

LT AERIAL Bunched Cables

1.1 KV Volt Grade, are used for distributing power to individual consumers by utility service providers such as electricity boards and electricity distributing authorities. The cables are suspended overhead using electrical poles. The cables can be tapped intermittently from any required position, enabling them to be used in urban as well as rural areas.

Configuration

Single Phase or Three Phase systems with or without Street Light line.

Conductor

Phase or lighting conductor: Electrical grade Aluminium of H2 or H4 grade as per IS: 8130 Messenger conductor: Aluminium Silica and Magnesium Alloy.

Insulation

XLPE with Sioplas Technique.

Identification of Phase

Ridges provided on the insulation of Phase Conductors: 1 ridge for the 1st phase, 2 ridges for the 2nd phase and 3 ridges for the 3rd phase. The Neutral phase may have 4 ridges if required.

Colour of Insulation

As the cable remains exposed to environmental elements such as UV rays from sunlight, the insulation is mixed with a small amount of carbon black to prevent the deterioration of polythene.

Construction of Cable

The phase conductor can be of single phase or three phases. A lighting conductor can be also incorporated for street lighting. A messenger conductor supports the weight of the cable and keeps the assembly strung under tension.

Phase conductors are made of concentrically stranded Aluminium Wires having 7 or 19 wires. Messenger conductors are made of a specially treated Silica, Magnesium and Aluminium Alloy having 7 or 19 wires. Phase and lighting conductors may be insulated with XLPE compound of Sioplas Technology. Messenger conductors are kept either bare or insulated. Phase and lighting conductors are sometimes twisted around the messenger conductor. In special cases a neutral conductor may also be provided separately. Generally, the messenger acts as earth and neutral.

This construction has additional advantages

Cables are lighter in weight

Easy to install

Can be installed on poles, on walls etc.

Easy to make terminations and branch off joints on live wire as well

Protection against power theft

Twisting and Laying

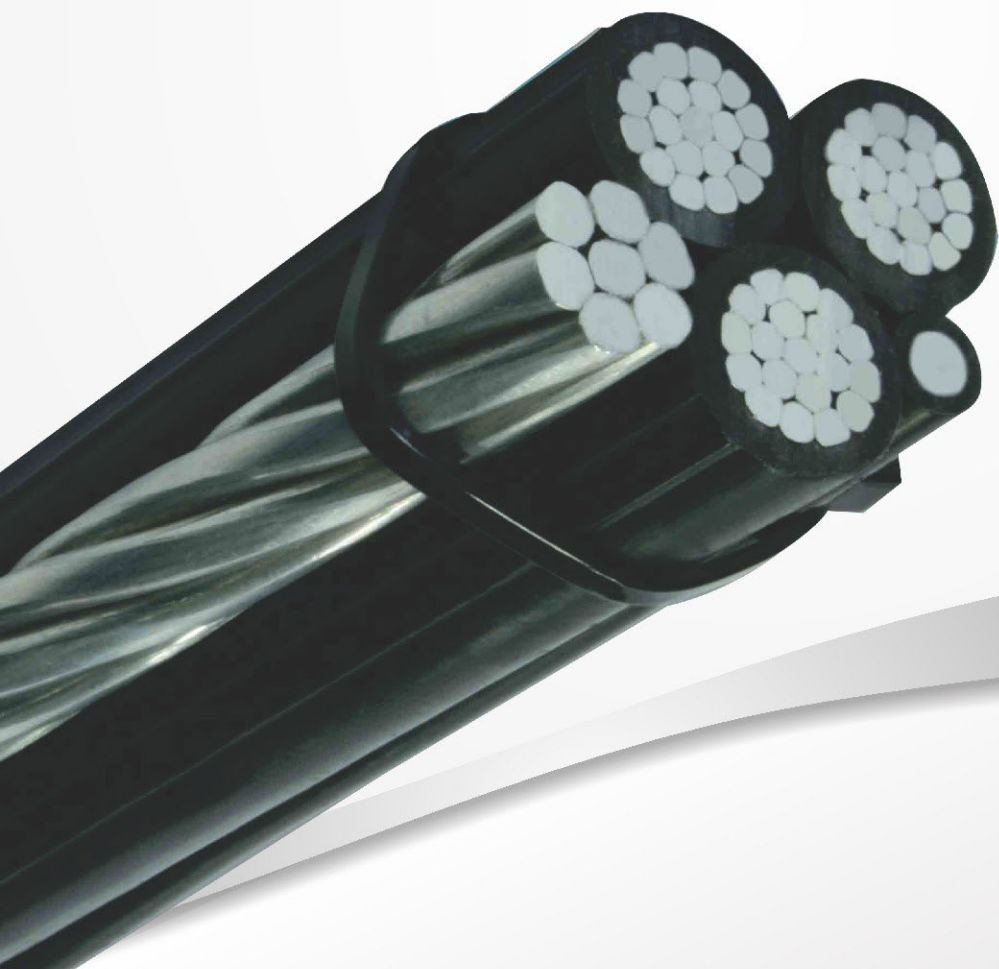
The phase conductors are being allowed to slide freely over the messenger conductor during temperature fluctuation. It is also to be ensured that during sliding the insulation should not get scratches due to rubbing effect. During expansion and contraction, the phase conductors try to move toward the ends exerting additional stress at the terminating point or at the clipping point. By special twisting process such forces are neutralised. During installation and branching off, phases conductors can easily be loosened to crimp to the connectors without straining and damaging the phase conductor.



