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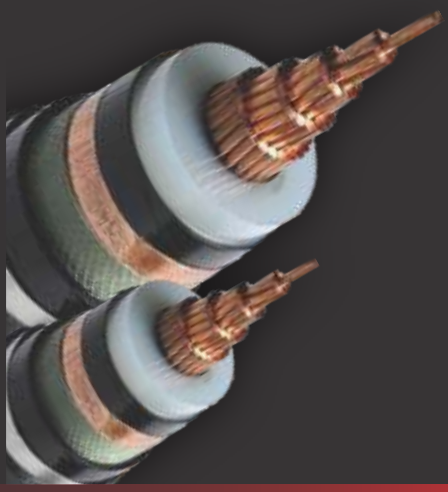

Designed for living engineered to last

RALLISON
DRIVEN BY DESIRE
An ISO 9001:2015 Certified Co.

CABLES

What is XLPE Cables :-

XLPE is an abbreviation for Cross-linked polyethylene or vulcanized polyethylene. The basic material is low density polyethylene. Polyethylene is thermoplastic material consisting long chain of hydrocarbon molecules. Cross linking of Polyethylene take place in three dimensional network. As such XLPE has strong resistance to deformation at higher temperature. XLPE is non polar material which possesses high insulation resistance and dielectric strength and low dielectric losses.

Advantage of XLPE Cables

Due to the excellent electrical, thermal, mechanical and chemical properties of XLPE, these cables are widely used by the customers replacing the conventional cables using PVC as insulating material. The various advantages of XLPE cables are given below :

1. Higher current rating : it is possible to use one lower size of cable as compared to PVC.
2. Higher emergency overload withstand capacity. It can withstand overload conductor temperature up to 130°C because of better ageing properties and resistance to deformation under load.
3. Higher short circuit rating : XLPE can withstand short circuit temperature up to 250°C whereas PVC cables can withstand only upto 160°C.
4. Enhanced life because dielectric losses are very small.
5. Jointing & termination are very easy.
6. XLPE Cables are not prone to fatigue damage due to vibrations or loading cycles.
7. Easy handling during installation because these cables are lighter in weight as compared to PVC Cables.
8. XLPE Cables retain their flexibility down up to -40°C.
9. No elevation limitation.
10. Better resistance to most chemical such as ordinary acids, bases & oil.
11. PVC Cables have distinct disadvantage regarding environmental protection, if they burn they gives off corrosive gases. Although XLPE also burns but the combustion products, carbon dioxide and water, cause much less environmental damage. Moreover, it does not melt like polyethylene.

General Construction

Rallison XLPE Cables are manufactured conforming to IS:7098 (Part-1) or as per customer's requirement.

Conductor

The conductor of power cables is generally made from EC grade aluminum and annealed high conductivity copper is used for control cables. All conductors conform to IS: 8130, Power Cables with copper conductor can also be supplied as per customers requirement.

The conductor are solid / stranded / bunched as per requirement.

Properties	XLPE	PVC
Normal Continuous operating temp. (°C)	90	70/85
Emergency overload temp. (°C)	130	95/105
Short circuit temp. (°C)	250	160
Chemical resistance	Very good	Very good
Moisture resistance	Very good	Very good
Fire resistance	Good	Very good
Min. Installation Temp. (°C)	-40	0
Thermal resistivity of Dielectric (°C cm/Watt)	350	600
Volume resistivity of Dielectric (Ohm-cm)	10^{15}	10^{13}
Dielectric constant	2.3	6
Break down voltage (kV/mm)	40	20
Power factor at 50Mhz (Hz)	0.0008	0.1

Insulation

The conductor is insulated with the XLPE compound by extrusion.

Core Identification

For identification of cores the following colour scheme is adopted.

1. Core (Single Core)	Red, Black, Yellow, Blue is adopted or natural
2. Core	red & Black
3. Core	Red, Yellow and Blue
4. Core	Red, Yellow, Blue and Black
5. Core	Red, Yellow, Blue, Black and Grey
6. Core and Above	Two adjacent cores (counting & direction core) in each layer Blue & Yellow, remaining cores are Grey
	or
	By numerals either by applying numbered strips or by printing on cores.
	For reduced neutral conductors, the core shall be black.

Inner Sheath (Common Covering)

The laid up cores shall be provided with an inner sheath applied either by extrusion or by wrapping. The fillers and inner sheath shall be of the following.

a). Vulcanized or unvulcanized rubber, or

b). Thermoplastic materials.

Single core cables do not have inner sheath.

It shall be ensured that it is as circular as possible.

Armouring

Armouring shall be applied over the insulation in case of single core cables and over the inner Sheath in case of twin, three and multicore cables. the armour wires/strips shall be applied as closely as practicable.

Where the calculated diameter below Armouring does not exceed 13mm the armour shall consist of galvanized round steel wire and whenever the calculated diameter below the Armouring greater than 13mm, the armour shall consist of either galvanized round steel wire or galvanized steel strips. (Generally consist of steel strips.)

Outer Sheath

The outer sheath shall be applied by Extrusion. It shall be applied over the insulation in case of unarmoured single core cables, over the inner Sheath in case of unarmoured twin, three, multicore cable and over the armouring in case of armoured cables. The colour of outer sheath shall be black or any other colour as per the customer's requirements.

The name Rallison is Embossed on the outer sheath of the cable at regular intervals. The word ELECTRIC is also embossed to distinguish these cables from telephone cables and word MINING is also added in case of mining cables. The FR-LSH cables bear an additional legend FR-LSH as the case may be. Any other information required by the customer is also embossed.

FR / FR-LSH / FR-LSZH / FS Cable

Rallison has also successfully developed, manufactured, tested & supplied thousand of kilometers of new generation FR (Fire Retardant) / FR-LSH (Fire Retardant Low Smoke with reduced Halogen and Smoke) / FR-LSZH (Fire Resistant - Low Smoke Zero Halogen) / FS (Fire Survival) cables. these cables with special formulation for sheathing material, prevent the propagation of flame along the length of the cable when exposed to fire. In addition FR-LSH cables emit low smoke and halogen emission is also reduced under fire conditions. These properties help immensely in fire fighting operations and prevention of further loss to costly equipments. FR-LSZH cable and FS Cables emits very low Smoke and Halogen as compared to FR-LSH cables.

Cables with Anti Rodent / Anti Termite Repulsion Properties

Rallison can also supply the cables having outer sheath with Anti rodent / Anti termite properties.

Final Testing

All the cable length manufactured at Rallison works undergo rigorous testing detailed given below.

