



TECHNICAL SPECIFICATION OF UNARMoured FLAT 1100 VOLTS L.T. PVC INSULATED TWIN CORE 4mm² CABLE WITH ROUND ALUMINIUM CONDUCTOR YELLOW SHEATHED.

I. SCOPE:

This specification covers Manufacture, testing at works, supply and delivery of unarmoured flat LT PVC insulated and PVC sheathed cables, twin core Flat 4.0mm² of H2 Grade, Class-I Circular Aluminum Conductor to any MGVCL's stores in Gujarat.

II. Climatic Conditions:

The unarmoured L.T. PVC cables are required to be laid outdoors either for giving power supplies to domestic and commercial consumers. The climatic conditions will be as under.

a) Temperature Variation	: 5°C to 55°C
b) Relative humidity	: Up to 95%
c) Altitude	: 0 to 1000 Mtrs.
d) No. of tropical monsoon months	: 3 (Three)
e) Max. wind pressure	: 150 Kg/cm ²
f) Average annual rainfall	: 750/800mm
g) Average thunderstorm base per annum	: 15
h) Terrain	: Coastal saline, desert, Chemically polluted, Heavily/moderately polluted and normal atmosphere.

III. Installations:

These cables are required to be laid indoor or outdoor between LT Dist. Poles and the consumer's premises i.e. as LT overhead lines supported between poles and houses / shops, Commercial establishment. These cables are required to be laid overhead, hung, expose to atmosphere in a climatic condition as maintained above.

IV. Applicable Standards:

1. IS - 694 of 2010
2. IS - 5831 of 1984 Re-affirmed 1991
3. IS - 8130 of 1984 "
4. IS - 10810 of 1984 (Methods of test for cable)
Re- affirmed - 1991.

The above standards with latest amendment/revision in force on date of tender shall be applicable. However, for type test certificates, samples submitted for type testing will have to be got tested at any Govt. approved laboratory as per the IS-694/1990 with latest amendment/revision as in force on the date of inviting tender. All acceptance and routine tests on offered lots shall be carried according to IS-694/1990 with latest amendment revision in force on date of inviting tender during the execution or order placed and till complete supply is over.

Date:

Seal & Signature of Tenderer



V. Technical Particulars:

a) Voltage Class and Al. Conductor Grade:

PVC insulated cable shall be PVC insulated and PVC sheathed flat LT cable for working voltage Up to and including 1100 Volts confirming standard mentioned above and with ISI mark having aluminum H2 Grade, Class-I round conductor 2 cores with colour coded of each core as specified in the relevant IS.

b) Insulation and Sheath:

The type of insulation shall be Type-A as per IS-5831 of 1984 (with latest amendment/revision) and colour of Insulation of each core as specified in IS.

Similar the type of sheath shall be type ST-1 as per IS-5831 of 1984 (with latest amendment/revision) and colour of sheath is yellow.

VI. Packing and Marking/Embossing:

The LT PVC cable shall be packed in polythene straps each of 100 Meters length. The following information shall be marked on label attached with each coil as per the clause No: 15 of **IS 694:2010**:-

- a) Reference IS No.
- b) Manufacturers Name, Brand Name Or Trade Mark
- c) Type of Cable & Voltage Grade
- d) Numbers of Cores
- e) Nominal Cross Section Area of Conductor
- f) Length of Cable in Coil
- g) Approximate Gross Weight
- h) Country of Manufacture
- i) Year of Manufacture
- j) Name of Purchase
- k) A/T No. & Date.

MARKING / EMBOSSING

The word MGVCL, Voltage Grade, IS Number, Year of Manufacturing and Trade Mark shall be embossed on every meter length of Cable.

Also the marking (i.e. numbers 1, 2, 3...) showing the continuous length of cable should be done on outer sheath of cable at interval of every one meter length.

VII. Standard Length:

Cable i.e. 2 Core 4.0mm² shall be supplied in standard length Of 100 Mtr. Length (Length up to $\pm \frac{1}{2}\%$ of standard length shall be acceptable). Non-standard length will not be acceptable.

VIII. Submission of ISI License for **IS 694/2010 for out door cable and G.T.P.:**

The tenderers are required to submit duly attested xerox copy of the valid ISI License up to the date of delivery for supply of these cables/wires and they should submit GTP along with the tender failing which, the offer would be ignored.

Date:

Seal & Signature of Tenderer



IX. Submission of Type Test Certificate :

The duly attested copy of Type Test Certificate not more than seven years old as per **IS: 694/2010** with latest amendment if any shall be submitted with offer on yellow colour sheath, Unarmoured cable from Govt. approved laboratory.

The Type Test Certificate shall cover all the test from table no.8 & "additional aging test" as per IS 694/90 with latest amendment/revision in operation on date of inviting tender.

X. Sealing :

Sample Coils selected for testing should be sealed at both the ends with waterproof stickers or with Non-hygroscopic sealing material after successful testing.

XI. Inspection and Testing :-

The supplier/ tenderer must have testing facilities at the works of manufacturer to carryout the Acceptance Tests and Routine Tests as mentioned in relevant IS.

a) Testing will be carried out at the works of manufacturer's in presence of MGVCL's representative at the firm's cost according to **IS-694/2010** with latest amendment/revisions in operation on date of inviting tender.