Cross sectional view of Aerial Bunch Cables



LT AERIAL BUNCH CABLES



Zenium Aerial Bunched Cable: 1.1KV grade Stranded & Compacted Aluminium Phase Conductor, and Stranded Messenger Conductor with All Aluminium Alloy, Phase Conductor is insulated with XLPE (Sioplas) Compound, Messenger is either insulated or bare. Referred specification IS:14255-1995 up to the latest amendment.

Sl. No	Description and Type of Cable	Number of Wires		Thickness of XLPE Insulation		Approx overall Diameter	Approx Weight of Cable	Breaking Load of Messenger	Maximum D.C Resistance		AC Current Rating Amps
		Phase	Messenger	Phase	Messenger				Ohms / Km	Phase	
	With insulated messenger conductor			mm	mm	mm	Kg/KM	KN (min)	Phase	Messenger	In air at 40°C
1	1 C x 16 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	20.0	165	7.0	1.910	1.380	72
2	3 C x 16 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	22.0	301	7.0	1.910	1.380	64
3	1 C x 25 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	22.4	195	7.0	1.200	1.380	99
4	3 C x 25 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	25.0	390	7.0	1.200	1.380	84
5	1 C x 35 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	27.3	227	7.0	0.868	1.380	120
6	3 C x 35 mm ² + 25 mm ² (insulated)	7	7	1.20	1.20	27.4	486	7.0	0.868	1.380	105
7	1 C x 35 mm ² + 35 mm ² (insulated)	7	7	1.20	1.20	28.0	259	9.8	0.868	0.986	120
8	3 C x 35 mm ² + 35 mm ² (insulated)	7	7	1.20	1.20	28.4	518	9.8	0.868	0.986	105
9	1 C x 50 mm ² + 35 mm ² (insulated)	7	7	1.50	1.20	29.0	317	9.8	0.641	0.986	150
10	3 C x 50 mm ² + 35 mm ² (insulated)	7	7	1.50	1.20	32.3	692	9.8	0.641	0.986	130
11	3 C x 70 mm ² + 50 mm ² (insulated)	7	7	1.50	1.50	37.5	939	14.0	0.443	0.689	155
12	3 C x 70 mm ² + 70 mm ² (insulated)	7	7	1.50	1.50	39.0	1002	19.7	0.443	0.492	155
13	3 C x 95 mm ² + 70 mm ² (insulated)	19	7	1.50	1.50	42.7	1237	19.7	0.320	0.492	190
14	3 C x 120 mm ² + 70 mm ² (insulated)	19	7	1.60	1.50	46.0	1482	19.7	0.253	0.492	220
15	3 C x 150 mm ² + 70 mm ² (insulated)	19	7	1.80	1.50	50.0	1791	19.7	0.206	0.492	250
	With bare messenger conductor										
1	1 C x 16 mm ² + 25 mm ² (bare)	7	7	1.20	N.A*	18.5	137	7.0	1.910	1.380	72
2	3 C x 16 mm ² + 25 mm ² (bare)	7	7	1.2	-do-	19.3	272	7.0	1.910	1.380	64
3	1 C x 25 mm ² + 25 mm ² (bare)	7	7	1.20	-do-	19.5	167	7.0	1.200	1.380	99
4	3 C x 25 mm ² + 25 mm ² (bare)	7	7	1.20	-do-	20.5	362	7.0	1.200	1.380	84
5	1 C x 35 mm ² + 25 mm ² (bare)	7	7	1.20	-do-	22.0	199	7.0	0.868	1.380	120
6	3 C x 35 mm ² + 25 mm ² (bare)	7	7	1.20	-do-	23.5	458	7.0	0.868	1.380	105
7	1 C x 35 mm ² + 35 mm ² (bare)	7	7	1.20	-do-	24.6	226	9.8	0.868	0.986	120
8	3 C x 35 mm ² + 35 mm ² (bare)	7	7	1.20	-do-	25.0	485	9.8	0.868	0.986	105
9	1 C x 50 mm ² + 35 mm ² (bare)	7	7	1.50	-do-	26.6	284	9.8	0.641	0.986	150
10	3 C x 50 mm ² + 35 mm ² (bare)	7	7	1.50	-do-	26.8	659	9.8	0.641	0.986	130
11	3 C x 70 mm ² + 50 mm ² (bare)	7	7	1.50	-do-	31.2	890	14.0	0.443	0.689	155
12	3 C x 70 mm ² + 70 mm ² (bare)	7	7	1.50	-do-	34.4	946	19.7	0.443	0.492	155
13	3C x 95 mm ² + 70 mm ² (bare)	19	7	1.50	-do-	36.0	1179	19.7	0.320	0.492	190
14	3C x 120 mm ² + 70 mm ² (bare)	19	7	1.60	-do-	38.0	1425	19.7	0.253	1.492	220
15	3C x 150 mm ² + 70 mm ² (bare)	19	7	1.80	-do-	40.0	1735	19.7	0.206	0.492	250