Routing Test

Tests carried out on each cable to check the requirements which are likely to vary during production.

1. Conductor Resistance / Insulation Resistance.
2. High Voltage
3. Armour resistance (for Mining cables)

Type Test

Tests carried out to prove conformity with the specification. These are intended to prove the general qualitites and design of a given type of cable. the following shall constitute Type Test.

Test	For Requirement Ref	For Test Method Ref Part Number of IS :10810
a) Test on Conductor	IS : 8130 - 1984	1
i) Annealing (for copper)	IS : 8130 - 1984	2
ii) Tensile test (for Aluminium)	IS : 8130 - 1984	3
iii) Wrapping test (for Aluminium)	IS : 8130 - 1984	5
vi) Conductor resistance		
b) Test for Armouring wires/strips	6, Table 5 and IS : 3975 - 1979	36 to 42
c) Test for thickness for Insulation & Sheath	9, 12 and 14 Table 2, 4 &6	6
d) Physical tests for insulation		
i) Tensile Strength and Elongations at break	Table 1	7
ii) Ageing in Air oven	Table 1	11
iii) Hot set test	Table 1	30
vi) Shrinkage test	Table 1	12
v) Water absorption (gravimetric)	Table 1	33
e) Physical tests for Outer Sheath		
i) Tensile Strength and Elongations at break	IS : 5831 - 1984	7
ii) Ageing in Air oven	IS : 5831 - 1984	11
iii) Loss of Mass in Air oven (where applicable)	IS : 5831 - 1984	10
vi) Shrinkage test	IS : 5831 - 1984	12
v) Hot deformation	IS : 5831 - 1984	15
vi) Heat Shock test	IS : 5831 - 1984	14
vii) Thermal Stability	IS : 5831 - 1984	
f) Insulation resistance (Volume Resistivity Test)	Table 1	43
g) High Voltage	16.2	45
h) Flammability Test	16.3	53
Optional Tests The following shall constitute optional test for outer Sheath :		
a) Cold bend	IS : 5831 - 1984	20
b) Cold impact	IS : 5831 - 1984	21
c) Resistance test for armour (other than mining cable)		
d) Anti Rodent / Termite		

Acceptance Test

The following shall constitute acceptance tests.

1. Annealing (for Copper)
2. Tensile test (for Aluminium)
3. Wrapping test (Aluminium)
4. Conductor resistance test
5. Test for thickness for Insulation & Sheath
6. Hot set test for insulation
7. Tensile strength and elongation at break test for insulation & sheath
8. High Voltage test
9. Insulation resistance (volume resistivity) test.

The following additional Type test are carried out on FR, FR-LSH, FR-LSZH and FS cables.

S.No.	Condition of Hazards	Test	Specification/Method of Test	Specified Value
1.	Spread of fire.	(a) Oxygen index (Limiting Oxygen) Index-LOI (b) Temperature Index	ASTM-D 2863 ASTM-D 2863 & BICC Handbook	29% (Min.) 250 Deg.C (Min)
2.	Evolution of Corrosive gases	Halogen Acid gas generation	**IEC-754-1 (By wt.)	20% (Max)
3.	Emission of smoke	Smoke density rating test (SDR)	**ASTM-D-2843	60% (Max)
4.	Evolution of Corrosive gases	Halogen Acid gas generation	***IEC-754-1 (By wt.)	0.5% (Max)
5.	Emission of smoke	Smoke density rating test (SDR)	***ASTM-D 2843	20% (Max)
6.	Flammability	Flame Retardance	*(a)IEC-332-1 (Single Cable) *(b)Swedish Chimney SS-424-1475 (Class F3) *(c)IEC-332-3 (Bunched cables)	Unburnt Length Unburnt Length 300mm(Min) Length Burnt 2.5 Mtrs. (Max.)

Tests applicable for FR cables

Test applicable for FR-LSH cables.

Tests applicable for FR-LSZH and FS cables

Performance Table As per BS:6387 for FS Cables

Test	Category
Resistance to fire alone	
650°C for 3 hours	A
750°C for 3 hours	B
950°C for 3 hours	C
950°C for 3 hours	S
Resistance to fire with Water Spray (optional)	
650°C	W
Resistance to fire with Mechanical Shock (optional)	
650°C	X
750°C	Y
950°C	Z

Rating Factors

The current carrying capacity or loading of cables is limited by the thermal, electrical and other associated lossed provided by the conductor, insulation, protective covering and surrounding. Thus, the current carrying capacity of cable not only depends upon size, type voltage grade, material design and manufactures but also on a number of various conditions of installation and use. It is desirable to determine the correct current carrying capacity on actual service conditions for each and every case. Any overloading leads to uneconomic utilization of their capacity.

The current ratings given in Tables are based on normal conditions of installation described below for normal size of XLPE cables. Data for any other construction of cable can be supplied on request.

Max. Conductor Temperature	90°C
Thermal resistivity of soil	150°C cm/watt
Thermal resistivity of XLPE	350°C cm/watt
Ambient air temperature	40°C
Ground temperature	30°C
Depth of laying (cable laid direct in ground)	75 cm for 1.1KV & 90cm for 3.3 KV

For site condition other than the above condition of installation the appropriate rating factors given must be used.

1. **Rating factors for variation in ground temperature.**

Ground Temp. (°C)	15	20	25	30	35	40	45	50
Rating Factor	1.12	1.08	1.04	1.00	0.96	0.92	0.86	0.82

2. **Rating factor for variation in ambient temperature.**

Ground Temp. (°C)	20	25	30	35	40	45	50
Rating Factor	1.18	1.14	1.10	1.05	1.00	0.96	0.90

3. **Rating factor for variation in depth of laying in ground.**

Depth of laying (cms)	75	90	105	120	150	150	180 or more
upto 25 sq.mm.	1.00	0.99	0.98	0.97	0.96	0.96	0.95
35 sq.mm. to 300 sq.mm	1.00	0.98	0.97	0.96	0.94	0.94	0.93
above 300 sq.mm.	1.00	0.97	0.96	0.95	0.92	0.92	0.91

4. **Rating factor for Variation in Thermal Resistivity of Soil.**
(Twin and multicore Core Cables Laid Direct in the Ground)

