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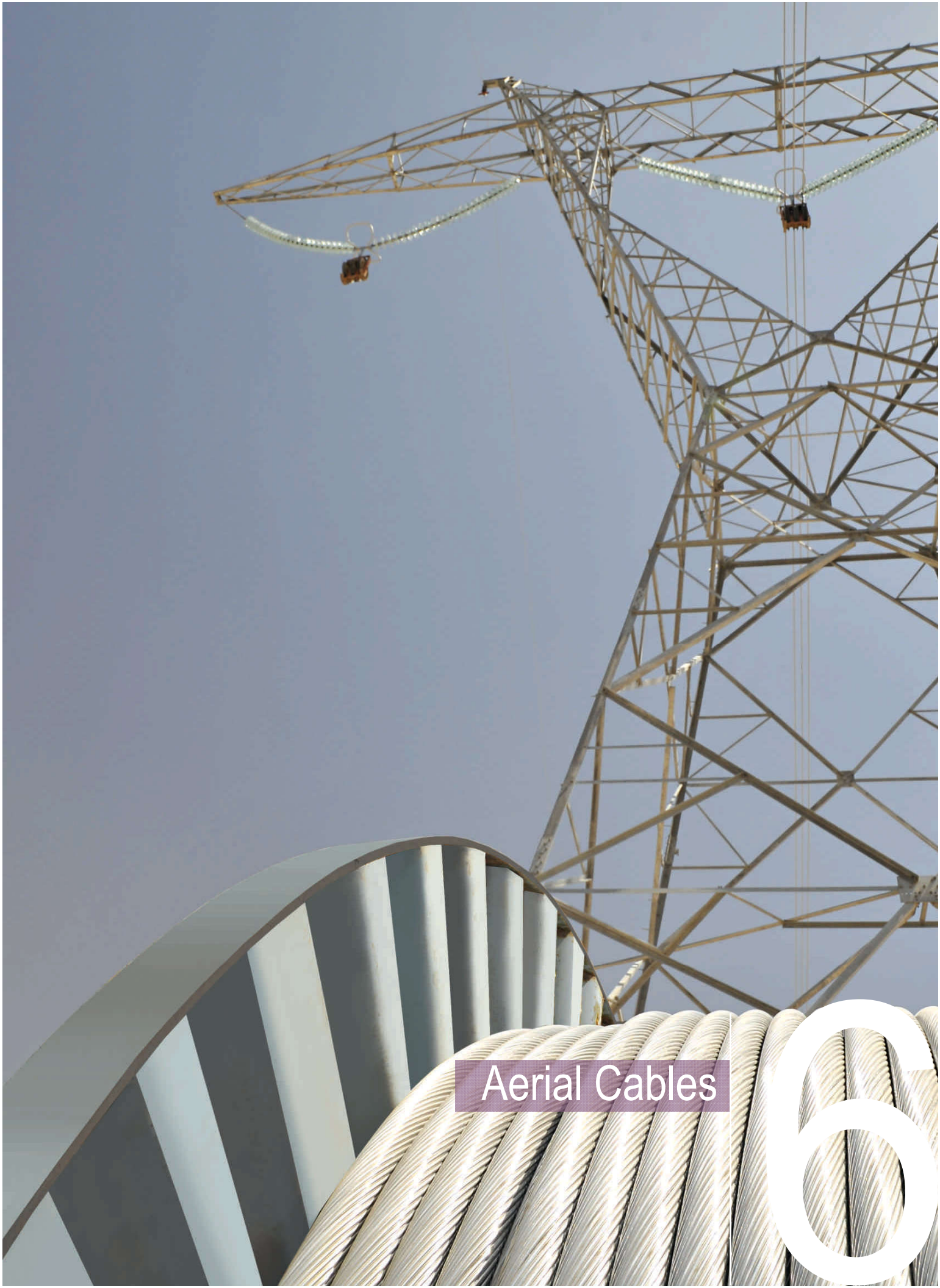
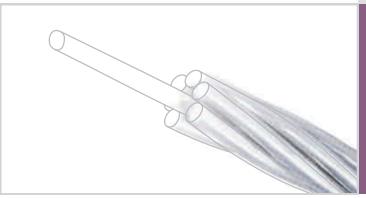