Sl. No.	Description and Type of Cable	Number of Wires		Thickness of XLPE Insulation		Approx overall Diameter	Approx Weight of Cable	Breaking Load of Messengers	Maximum D.C Resistance		AC Current Rating Amps
		Phase	Messenger	Phase	Messenger				Ohms / Km	Phase	
	With insulated messenger conductor			mm	mm	mm	Kg/KM	KN (min)	Phase	Messenger	In air at 40°C
1	3 C x 16 mm ² + 25 mm ² (insulated)+16 mm ²	7	7	1.20	1.20	23.5	369	7.0	1.910	1.380	62
2	3 C x 25 mm ² + 25 mm ² (insulated)+16 mm ²	7	7	1.20	1.20	25.0	457	7.0	1.200	1.380	82
3	3 C x 35 mm ² + 25 mm ² (insulated)+16 mm ²	7	7	1.20	1.20	27.5	554	7.0	0.868	1.380	103
4	3 C x 35 mm ² + 35 mm ² (insulated)+16 mm ²	7	7	1.20	1.20	28.4	586	9.8	0.868	0.986	103
5	3 C x 50 mm ² + 35 mm ² (insulated)+16 mm ²	7	7	1.50	1.20	32.5	760	9.8	0.641	0.986	127
6	3 C x 70 mm ² + 50 mm ² (insulated)+16 mm ²	7	7	1.50	1.50	37.5	1007	14.0	0.443	0.689	154
7	3 C x 70 mm ² + 70 mm ² (insulated)+16 mm ²	7	7	1.50	1.50	39.5	1070	19.7	0.443	0.492	154
8	3 C x 95 mm ² + 70 mm ² (insulated)+16 mm ²	19	7	1.50	1.50	42.5	1304	19.7	0.320	0.492	188
9	3 C x 120 mm ² + 70 mm ² (insulated)+16 mm ²	19	7	1.60	1.50	46.8	1550	19.7	0.253	0.492	218
10	3 C x 150 mm ² + 70 mm ² (insulated)+16 mm ²	19	7	1.80	1.50	50.8	1860	19.7	0.206	0.492	248
	With bare messenger conductor										
1	3 C x 16 mm ² + 25 mm ² (bare)+16 mm ²	7	7	1.20	N.A*	19.5	340	7.0	1.910	1.380	62
2	3 C x 25 mm ² + 25 mm ² (bare)+16 mm ²	7	7	1.20	-do-	20.5	429	7.0	1.200	1.380	82
3	3 C x 35 mm ² + 25 mm ² (bare)+16 mm ²	7	7	1.20	-do-	23.5	526	7.0	0.868	1.380	103
4	3 C x 35 mm ² + 35 mm ² (bare)+16 mm ²	7	7	1.20	-do-	25.0	553	9.8	0.868	0.986	103
5	3 C x 50 mm ² + 35 mm ² (bare)+16 mm ²	7	7	1.50	-do-	26.8	727	9.8	0.641	0.986	127
6	3 C x 70 mm ² + 50 mm ² (bare)+16 mm ²	7	7	1.50	-do-	31.5	958	14.0	0.443	0.689	154
7	3 C x 70 mm ² + 70 mm ² (bare)+16 mm ²	7	7	1.50	-do-	34.5	1013	19.7	0.443	0.492	154
8	3 C x 95 mm ² + 70 mm ² (bare)+16 mm ²	19	7	1.50	-do-	37.0	1248	19.7	0.320	0.492	188
9	3 C x 120 mm ² + 70 mm ² (bare)+16 mm ²	19	7	1.60	-do-	39.0	1493	19.7	0.253	0.492	218
10	3 C x 150 mm ² + 70 mm ² (bare)+16 mm ²	19	7	1.80	-do-	40.0	1803	19.7	0.206	0.492	248

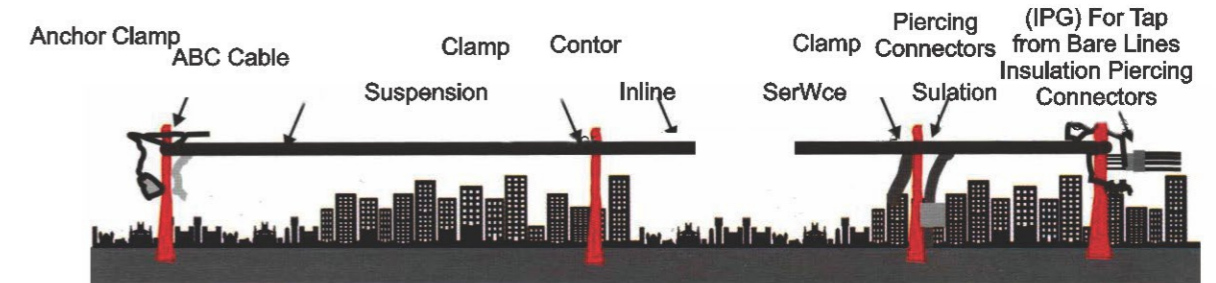
Note: Insulation thickness of 16 mm² for lighting conductor current rating of 16 mm² lighting conductor Conductor operating temperature Short circuit temperature of one sec,

1.20 mm
62.Amps.
90°C
250°C

Ambient Air temperature is 40°C

Air Temperature °C	20	25	30	35	40	45	50
Rating Factor	1.32	1.25	1.16	1.09	1	0.9	0.81

* Not Applicable



Typical LT Aerial Bunch Cable Network