Material shall not be dispatch by the supplier without having being inspected and test certificate approved by MGVCL's representative and obtaining of specific dispatch instructions in writing.

b) The MGVCL reserves the right to select sample from any offered /inspected lot against the A/T to be issued which will be get type tested at any Government approved laboratory as decided by the MGVCL. The results of this type tested sample shall be applicable for the entire quantity of the particular lot offered or supplied by the supplier. The MGVCL shall bear the testing charges if sample passes all the tests and if sample fails in any one of the tests, supplier shall have to bear testing charges, same are recoverable from the supplier's any pending bill, security deposit, Bank Guarantee or by any suitable means, whichever deem fit by the MGVCL. In case of sample failing in aforesaid type tests, supplier shall have to replace the whole lot materials, which should pass through the type tests, the re-testing charges will have to be paid by supplier. If any quantity against the particular lot is consumed by the MGVCL, Supplier will agree for any penalty/deduction in price as decided by the competent authority of MGVCL. Decision of competent authority in case of any dispute will be final and binding to supplier.

c) Acceptance Tests

The acceptance tests shall be carried out on cable offered are :-

1. Tensile Strength (for aluminium conductor)
2. Wrapping Test (for aluminium conductor)

Date:

Seal & Signature of Tenderer



3. Conductor Resistance Test
4. Test for Thickness of Insulation
5. Tensile Strength & Elongation at Break of Insulation and Sheath
6. Insulation Resistance Test
7. High Voltage Test
8. Flammability Test

Sampling Plan for Acceptance Test as follows as per IS-694:

Nos. of Drums/ Coils/ Reels in the LOT (1)	Nos. of Drums/ Coils/ Reels to be taken as Sample (2)	Permissible Nos. of Defectives (3)
Up to 50	3	0
51 to 100	5	0
101 to 300	8	0
301 and above	13	1

These samples shall be taken at random.

XII. Testing Machines / Meters Calibration:

All machines and meters to be used in testing shall be calibrated within valid time limit either at the Laboratory of manufacturer or machine/meter or at Govt. recognized laboratory. The machine/ meter to be used in testing shall be in tolerance limit as per their accuracy class.

XIII. Important:

In absence of valid ISI License/GTP duly filled in/and copy of type test certificate duly attested by authorized person, offer will be liable to be ignored without any further correspondence.

Date:

Seal & Signature of Tenderer



Manufacturer's Name:

And Address:

GUARANTEED TECHNICAL PARTICULARS

Technical information and G.T.P. For supply of Twin Core 4.0 sq. mm. Aluminium Conductor Flat, unarmoured, L.T. PVC Cable having colour of sheath yellow.

PART - A

Bidders have to confirm following important requirements:

Sr No.	Particulars	Conformation
1	Cable shall be manufactured and Supplied Confirming to IS:694/2010 with latest Amendment if any	YES
2	Label on coil of Cable shall bear ISI Mark	YES
3	Colour of Sheath - Yellow	YES
4	Size: 2 Core, 4.0 sq. mm.	YES
5	Shape - Flat	YES
6	Standard length 100 Mtrs $\pm$ 0.5 %	YES
7	ISI License shall remain valid Till order is completed	YES
8	Non-Standard length not acceptable	YES.
9	Packing shall contain only one standard	YES.
10	Length. Packing material-Polythene straps	YES.
11	Following shall be embossed on cable (as per Is 694:2010)	
	a. MGVCL	YES.
	b. 1100 Volts	YES.
	c. IS:694/2010	YES.
	d. Year of manufacture	YES.
	e. Trade Mark of Supplier	YES.
	f. No. showing length (i.e 1,2,3....)	YES.
12	Conductor	
	a. Aluminum Class I	YES.
	b. Solid circular Grade- H2.	YES.
	c. Conductor resistance at 20°C - 7.41 ohms/km	YES.
13	Thickness of insulation	
	a. Average - 0.80 mm or more	YES.
	b. Minimum - 0.62 mm or more	YES.
14	Thickness of sheath	
	a. Average - 1.00 mm or more	YES.
	b. Minimum - 0.75 mm or more	YES.
15	Volume receptivity of Insulation	
	a. AT 27°C - 1×10^{13} Ohm. cm. Min.	YES.
	b. At 70°C - 1×10^{10} Ohm. cm. Min	YES.
16	Tensile Strength of Insulation & Sheath -12.5 N/mm ² Min	YES
17	Elongation at break of Insulation and Sheath - 150% Min	YES

Date:

Seal & Signature of Tenderer

**PART - B**

Bidders has to furnish below details about material for information

Sr. No.	Particulars	Details
1	Copy of ISI License for IS:694	
	a. Number	
	b. Date of expiry	
2	Weight per 100 meters length of Cable (Per Coil) in Kg	
	a. Weight of Aluminium Conductor with $\pm$ Tolerance	
	b. Weight of PVC Insulation with $\pm$ Tolerance	
	c. Weight of PVC Sheath with $\pm$ Tolerance	
	d. Total Weight of Cable with $\pm$ Tolerance	
3	Properties of PVC (Insulation & Sheath)	
	a. Source of PVC Compound	
	b. Dielectric Constant	
	c. Dielectric Strength Kg/mm	
	d. Specific Gravity	
	e. Tensile Strength	
	f. Elongation at break	
4	g. Thermal Resistivity	
	Continuous Current Carrying Capacity of Cable in Air	

Date:

Seal & Signature of Tenderer



PART - C (ENCLOSURES)

Bidder has to enclose following documents and has to confirm for the same

Sr. No.	Particulars	Conformation
1	ISI License	YES
2	Proof if applied for renewal of ISI License	YES
3	Type test certificate from Govt. approved	YES
4	Laboratory(for all core)with yellow colour Sheath	
5	a. Name of Lab.	YES
6	b. Test Report No.	YES
7	c. Date	YES
8	List of plant and machinery	YES.
9	List of testing facility available	YES.
10	List of orders pending/executed	YES.
	a. with G.E.B./GUVNL/DISCOM thereof	
	b. with Government agencies other than above	
	c. with Private agencies other than above	

Part - D

Bidder has to mention below deviation if any, quoting relevant clause of specification.

Date:

Seal & Signature of Tenderer