Nominal area of Conductor mm^2	Two cables touching for values of Theral Resistivity of soil °C cm / W					
	100	120	150	200	250	300
1.5	1.10	1.05	1.00	0.92	0.86	0.81
2.5	1.10	1.05	1.00	0.92	0.86	0.81
4	1.10	1.05	1.00	0.92	0.86	0.81
6	1.10	1.05	1.00	0.92	0.86	0.81
10	1.10	1.06	1.00	0.92	0.85	0.80
16	1.12	1.06	1.00	0.91	0.84	0.79
25	1.14	1.08	1.00	0.91	0.84	0.78
35	1.15	1.08	1.00	0.91	0.84	0.77
50	1.15	1.08	1.00	0.91	0.84	0.77
70	1.15	1.08	1.00	0.90	0.83	0.76
95	1.15	1.08	1.00	0.90	0.83	0.76
120	1.17	1.09	1.00	0.90	0.82	0.76
150	1.17	1.09	1.00	0.90	0.82	0.75
185	1.18	1.09	1.00	0.89	0.81	0.75
240	1.18	1.09	1.00	0.89	0.81	0.75
300	1.18	1.09	1.00	0.89	0.81	0.75
400	1.19	1.10	1.00	0.89	0.81	0.75

5. Rating factors for Cables laid direct in the horizontal formation.

Single Core Cables				
No of Trefoils in Group	Distance between Trefoils			
	Touching	15cm	30cm	45cm
2	0.78	0.81	0.85	0.88
3	0.68	0.71	0.77	0.81
4	0.61	0.65	0.72	0.76
5	0.56	0.61	0.68	0.73

Multi Core Cables				
No of Cables in Group	Distance of Cables			
	Touching	15cm	30cm	45cm
2	0.79	0.82	0.87	0.90
3	0.69	0.75	0.79	0.83
4	0.62	0.69	0.74	0.79
5	0.58	0.65	0.72	0.76

6. Rating factors for Cables laid in ducts in horizontal formation.

Single Core Cables			
No of Trefoils in Group	Distance between Trefoils		
	Touching	45cm	60cm
2	0.87	0.90	0.91
3	0.79	0.83	0.86
4	0.74	0.79	0.82
5	0.71	0.76	0.80

Multi Core Cables				
No of Cables in Group	Distance of Cables			
	Touching	30cm	45cm	60cm
2	0.88	0.90	0.92	0.94
3	0.82	0.84	0.87	0.89
4	0.77	0.80	0.84	0.87
5	0.74	0.78	0.82	0.85

7. Rating factors for Cables laid on trays in covered trench with having restricted air circulation, Trefoils are separated by two cable diameter horizontally and the trays are in tiers having 30 cm distance.

Single Core Cables			
No of Trays in Tiers	No. of Trefoils in Horizontal Formation		
	1	2	3
1	0.95	0.90	0.88
2	0.90	0.85	0.83
3	0.88	0.83	0.81
6	0.86	0.81	0.79

Multi Core Cables				
No of Trays in Tiers	No. of Cables Per Tray			
	1	2	3	6
1	0.95	0.90	0.88	0.85
2	0.90	0.85	0.83	0.81
3	0.88	0.83	0.81	0.79
6	0.86	0.81	0.79	0.77

8. Rating factors for trays in open air.

Single Core Cables			
No of Trays in Tiers	No. of Trefoils in Horizontal Formation		
	1	2	3
1	1	0.98	0.96
2	1	0.95	0.93
3	1	0.94	0.92
6	1	0.93	0.90

Multi Core Cables				
No of Cables Trays in Tiers	No. of Cables Per Tray			
	1	2	3	6
1	1	0.98	0.98	0.93
2	1	0.95	0.93	0.90
3	1	0.94	0.92	0.89
6	1	0.93	0.90	0.87

TABLE 1 **"RALLISON"** 1100V SINGLE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Unarmoured Cable			Armoured Cable							Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
					Strip Armoured Cable				Round Wire Armoured Cable						
		Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Thickness of Insulation	Nominal Dimension of Flat Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	1.8	7.5	1.0	-	-	-	1.4	1.24	10.0	37	33	7.41	9.48
6	Solid	0.7	1.8	8.0	1.0	-	-	-	1.4	1.24	10.5	47	43	4.60	5.90
10	Solid	0.7	1.8	9.0	1.0	-	-	-	1.4	1.24	11.5	59	55	3.08	3.94
16	Stranded	0.7	1.8	10.0	1.0	-	-	-	1.4	1.24	12.5	76	72	1.91	2.44
25	Stranded	0.9	1.8	12.0	1.2	-	-	-	1.4	1.24	14.0	98	98	1.20	1.54
35	Stranded	0.9	1.8	13.0	1.2	-	-	-	1.4	1.24	16.0	116	119	0.868	1.11
50	Stranded	1.0	1.8	14.5	1.3	-	-	-	1.4	1.24	18.0	137	145	0.641	0.82
70	Stranded	1.1	1.8	16.0	1.4	-	-	-	1.4	1.24	20.8	168	185	0.443	0.567
95	Stranded	1.1	1.8	18.0	1.4	4 x 0.80	1.40	20.0	1.6	1.40	22.0	202	235	0.320	0.410
120	Stranded	1.2	1.8	20.0	1.5	4 x 0.80	1.40	22.0	1.6	1.40	23.0	230	276	0.253	0.324
150	Stranded	1.4	2.0	22.0	1.7	4 x 0.80	1.40	23.0	1.6	1.40	25.0	256	314	0.206	0.264
185	Stranded	1.6	2.0	24.0	1.9	4 x 0.80	1.40	25.0	1.6	1.40	27.0	290	366	0.164	0.210
240	Stranded	1.7	2.0	27.0	2.0	4 x 0.80	1.40	28.0	1.6	1.40	29.0	335	434	0.125	0.160
300	Stranded	1.8	2.0	29.0	2.1	4 x 0.80	1.56	30.0	1.6	1.56	32.0	376	500	0.100	0.128
400	Stranded	2.0	2.2	33.0	2.4	4 x 0.80	1.56	35.0	2.0	1.56	37.0	429	589	0.0778	0.100
500	Stranded	2.2	2.2	36.0	2.	4 x 0.80	1.56	38.0	2.0	1.56	40.0	485	685	0.0605	0.0774
630	Stranded	2.4	2.2	40.0	2.8	4 x 0.80	1.72	42.0	2.0	1.72	45.0	546	793	0.0469	0.0600
800	Stranded	2.6	2.4	45.0	3.1	4 x 0.80	1.72	47.0	2.0	1.88	50.0	608	907	0.0367	0.0470
1000	Stranded	2.8	2.6	50.0	3.3	4 x 0.80	1.88	52.0	2.5	2.04	55.0	665	1022	0.0291	0.0372