Aerial Cables

6

CONTENTS



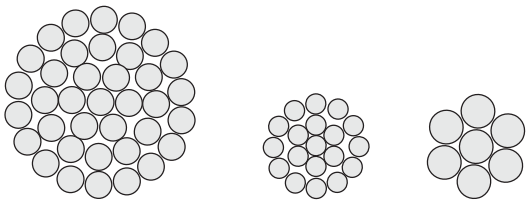


All Aluminium conductor – AAC

Standard:
IEC 61089 Type A1

Construction :
All-Aluminium conductors are the most favoured type for use in the construction of relatively short span distribution schemes and are in common use on lines for voltages up to 63 KV.
Another frequent application for all – Aluminium conductor is in flexible busbar connections. Although aluminium-to-copper connection can be made, it is better to use aluminium conductors for service connections, various forms cable being available for this purpose.The data sheets show the most common sizes of conductor but other sizes, related to any recognized specification, can be supplied.

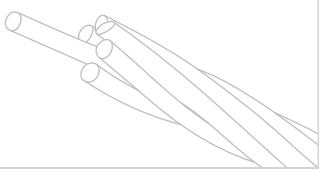
Application:
These conductors have great economical advantage when compared with copper type bare conductors and Insulated cables regarding installation of overhead distribution lines at low and medium voltages.



37 All Al. 19 All Al. 7 All Al.

CONSTRUCTIONAL & DESIGN DATA

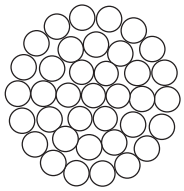
Code number	Area	No. of Wires	Dia. of Wires	Weight	Rated strength	D.C. resistance
	mm²	No	mm	Kg/km	KN	ohm/km
10	10	7	1.35	27.4	1.95	2.8633
15	15	7	1.71	43.8	3.04	1.7896
25	25	7	2.13	68.4	4.50	1.1453
40	40	7	2.70	109.4	6.80	0.7158
63	63	7	3.39	172.3	10.39	0.4545
100	100	19	2.59	274.8	17.00	0.2877
125	125	19	2.89	343.6	21.25	0.2302
160	160	19	3.27	439.8	26.40	0.1798
200	200	19	3.66	549.7	32.00	0.1439
250	250	19	4.09	687.1	40.00	0.1151
315	315	37	3.29	867.9	51.97	0.0916
400	400	37	3.71	1102.0	64.00	0.0721
450	450	37	3.94	1239.8	72.00	0.0641
500	500	37	4.15	1377.6	80.00	0.0577
560	560	37	4.39	1542.9	89.60	0.515
630	630	61	3.63	1738.3	100.80	0.0458
710	710	61	3.85	1959.1	113.60	0.0407
800	800	61	4.09	2207.4	128.00	0.0361
900	900	61	4.33	2483.3	144.00	0.0321
1000	1000	61	4.57	2759.2	160.00	0.0289
1120	1120	91	3.98	3093.5	179.20	0.0258
1250	1250	91	8.14	3452.6	200.00	0.0231
1400	1400	91	4.43	3866.9	224.00	0.0207
1500	1500	91	4.58	4143.1	240.00	0.0193

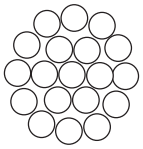


All Aluminium Alloy conductor – AAAC

Standard:
German Standard DIN 48201

Construction :
These conductors are formed by several of these, with other wires of galvanized steel, stranded in concentric layers. The central wire which from the core are of either alloy or steel and the outer layers are of alloy. Normally the composition of these conductors is the same as the ones pertaining to the aluminium steel conductors.In the case of alloy conductors, all the wire can be the same nominal diameter and in the case of alloy conductors with a steel core, the diameters of the alloy and the steel wire can be the same or different of one other.The basic composition of this alloy pertains to the aluminium - magnesium - silicon group which is also known in Europe as Almelec Aldery and after their drawing they must undergo a thermal treatment at a temperature of approximately 165°C.


37 Al.Alloy

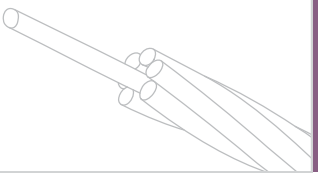

19 Al.Alloy


7 Al.Alloy

Application:
As regards aluminium, the wire of this alloy has a double tensile strength (greater than 30kg/mm^2), its electrical conductivity is 15% lower (53% instead of 61%) and the weight is the same.By making use of these characteristics, in many cases, an alloy conductor can be replaced the Aluminium conductor steel reinforced with a similar installation cost. The Aluminium Alloy steel reinforced conductors have a much higher strength and low, medium, high and very high voltage lines.

