma Invoice
- f) Calculation Sheet for price variation on the basis of IEEMA or CACMAI as applicable with base date of order
- g) Seal list and packing list
- h) Challan in triplicate
- k) Way Bill, if applicable



**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR  
33 KV ARMoured COPPER XLPE CABLES  
(To be filled in by the Supplier)**

1	NAME OF MANUFACTURER & ADDRESS	:	
2	Voltage Grade.	:	19/33KV
3	Core & Cross Section No x sq. mm.	:	3 x 400
4	Type & Designation(as per ISS)	:	2XFY
5	List of Standards applicable with latest amendment	:	<b>IS: 7098(PT-2) 2011</b> , IS: 8130 -1984, IS:5831 - 1984, IS:3975 - 1999, IS: 10810 - 1984 & IS: 10418 - 1982 and all the said IS with latest amendment
6	System suitable for	:	
a	Service Voltage	:	33 KV
b	Neutral Earthing ( Not Effective)	:	19 KV
7	Maximum. Conductor temperature	:	
a	Continuous (in Deg. C)	:	90
b	Short time (in Deg.C )	:	250
8	Conductor	:	
a	Material to IS-8130(Class/Grade)	:	Plain Annealed Copper , Class -2
b	Size (Sq.mm.)	:	400
c	No./Nominal diameter of wires in each Conductor (no./mm.)	:	
d	Shape of conductor(Circular/other shaped)	:	Stranded Circular Compacted
e	Overall Dia. of Compacted Conductor Core	:	
9	Shielding/screening on Conductor	:	
a	Material	:	Black Semi-conducting compound
b	Type	:	Extruded
c	Whether thermosetting?	:	
d	Thickness	:	
10	Insulation	:	
a	Material	:	XLPE as per IS 7098 PT-II 2011
b	Type	:	Extruded
c	Thickness (mm)	:	8.8mm (nominal)
11	Shielding / screening on insulation	:	
a	Material for Non metallic part	:	<b>Black extruded semi-conducting compound followed by semi-conducting tape</b>
i)	Type	:	Extruded
ii)	Thickness (mm)	:	0.5 mm(min)
b	Material for Metallic part	:	Copper Tape (100% coverage) with minimum 10% overlap



	i) Thickness (mm)	:	0.06 mm(min)
	ii) Width (mm)	:	50 mm (min)
c	Fillers and Binder tape	:	Shielded cores laid up with fillers and nylon thread use as binder tape.
12	Inner – sheath	:	
A	Material	:	
B	Type	:	
C	Minimum Thickness of sheath (mm)	:	
D	Extruded/Wrapped	:	
E	Approx. outside diameter	:	
13	Armouring	:	
A	Material	:	Galvanised Steel Strip
B	Size	:	
C	D.C. resistance at 20 deg.C (Ohm/Km.)	:	
D	Armour Coverage Percentage	:	90%(Min)
14	Overall Sheath	:	
A	Material	:	PVC (Green Colour)
B	Type	:	ST-2
C	Thickness (mm.)	:	
D	Colour of Sheath	:	
15	Approx. overall diameter of the Cable (mm.)	:	
16	Continuous current rating for standard condition, laid direct	:	
A	In ground at temp 30 deg.C	:	
B	In duct at temp 30 deg.C	:	
C	In air at temp 40 deg.C	:	
17	Charging current attracted system voltage A/KM	:	
18	Short Circuit Current in KA (Maxm.)	:	
a	for 1 sec	:	
b	for 0.5 sec	:	
19	Combine Earth Fault Current for Screen and Armour in KA for 1 sec	:	
20	Electrical Parameters	:	
a	Maxm. D.C. resistance/km of conductor at 20 deg.C (Ohm/Km)	:	
b	AC resistance/kilometer of conductor at 90 deg.C (approx.) (Ohm/Km)	:	



c	Reactance/kilometer(approx.) (Ohm/Km)	:	
d	Capacitance/Kilometer(approx.) (um/Km)	:	
e	Di-electric losses at rated (Uo/U) system KV, 50 cycles/secin Watts/KV/Phase)	:	
f	i) tan-delta at 0.5 Uo	:	
	ii) tan-Delta at Uo	:	
	iii) tan-Delta at 1.5 Uo	:	
	iv) tan-Delta at 2 Uo	:	
g	Partial discharge value		
21	Vol. Resistivity at 27 deg.C(ohm/Cm)	:	
22	Recommended minimum bending radius	:	
23	Derating factor for following ambient temperature in Air/Ground	:	
a	at30 deg. C	:	
b	at35 deg. C	:	
c	at45 deg. C	:	
d	at 50 deg.C	:	
24	Cable Drums	:	
a	Standard Length of Cable/Drum (Mtr)		250±5%
b	Net weight of cable/Drum (kg)		
c	Dimension of Drum		Generally as per IS: 10418-1982
d	Shipping weight (Kg)		
25	Overall tolerance in total quantity	:	-1%
26	Safe pulling force (Kg.)	:	
27	Details of the protective measures against attack by white ante varmints etc. to be XLPE's outer sheath during manufacture	:	
28	Type of curing of XLPE insulations	:	Inert Gas (Nitrogen) curing through CCV Line
29	Cut ends of the Cable shall be sealed	:	Heat shrinkable and caps
30	Cable identification shall be made as per class 8.10 (Yes/No)		
31	Cable Drums shall be marked with the with the information of Clauses 9.1 conspicuously (Yes/No)	:	
32	Embossing	:	Name of Manufacturer, ELECTRIC, WBSEDCL (Project Name-), 33 KV XLPE Armoured copper Cable, Size, Cable Type (2XFY), Month & Year of Manufacturing, Sequential length Marking by printing / engraving in each meter interval
33	Drum Marking (Information shall be stencilled on each drum)		As per TS



Signature with Designation & Seal  
With Name of the Firm

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