TABLE 2 **"RALLISON"** 1100V SINGLE CORE COPPER CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Unarmoured Cable			Armoured Cable							Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
					Strip Armoured Cable				Round Wire Armoured Cable						
		Nominal Thickness of Insulation	Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Thickness of Insulation	Nominal Dimension of Flat Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	1.8	7.5	1.0	-	-	-	1.4	1.24	10.0	47	41	4.61	5.90
6	Solid	0.7	1.8	8.0	1.0	-	-	-	1.4	1.24	10.5	58	52	3.08	3.94
10	Solid	0.7	1.8	9.0	1.0	-	-	-	1.4	1.24	11.5	77	71	1.83	2.34
16	Stranded	0.7	1.8	10.0	1.0	-	-	-	1.4	1.24	12.5	98	94	1.15	1.47
25	Stranded	0.9	1.8	12.0	1.2	-	-	-	1.4	1.24	14.0	126	126	0.727	0.930
35	Stranded	0.9	1.8	13.0	1.2	-	-	-	1.4	1.24	16.0	150	154	0.524	0.671
50	Stranded	1.0	1.8	14.5	1.3	-	-	-	1.4	1.24	18.0	177	187	0.387	0.495
70	Stranded	1.1	1.8	16.0	1.4	-	-	-	1.4	1.24	20.8	216	238	0.268	0.343
95	Stranded	1.1	1.8	18.0	1.4	4 x 0.80	1.40	20.0	1.6	1.40	22.0	260	303	0.193	0.247
120	Stranded	1.2	1.8	20.0	1.5	4 x 0.80	1.40	22.0	1.6	1.40	23.0	295	354	0.153	0.196
150	Stranded	1.4	2.0	22.0	1.7	4 x 0.80	1.40	23.0	1.6	1.40	25.0	329	403	0.124	0.159
185	Stranded	1.6	2.0	24.0	1.9	4 x 0.80	1.40	25.0	1.6	1.40	27.0	371	468	0.0991	0.127
240	Stranded	1.7	2.0	27.0	2.0	4 x 0.80	1.40	28.0	1.6	1.40	29.0	427	553	0.0754	0.0965
300	Stranded	1.8	2.0	29.0	2.1	4 x 0.80	1.56	30.0	1.6	1.56	32.0	477	634	0.0601	0.0769
400	Stranded	2.0	2.2	33.0	2.4	4 x 0.80	1.56	35.0	2.0	1.56	37.0	537	737	0.0470	0.0602
500	Stranded	2.2	2.2	36.0	2.	4 x 0.80	1.56	38.0	2.0	1.56	40.0	598	844	0.0366	0.0468
630	Stranded	2.4	2.2	40.0	2.8	4 x 0.80	1.72	42.0	2.0	1.72	45.0	661	961	0.0283	0.0362
800	Stranded	2.6	2.4	45.0	3.1	4 x 0.80	1.72	47.0	2.0	1.88	50.0	721	1077	0.0221	0.0283
1000	Stranded	2.8	2.6	50.0	3.3	4 x 0.80	1.88	52.0	2.5	2.04	55.0	772	1188	0.0176	0.0225

TABLE 3 **"RALLISON"** 1100V TWO CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
				Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	13.0	-	-	-	1.40	1.24	14.5	42	38	7.41	9.48
6	Solid	0.7	0.3	1.8	14.0	-	-	-	1.40	1.24	15.5	55	50	4.61	5.90
10	Solid	0.7	0.3	1.8	15.0	-	-	-	1.40	1.24	17.0	68	64	3.08	3.94
16	Stranded	0.7	0.3	1.8	15.0	-	-	-	1.40	1.40	17.0	89	83	1.91	2.44
25	Stranded	0.9	0.3	2.0	17.5	4 x 0.80	1.40	18.5	1.60	1.40	20.0	114	109	1.20	1.54
35	Stranded	0.9	0.3	2.0	19.0	4 x 0.80	1.40	20.0	1.60	1.40	21.5	136	133	0.868	1.11
50	Stranded	1.0	0.3	2.0	21.5	4 x 0.80	1.40	22.5	1.60	1.40	24.0	161	162	0.641	0.82
70	Stranded	1.1	0.3	2.0	24.5	4 x 0.80	1.56	25.5	1.60	1.56	27.0	197	204	0.443	0.567
95	Stranded	1.1	0.4	2.2	27.5	4 x 0.80	1.56	28.0	2.00	1.56	30.0	235	251	0.320	0.410
120	Stranded	1.2	0.4	2.2	30.5	4 x 0.80	1.56	30.5	2.00	1.56	32.5	266	287	0.253	0.324
150	Stranded	1.4	0.4	2.2	33.0	4 x 0.80	1.72	34.0	2.00	1.72	36.0	296	328	0.206	0.264
185	Stranded	1.6	0.5	2.4	37.0	4 x 0.80	1.72	37.5	2.00	1.88	40.0	335	379	0.164	0.210
240	Stranded	1.7	0.5	2.6	40.5	4 x 0.80	1.88	41.0	2.50	2.04	45.0	385	448	0.125	0.160
300	Stranded	1.8	0.6	2.8	44.5	4 x 0.80	2.04	45.5	2.50	2.20	49.0	432	513	0.100	0.128
400	Stranded	2.0	0.6	3.0	49.0	4 x 0.80	2.36	50.0	2.50	2.36	53.0	487	593	0.0778	0.100
500	Stranded	2.2	0.7	3.4	55.0	4 x 0.80	2.52	56.0	3.15	2.68	60.5	548	683	0.0605	0.0774
630	Stranded	2.4	0.7	3.6	62.0	4 x 0.80	2.68	63.0	3.15	2.84	67.5	612	784	0.0469	0.0600