CONSTRUCTIONAL & DESIGN DATA

Code number		Stranding and wire diameter	Overal diameter	Weight	Nominal breaking load	Maximum DC resistance at 20°C	Maximum AC resistance		Current rating ambient temp	
Nominal	Actual						25°c	75°c	25°c	40°c
mm²	mm²	No./mm	mm	Kg/km	Kp	ohm/km	ohm/km		A	
16	15.89	7/1.7	5.1	43	453	2.09127	2.13350	2.55490	96	80
25	24.25	7/2.1	6.3	66	691	1.37047	1.39827	1.67445	127	106
35	34.36	7/2.5	7.5	94	979	0.96700	0.98715	1.18213	160	134
50	49.46	7/3.0	9.0	135	1409	0.67153	0.68552	0.82092	206	170
50	48.36	19/1.8	9.0	133	1377	0.69063	0.70502	0.84427	201	168
70	65.82	19/2.10	10.5	181	1875	0.50740	0.51797	0.62028	246	206
95	93.27	19/2.50	12.5	256	2657	0.35802	0.36601	0.43831	310	260
120	117.00	19/2.80	14.0	322	3333	0.28541	0.29178	0.34941	361	303
150	147.10	37/2.25	15.7	405	4191	0.22742	0.23279	0.27888	420	352
185	181.60	37/2.50	17.5	500	5174	0.18421	0.18890	0.22621	483	405
240	242.53	61/2.25	20.2	670	6909	0.13835	0.14265	0.17082	584	489
300	299042	61/2.50	22.5	827	8530	0.11206	0.11600	0.13891	671	562
400	400.13	61/2.89	26.0	1105	11398	0.08386	0.08839	0.10585	807	676
500	499.82	61/3.23	29.1	1381	14238	0.06713	0.07137	0.08546	932	781
625	626.28	91/2.96	32.6	1733	17838	0.05369	0.05830	0.06981	1071	898
800	802.06	91/3.35	36.8	2226	22848	0.04192	0.04752	0.05691	1237	1036
1000	999.68	91/3.74	41.1	2767	28477	0.03367	0.04037	0.04835	1393	1166



Aluminium conductor Steel Reinforced – ACSR-GA

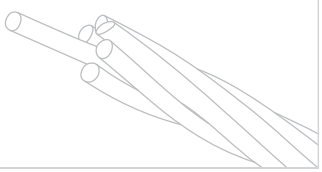
Standard:
British Standard BS 215 Part 2

Construction :
Aluminium Conductors Consist of several wires of Aluminium and galvanized high carbon steel, stranded in concentric layers, the wire or wires which form the core are made galvanized steel core of 1,7 or 19 wires, Surrounded by concentric layers of Aluminium wires.

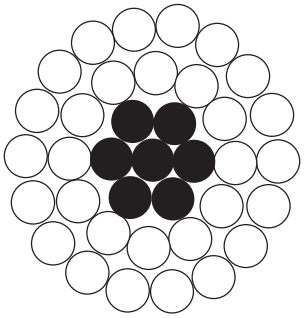
Application:
The Aluminium conductors (ACSR) are suitable for over head lines of medium, high and extra high voltages for short or long distances.

CONSTRUCTIONAL & DESIGN DATA

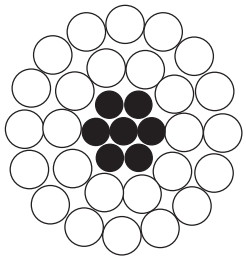
Code name	Area				Stranding and wire diameter		Approx derail diameter	Weight			Nominal breaking load	Maximum DC resistance at 20°C	Maximum AC resistance		current rating ambient temp	
	Aluminium		Steel	Total	Aluminium	Steal		Aluminium	Steal	Total			25°c	75°c	25°c	40°c
	Nominal	mm²	mm²	mm²	No./mm	No./mm	mm	kg/km	kg/km	kg/km	kgf	ohm/km	ohm/km		A	
Mole	-	10.60	1.77	12.37	6/1.50	1/1.50	4.5	29	14	43	421	2.63987	2.69317	3.22513	82	69
Squirrel	-	2098	3.50	24.48	62.11	½.11	6.33	58	27	85	806	1.3414	1.36120	1.63006	129	108
Gopher	25	26.25	4.37	30.62	6/2.36	12.36	7.08	72	34	106	980	1.06645	1.08808	1.30300	149	135
Weasel	30	31.61	5.27	36.88	6/2.59	12.59	7.77	87	41	128	1157	0.88545	0.90358	1.082206	169	141
Fox	-	3668	6.11	42.79	6/2.79	12.79	8.37	101	48	148	1343	0.76306	0.77868	0.93249	186	165
Ferret	40	42.41	7.07	49.48	6/3.00	1/3.00	9	116	55	171	1553	0.65997	0.67348	0.80651	205	172
Rabbit	50	52.88	8.81	61.70	6/3.35	1/3.35	10.05	145	69	214	1873	0.52927	0.5429	0.64701	238	199
Mink	-	63.12	10.52	73.64	6/3.66	1/3.66	10.98	173	82	255	2223	044341	0.45289	0.54234	267	224
Shrunk	-	63.22	36.88	100.10	12/2.59	7/2.59	12.95	175	288	483	5378	0.42001	0.46076	0.55176	290	243
Beaver	-	75.02	12.50	87.52	6/3.99	1/3.99	11.97	206	97	303	2627	0.3709	0.38107	0.45634	300	251
Horse	70	73.36	42.79	116.16	12/2.79	7/2.79	13.95	203	334	537	6240	0.36195	0.39706	047549	321	269
Recon	-	79.21	13.20	92.42	6/4.10	¼.10	12.3	217	103	320	2774	0.35334	0.36123	043258	311	261
Otter	-	83.92	13.99	97.90	6/4.22	¼.22	12.66	230	109	339	2930	0.33353	0.34098	0.40833	323	271
Cat	-	95.42	15.90	111.33	6/4.50	¼.50	13.5	262	124	386	3341	0.29332	0.29986	0.35909	352	295
Hare	-	104.98	17.50	122.43	6/4.72	¼.72	14.16	288	136	424	3665	0.26661	0.27291	0.2368	376	314
Dog	100	104.98	13.55	118.53	6/4.72	7/1.57	14.15	288	106	394	3333	0.26811	0.27896	0.33406	374	313
Hyena	-	105,96	20.48	126.43	7/4.39	7/1.93	14.57	291	160	451	4194	0.26316	0.27602	0.33054	381	319
Leopard	-	13137	16.84	148.21	6/5.28	7/1.75	15.81	360	132	492	4157	0.21432	0.22338	0.28748	433	363
Coyote	-	131.74	20.06	151.80	26/2.54	7/1.91	15.89	364	156	510	4684	0.21443	022417	0.26845	434	364
Cougar	-	131.51	7.31	138.81	18/3.05	1/3.05	15.25	362	58	420	3116	0.21717	0.22270	0.26669	425	355
Tiger	-	131.23	30.62	161.85	30/2.36	7/2.36	16.52	363	239	602	5916	0.21273	0.22466	0.26903	441	370
Wolf	150	158.05	36.88	194.93	30/2.59	7/2.59	18.13	437	288	725	7061	0.17663	0.18697	0.22391	499	419
-	150	158.65	8.81	167.46	18/3.35	1/3.35	16.75	437	69	506	3460	0.1900	0.18502	0.22155	481	403
Lynx	175	183.40	42.79	226.20	30/2.79	7/2.79	19.53	507	334	841	8137	0.15221	0.16113	0.19295	551	462
-	175	184.23	10.24	194.47	18/3.61	1/3.61	18.05	508	80	558	3983	0.15501	0.15933	0.19080	532	446



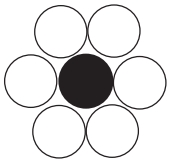
Aluminium conductor Steel Reinforced – ACSR-GA