TABLE 4 **"RALLISON"** 1100V TWO CORE COPPER CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Unarmoured Cable		Steel Armoured Cable							Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
			Minimum Thickness of Inner Sheath	Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	13.0	-	-	-	1.4	1.24	14.5	54	48	4.61	5.90
6	Solid	0.7	0.3	1.8	14.0	-	-	-	1.4	1.24	15.5	67	61	3.08	3.94
10	Stranded	0.7	0.3	1.8	15.0	-	-	-	1.4	1.24	17.0	89	83	1.83	2.34
16	Stranded	0.7	0.3	1.8	15.0	-	-	-	1.4	1.40	17.0	115	108	1.15	1.47
25	Stranded	0.9	0.3	2.0	17.5	4 x 0.80	1.40	18.5	1.6	1.40	20.0	147	140	0.727	0.930
35	Stranded	0.9	0.3	2.0	19.0	4 x 0.80	1.40	20.0	1.6	1.40	21.5	176	172	0.524	0.671
50	Stranded	1.0	0.3	2.0	21.5	4 x 0.80	1.40	22.5	1.6	1.40	24.0	208	208	0.387	0.495
70	Stranded	1.1	0.3	2.0	24.5	4 x 0.80	1.56	25.5	1.6	1.56	27.0	253	262	0.268	0.343
95	Stranded	1.1	0.4	2.2	27.5	4 x 0.80	1.56	28.0	2.0	1.56	30.0	302	322	0.193	0.247
120	Stranded	1.2	0.4	2.2	30.5	4 x 0.80	1.56	30.5	2.0	1.56	32.5	340	368	0.153	0.196
150	Stranded	1.4	0.4	2.2	33.0	4 x 0.80	1.72	34.0	2.0	1.72	36.0	379	419	0.124	0.159
185	Stranded	1.6	0.5	2.4	37.0	4 x 0.80	1.72	37.5	2.0	1.88	40.0	425	482	0.0991	0.127
240	Stranded	1.7	0.5	2.6	40.5	4 x 0.80	1.88	41.0	2.5	2.04	45.0	486	566	0.0754	0.0965
300	Stranded	1.8	0.6	2.8	44.5	4 x 0.80	2.04	45.5	2.5	2.20	49.0	541	644	0.0601	0.0769
400	Stranded	2.0	0.6	3.0	49.0	4 x 0.80	2.36	50.0	2.5	2.36	53.0	602	734	0.0470	0.0602

TABLE 5 **"RALLISON"** 1100V THREE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
				Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	13.0	-	-	-	1.40	1.24	15.00	35	32	7.41	9.48
6	Solid	0.7	0.3	1.8	14.0	-	-	-	1.40	1.24	16.00	46	42	4.61	5.90
10	Solid	0.7	0.3	1.8	16.5	-	-	-	1.40	1.24	18.00	57	54	3.08	3.94
16	Stranded	0.7	0.3	1.8	17.0	4 x 0.80	1.24	18.5	1.60	1.40	20.0	74	69	1.91	2.44
25	Stranded	0.9	0.3	2.0	20.0	4 x 0.80	1.40	20.5	1.60	1.40	22.00	95	93	1.20	1.54
35	Stranded	0.9	0.3	2.0	22.0	4 x 0.80	1.40	23.0	1.60	1.40	24.00	114	114	0.868	1.11
50	Stranded	1.0	0.3	2.0	24.5	4 x 0.80	1.40	25.5	1.60	1.56	27.00	134	138	0.641	0.82
70	Stranded	1.1	0.4	2.2	29.0	4 x 0.80	1.56	30.0	2.00	1.56	31.5	164	175	0.443	0.567
95	Stranded	1.1	0.4	2.2	32.0	4 x 0.80	1.56	32.5	2.00	1.56	34.5	197	216	0.320	0.410
120	Stranded	1.2	0.4	2.2	34.5	4 x 0.80	1.56	35.5	2.00	1.72	37.5	223	249	0.253	0.324
150	Stranded	1.4	0.5	2.4	38.5	4 x 0.80	1.72	39.0	2.00	1.88	41.5	249	284	0.206	0.264
185	Stranded	1.6	0.5	2.6	43.0	4 x 0.80	1.88	43.5	2.50	2.04	48.0	282	329	0.164	0.210
240	Stranded	1.7	0.6	2.8	48.0	4 x 0.80	2.04	48.5	2.50	2.20	52.0	327	392	0.125	0.160
300	Stranded	1.8	0.6	3.0	52.0	4 x 0.80	2.20	52.0	2.50	2.36	57.0	369	452	0.100	0.128
400	Stranded	2.0	0.7	3.2	59.0	4 x 0.80	2.52	59.5	3.15	2.68	65.0	420	526	0.0778	0.100
500	Stranded	2.2	0.7	3.6	66.0	4 x 0.80	2.68	66.0	3.15	2.84	72.0	478	612	0.0605	0.0774
630	Stranded	2.4	0.7	3.8	73.0	4 x 0.80	2.84	73.0	4.00	3.00	80.0	542	712	0.0469	0.0600

TABLE 6 **"RALLISON"** 1100V THREE CORE COPPER CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
				Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	13.5	-	-	-	1.40	1.24	15.0	45	41	4.61	5.90
6	Solid	0.7	0.3	1.8	14.5	-	-	-	1.40	1.24	16.0	56	52	3.08	3.94
10	Stranded	0.7	0.3	1.8	16.5	-	-	-	1.40	1.24	18.0	74	70	1.83	2.34
16	Stranded	0.7	0.3	1.8	17.0	4 x 0.80	1.24	18.5	1.60	1.40	20.0	95	89	1.15	1.47
25	Stranded	0.9	0.3	2.0	20.0	4 x 0.80	1.40	20.5	1.60	1.40	22.0	122	119	0.727	0.930
35	Stranded	0.9	0.3	2.0	22.0	4 x 0.80	1.40	23.0	1.60	1.40	24.0	146	147	0.524	0.671
50	Stranded	1.0	0.3	2.0	24.5	4 x 0.80	1.40	25.5	1.60	1.56	27.0	173	179	0.387	0.495
70	Stranded	1.1	0.4	2.2	29.0	4 x 0.80	1.56	30.0	2.00	1.56	31.5	212	226	0.268	0.343
95	Stranded	1.1	0.4	2.2	32.0	4 x 0.80	1.56	32.5	2.00	1.56	34.5	254	279	0.193	0.247
120	Stranded	1.2	0.4	2.2	34.5	4 x 0.80	1.56	35.5	2.00	1.72	37.5	287	320	0.153	0.196
150	Stranded	1.4	0.5	2.4	38.5	4 x 0.80	1.72	39.0	2.00	1.88	41.5	321	365	0.124	0.159
185	Stranded	1.6	0.5	2.6	43.0	4 x 0.80	1.88	43.5	2.50	2.04	48.0	362	422	0.0991	0.127
240	Stranded	1.7	0.6	2.8	48.0	4 x 0.80	2.04	48.5	2.50	2.20	52.0	418	500	0.0754	0.0965
300	Stranded	1.8	0.6	3.0	52.0	4 x 0.80	2.20	52.0	2.50	2.36	57.0	469	574	0.0601	0.0769
400	Stranded	2.0	0.7	3.2	59.0	4 x 0.80	2.52	59.5	3.15	2.68	65.0	528	662	0.0469	0.0602

TABLE 7 **"RALLISON"** 1100V THREE AND HALF CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation		Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
							Strip Armoured Cable			Round Wire Armoured Cable						
		Main	Neutral		Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
25/16	Stranded	0.9	0.7	0.3	2.0	21.0	4 x 0.80	1.40	22.0	1.60	1.40	24.0	95	93	1.20	1.54
35/16	Stranded	0.9	0.7	0.3	2.0	23.0	4 x 0.80	1.40	24.0	1.60	1.40	26.0	114	114	0.868	1.11
50/16	Stranded	1.0	0.9	0.3	2.0	26.0	4 x 0.80	1.40	27.0	1.60	1.56	29.0	134	138	0.641	0.82
70/35	Stranded	1.1	0.9	0.4	2.2	30.0	4 x 0.80	1.56	31.0	2.00	1.56	34.0	164	175	0.443	0.567
95/50	Stranded	1.1	1.0	0.4	2.2	34.0	4 x 0.80	1.56	35.0	2.00	1.56	38.0	197	216	0.320	0.410
120/70	Stranded	1.2	1.1	0.4	2.2	37.0	4 x 0.80	1.72	38.0	2.00	1.72	41.0	223	249	0.253	0.324
150/70	Stranded	1.4	1.1	0.5	2.4	41.0	4 x 0.80	1.72	42.0	2.00	1.88	45.0	249	284	0.206	0.264
185/95	Stranded	1.6	1.1	0.5	2.6	47.0	4 x 0.80	1.88	47.0	2.50	2.04	50.0	282	329	0.164	0.210
240/120	Stranded	1.7	1.2	0.6	2.8	51.5	4 x 0.80	2.04	52.0	2.50	2.20	56.0	327	392	0.125	0.160
300/150	Stranded	1.8	1.4	0.6	3.0	56.0	4 x 0.80	2.20	56.0	2.50	2.36	61.0	369	452	0.100	0.128
400/185	Stranded	2.0	1.6	0.7	3.4	63.0	4 x 0.80	2.52	63.0	3.15	2.68	69.0	420	526	0.0778	0.100
500/240	Stranded	2.2	1.7	0.7	3.6	71.0	4 x 0.80	2.68	71.5	3.15	2.84	77.0	478	612	0.0605	0.0774

TABLE 8 **"RALLISON"** 1100V THREE AND HALF CORE COPPER CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation		Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
							Strip Armoured Cable			Round Wire Armoured Cable						
		Main	Neutral		Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
25/16	Stranded	0.9	0.7	0.3	2.0	21.0	4 x 0.80	1.40	22.0	1.60	1.40	24.0	122	119	0.727	0.930
35/16	Stranded	0.9	0.7	0.3	2.0	23.0	4 x 0.80	1.40	24.0	1.60	1.40	26.0	146	147	0.524	0.671
50/16	Stranded	1.0	0.9	0.3	2.0	26.0	4 x 0.80	1.40	27.0	1.60	1.56	29.0	173	179	0.387	0.495
70/35	Stranded	1.1	0.9	0.4	2.2	30.0	4 x 0.80	1.56	31.0	2.00	1.56	34.0	212	226	0.268	0.343
95/50	Stranded	1.1	1.0	0.4	2.2	34.0	4 x 0.80	1.56	35.0	2.00	1.56	38.0	254	279	0.193	0.247
120/70	Stranded	1.2	1.1	0.4	2.2	37.0	4 x 0.80	1.72	38.0	2.00	1.72	41.0	287	320	0.153	0.196
150/70	Stranded	1.4	1.1	0.5	2.4	41.0	4 x 0.80	1.72	42.0	2.00	1.88	45.0	321	365	0.124	0.159
185/95	Stranded	1.6	1.1	0.5	2.6	47.0	4 x 0.80	1.88	47.0	2.50	2.04	50.0	362	422	0.0991	0.127
240/120	Stranded	1.7	1.2	0.6	2.8	51.5	4 x 0.80	2.04	52.0	2.50	2.20	56.0	418	500	0.0754	0.0965
300/150	Stranded	1.8	1.4	0.6	3.0	56.0	4 x 0.80	2.20	56.0	2.50	2.36	61.0	469	574	0.0601	0.0769
400/185	Stranded	2.0	1.6	0.7	3.4	63.0	4 x 0.80	2.52	63.0	3.15	2.68	69.0	528	662	0.0470	0.0602

TABLE 9 **"RALLISON"** 1100V FOUR CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
				Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	15.0	-	-	-	1.40	1.24	16.0	35	32	7.41	9.48
6	Solid	0.7	0.3	1.8	16.0	-	-	-	1.40	1.24	17.5	46	42	4.61	5.90
10	Solid	0.7	0.3	1.8	18.0	-	-	-	1.40	1.40	19.5	57	54	3.08	3.94
16	Stranded	0.7	0.3	1.8	19.0	4 x 0.8	1.40	20.0	1.60	1.40	21.0	74	69	1.91	2.44
25	Stranded	0.9	0.3	2.0	22.5	4 x 0.8	1.40	23.0	1.60	1.40	25.0	95	93	1.20	1.54
35	Stranded	0.9	0.3	2.0	25.0	4 x 0.8	1.40	25.0	1.60	1.40	26.5	114	114	0.868	1.11
50	Stranded	1.0	0.3	2.0	28.0	4 x 0.8	1.56	29.0	1.60	1.56	30.0	134	138	0.641	0.82
70	Stranded	1.1	0.4	2.2	32.0	4 x 0.8	1.56	33.0	2.00	1.56	35.0	164	175	0.443	0.567
95	Stranded	1.1	0.4	2.2	35.0	4 x 0.8	1.56	36.0	2.00	1.72	38.5	197	216	0.320	0.410
120	Stranded	1.2	0.5	2.4	40.0	4 x 0.8	1.72	40.5	2.00	1.88	43.0	223	249	0.253	0.324
150	Stranded	1.4	0.5	2.6	44.0	4 x 0.8	1.88	45.0	2.50	2.04	48.0	249	284	0.206	0.264
185	Stranded	1.6	0.5	2.8	49.0	4 x 0.8	2.04	49.5	2.50	2.20	52.5	282	329	0.164	0.210
240	Stranded	1.7	0.6	3.0	55.0	4 x 0.8	2.20	55.0	2.50	2.36	58.5	327	392	0.125	0.160
300	Stranded	1.8	0.7	3.2	66.0	4 x 0.8	2.36	60.0	3.15	2.52	65.5	369	452	0.100	0.128
400	Stranded	2.0	0.7	3.6	68.0	4 x 0.8	2.68	68.0	3.15	2.84	72.5	420	526	0.0778	0.100

TABLE 10 **"RALLISON"** 1100V FOUR CORE COPPER CONDUCTOR, XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Nominal Cross Sectional Area of Conductor	Form of Conductor	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
						Strip Armoured Cable			Round Wire Armoured Cable						
				Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
4	Solid	0.7	0.3	1.8	15.0	-	-	-	1.40	1.24	16.0	45	41	4.61	5.90
6	Solid	0.7	0.3	1.8	16.0	-	-	-	1.40	1.24	17.5	56	52	3.08	3.94
10	Stranded	0.7	0.3	1.8	18.0	-	-	-	1.40	1.40	19.5	74	70	1.83	2.34
16	Stranded	0.7	0.3	1.8	19.0	4 x 0.8	1.40	20.0	1.60	1.40	21.0	95	89	1.15	1.47
25	Stranded	0.9	0.3	2.0	22.5	4 x 0.8	1.40	23.0	1.60	1.40	25.0	122	119	0.727	0.930
35	Stranded	0.9	0.3	2.0	25.0	4 x 0.8	1.40	25.0	1.60	1.40	26.5	146	147	0.524	0.671
50	Stranded	1.0	0.3	2.0	28.0	4 x 0.8	1.56	29.0	1.60	1.56	30.0	173	179	0.387	0.495
70	Stranded	1.1	0.4	2.2	32.0	4 x 0.8	1.56	33.0	2.00	1.56	35.0	212	226	0.268	0.343
95	Stranded	1.1	0.4	2.2	35.0	4 x 0.8	1.56	36.0	2.00	1.72	38.5	254	279	0.193	0.247
120	Stranded	1.2	0.5	2.4	40.0	4 x 0.8	1.72	40.5	2.00	1.88	43.0	287	320	0.153	0.196
150	Stranded	1.4	0.5	2.6	44.0	4 x 0.8	1.88	45.0	2.50	2.04	48.0	321	365	0.124	0.159
185	Stranded	1.6	0.5	2.8	49.0	4 x 0.8	2.04	49.5	2.50	2.20	52.5	362	422	0.0991	0.127
240	Stranded	1.7	0.6	3.0	55.0	4 x 0.8	2.20	55.0	2.50	2.36	58.5	418	500	0.0754	0.0965
300	Stranded	1.8	0.7	3.2	60.0	4 x 0.8	2.36	60.0	3.15	2.52	65.5	469	574	0.0601	0.0769
400	Stranded	2.0	0.7	3.6	68.0	4 x 0.8	2.84	68.0	3.15	2.84	72.5	528	662	0.0470	0.0602

TABLE 11 **"RALLISON"** 1100V CONTROL CABLE, 1.5 SQ. MM SOLID COPPER & XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Number of Cores	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
					Strip Armoured Cable			Round Wire Armoured Cable						
			Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
Nos.	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
2	0.7	0.3	1.8	11.0	-	-	-	1.4	1.24	13.0	33	29	12.1	15.50
3	0.7	0.3	1.8	11.0	-	-	-	1.4	1.24	13.0	25	22	12.1	15.50
4	0.7	0.3	1.8	12.0	-	-	-	1.4	1.24	14.0	25	22	12.1	15.50
5	0.7	0.3	1.8	13.0	-	-	-	1.4	1.24	15.0	24	21	12.1	15.50
6	0.7	0.3	1.8	14.0	-	-	-	1.4	1.24	16.0	22	19	12.1	15.50
7	0.7	0.3	1.8	14.0	-	-	-	1.4	1.24	16.0	21	18	12.1	15.50
8	0.7	0.3	1.8	15.0	-	-	-	1.4	1.24	17.0	20	18	12.1	15.50
9	0.7	0.3	1.8	16.0	-	-	-	1.4	1.24	18.0	19	19	12.1	15.50
10	0.7	0.3	1.8	17.0	-	-	-	1.4	1.24	19.0	18	16	12.1	15.50
12	0.7	0.3	1.8	17.5	-	-	-	1.4	1.24	19.0	17	15	12.1	15.50
14	0.7	0.3	1.8	18.0	-	-	-	1.4	1.40	20.0	16	14	12.1	15.50
16	0.7	0.3	1.8	19.0	4 x 0.80	1.40	20.0	1.6	1.40	21.5	16	14	12.1	15.50
19	0.7	0.3	1.8	20.0	4 x 0.80	1.40	21.0	1.6	1.40	22.0	15	13	12.1	15.50
24	0.7	0.3	2.0	23.0	4 x 0.80	1.40	24.0	1.6	1.40	25.0	13	12	12.1	15.50
27	0.7	0.3	2.0	24.0	4 x 0.80	1.40	24.5	1.6	1.40	26.0	13	11	12.1	15.50
30	0.7	0.3	2.0	25.0	4 x 0.80	1.40	25.0	1.6	1.40	27.0	12	11	12.1	15.50
37	0.7	0.3	2.0	26.5	4 x 0.80	1.40	27.0	1.6	1.40	28.0	11	10	12.1	15.50
42	0.7	0.3	2.0	28.0	4 x 0.80	1.40	29.0	1.6	1.56	31.0	11	9	12.1	15.50
52	0.7	0.3	2.0	31.0	4 x 0.80	1.56	32.0	1.6	1.56	33.0	10	9	12.1	15.50
61	0.7	0.4	2.2	33.0	4 x 0.80	1.56	34.0	2.0	1.56	36.0	9	8	12.1	15.50

TABLE 12 **"RALLISON"** 1100V CONTROL CABLE, 2.5 SQ. MM SOLID COPPER & XLPE INSULATED, UNARMOURED & ARMOURED CABLE CONFORMING TO IS 7098 (PART-1) - 1988

Number of Cores	Nominal Thickness of Insulation	Minimum Thickness of Inner Sheath	Unarmoured Cable		Steel Armoured Cable						Current Rating		Max DC Resistance at 20°C	A.C. Resistance at 90°C
					Strip Armoured Cable			Round Wire Armoured Cable						
			Nominal Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Strip	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	Nominal Dimension of Steel Round Wire	Minimum Thickness of Outer Sheath	Approx. Overall Diameter of Cable	In Ground	In Free air		
Nos.	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Amp.	Amp.	ohm/km	ohm/km
2	0.7	0.3	1.8	12.0	-	-	-	1.4	1.24	14.0	39	32	7.41	9.48
3	0.7	0.3	1.8	12.0	-	-	-	1.4	1.24	14.0	34	30	7.41	9.48
4	0.7	0.3	1.8	13.0	-	-	-	1.4	1.24	15.0	34	30	7.41	9.48
5	0.7	0.3	1.8	14.0	-	-	-	1.4	1.24	16.0	31	28	7.41	9.48
6	0.7	0.3	1.8	15.0	-	-	-	1.4	1.24	17.0	29	26	7.41	9.48
7	0.7	0.3	1.8	15.0	-	-	-	1.4	1.24	17.0	27	25	7.41	9.48
8	0.7	0.3	1.8	16.0	-	-	-	1.4	1.24	18.0	26	24	7.41	9.48
9	0.7	0.3	1.8	17.0	-	-	-	1.4	1.40	19.0	25	22	7.41	9.48
10	0.7	0.3	1.8	18.5	4 x 0.80	1.40	19.0	1.6	1.40	21.0	24	21	7.41	9.48
12	0.7	0.3	1.8	19.0	4 x 0.80	1.40	20.0	1.6	1.40	21.5	22	20	7.41	9.48
14	0.7	0.3	1.8	20.0	4 x 0.80	1.40	21.0	1.6	1.40	22.0	21	19	7.41	9.48
16	0.7	0.3	2.0	21.0	4 x 0.80	1.40	22.0	1.6	1.40	23.0	20	18	7.41	9.48
19	0.7	0.3	2.0	22.0	4 x 0.80	1.40	23.0	1.6	1.40	24.0	19	17	7.41	9.48
24	0.7	0.3	2.0	26.0	4 x 0.80	1.40	27.0	1.6	1.40	28.0	17	16	7.41	9.48
27	0.7	0.3	2.0	26.5	4 x 0.80	1.40	27.0	1.6	1.40	28.5	16	16	7.41	9.48
30	0.7	0.3	2.0	27.0	4 x 0.80	1.40	28.0	1.6	1.40	29.0	16	14	7.41	9.48
37	0.7	0.3	2.0	29.0	4 x 0.80	1.40	30.0	1.6	1.56	31.5	15	13	7.41	9.48
42	0.7	0.4	2.2	32.0	4 x 0.80	1.56	33.0	2.0	1.56	34.5	14	12	7.41	9.48
52	0.7	0.4	2.2	34.5	4 x 0.80	1.56	35.0	2.0	1.56	37.0	13	12	7.41	9.48
61	0.7	0.4	2.2	36.5	4 x 0.80	1.56	37.0	2.0	1.56	39.0	12	11	7.41	9.48

Note : These Cables can be manufactured with Stranded conductor also

Capacitance and Reactance

Capacitance Approximate Capacitance (Microfarad/Km) 1.1kv XLPE Cables				
Nominal Area Conductor	Single Core			Three & Half and
Sq. mm	Unarmoured	Armoured	Two Core	Four Core
1.5	0.19	-	0.051	0.15
2.5	0.24	-	0.058	0.18
4	0.29	-	0.065	0.22
6	0.34	-	0.071	0.25
10	0.43	0.32	0.081	0.31
16	0.51	0.38	0.088	0.36
25	0.49	0.38	0.089	0.41
35	0.57	0.44	0.096	0.47
50	0.58	0.46	0.098	0.50
70	0.63	0.51	1.10	0.53
95	0.73	0.59	0.11	0.61
120	0.74	0.61	0.11	0.63
150	0.73	0.61	0.11	0.64
185	0.69	0.59	0.11	0.65
240	0.74	0.64	0.11	0.66
300	0.80	0.69	0.12	0.67
400	0.83	0.70	0.12	0.67
500	0.83	0.71	0.12	0.69
630	0.87	0.75	0.11	0.73
800	0.92	0.78	-	-
1000	0.94	0.81	-	-

Reactance Approximate Reactance at 50Hz (Ohm/km) 1.1kv XLPE Cables			
Nominal Area Conductor	Single Core		
Sq. mm	Unarmoured	Armoured	Multi Core
1.5	0.155	-	0.107
2.5	0.142	-	0.0985
4	0.132	-	0.0927
6	0.123	-	0.0884
10	0.114	0.134	0.0837
16	0.108	0.125	0.0808
25	0.103	0.120	0.0805
35	0.0986	0.114	0.0783
50	0.0937	0.108	0.0750
70	0.0900	0.102	0.0740
95	0.0865	0.100	0.0724
120	0.0841	0.0968	0.0712
150	0.0839	0.0941	0.0716
185	0.0836	0.0932	0.0718
240	0.0813	0.0900	0.0710
300	0.0795	0.0881	0.0705
400	0.0787	0.0873	0.0704
500	0.0779	0.0859	0.0702
630	0.0785	0.0843	0.0698
800	0.0755	0.826	-
1000	0.0752	0.0825	-

Short Circuit Rating for 1 Second Duration for XLPE Insulated Cables with Copper and Aluminium Conductors. (Current in kAmps)

Nominal Size	XLPE Insulated	
Sq. mm	Copper	Aluminium
1.5	0.21	-
2.5	0.36	-
4	0.57	0.38
6	0.86	0.57
10	1.40	0.94
16	2.30	1.50
25	3.60	2.40
35	5.00	3.30
50	7.10	4.70
70	10.00	6.60
95	13.60	9.00
120	17.10	11.30
150	21.40	14.20
185	26.40	17.50
240	34.30	22.60
300	42.90	28.30
400	57.10	37.70
500	71.40	47.20
630	90.00	59.40
800	114.30	75.50
1000	142.90	94.30

1. Max. Conductor Temperature during operation - 90°C
2. Max Conductor Temperature during short circuit - 250°C

Formula relating short circuit rating with duration

$$It = \frac{I\,sh}{t}$$

where

It = Short Circuit Rating for t seconds.

t = Duration in seconds

Ish = Short Circuit rating for 1 second.

SHOP FLOOR

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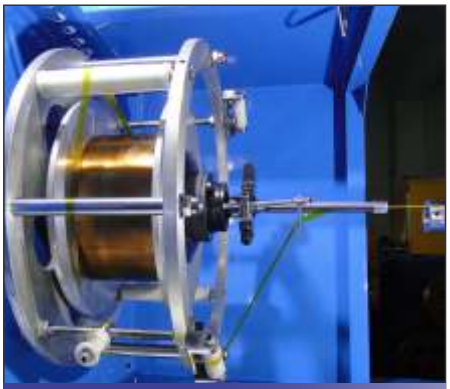

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