30 Al.
7 Steel



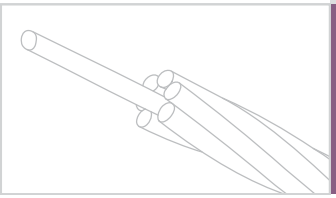
26 Al.
7 Steel



6 Al.
1 Steel

CONSTRUCTIONAL & DESIGN DATA

Code name	Area				Stranding and wire diameter		Approx derail diameter	Weight			Nominal breaking load	Maximum DC resistance at 20°C	Maximum AC resistance		Current rating ambient temp	
	Aluminium		Steel	Total	Aluminium	Steel		Aluminium	Steel	Total			25°c	75°c	25°c	40°c
	Nominal	mm²	mm²	mm²	No./mm	No./mm	mm	kg/km	mm²	mm²	mm	ohm/km	ohm/km		A	
Panther	200	21205	49.48	261.53	30/2.00	7/3.00	21	586	387	973	9408	0.13165	0.13979	0.16740	806	509
Lion	-	238.26	55.59	293.85	30/3.18	7/3.18	22.26	658	435	1083	10247	0.11717	0.12491	0.14958	654	549
Bear	-	264.42	61.70	326.11	30/3.35	7/3.35	26.45	731	482	1213	11345	0.10558	0.11310	0.18544	700	587
Goat	-	324.30	75.67	399.97	30/3.71	7/3.71	25.97	896	591	1488	13848	0.08608	0.09277	0.1110	799	671
Sheep	-	3750.10	87.52	462.62	30/3.99	7/3.99	27.93	1036	684	1721	15940	0.07442	0.08079	0.09675	878	736
Antelope	-	374.10	48.49	422.59	54/2.97	7/2.97	26.73	1015	379	1394	12087	0.07445	0.07975	09550	865	725
Bison	-	381.69	49.48	431.17	54/3.00	7/3.00	27	1036	337	1423	12130	0.07297	0.07817	0.09360	876	736
-	200	210.63	11.70	222.33	18/3.86	1/3.86	19.3	580	91	672	4513	0.13558	0.14291	0.1713	674	481
Deer	-	429.59	100.24	529.83	300/4.27	7/4.27	29.89	1187	783	1971	18212	0.06498	0.07114	0.08520	957	803
Zebra	400	428.87	55.59	484.465	54/3.18	7/3.18	28.62	1164	435	1599	13454	0.06494	0.07016	0.08402	943	791
Elk	-	477.12	111.33	588.44	30/4.50	7/4.50	31.5	1318	870	2189	20227	0.5851	0.06469	0.07747	1022	857
Camel	-	475.95	61.7	537.65	54/3.35	7/3.35	30.15	1292	482	1774	14883	0.05852	0.06385	0.07646	1006	844
Moose	-	528.47	68.5	596.98	54/3.53	7/3.53	31.77	1434	685	1970	16417	0.6270	0.05816	0.06985	1073	900



Aerial Bundled Cables : ABC

Type 1: SINGLE PHASE SELF SUPPORTING CABLE WITH ACSR CORE (0.6/1KV) NA2X-T

- **construction:**
  Conductor : Aluminium (phase and lighting), ACSR (neutral and messenger)
  insulation : XLPE
- **abbreviation:**
  AL/XLPE
  ACSR/XLPE
- **standard:** TAVANIR, NFC 33-209

TYPE 2: 3 PHASE SELF SUPPORTING CABLE WITH ACSR CORE (0.6/1KV) NA2X-T

- **construction:**
  Conductor : Aluminium (3 phases, and lighting), ACSR (neutral and messenger)
  insulation : XLPE
- **abbreviation:**
  AL/XLPE
  ACSR/XLPE
- **standard:** TAVANIR, NFC 33-209

TYPE 3: 3 PHASE SELF SUPPORTING CABLE WITH NEUTRAL AND LIGHTING CORE (0.6/1KV)TYPE 2 NA2X-T

- **construction:**
  Conductor : Aluminium (3 phases, neutral and lighting), galvanized steel wires (messenger)
  Insulation : XLPE
- **abbreviation:**
  AL/XLPE
- **standard:**TAVANIR, NFC 33-209

TYPE4: 3 PHASE SELF-SOPPORTING CABLE WITH LIGHTING, NAUTRAL – MESSENGER AL-ALLOY NA2X-T

- **construction:** aluminium (phase and lighting) al-alloy (messenger - nautral)
  Insulation : XLPE
- **abbreviation:**
  AL/XLPE
- **standard:**TAVANIR, NFC 33-209

Type 5: MEDIUM VOLTAGE SELF SUPPORTING CABLES 3 PHASE 20KV CABLES WITH INDIVIDUAL MESSENGER

- **construction:**
  Conductor : stranded and compacted aluminium conductor screen and insulation screen :
  extruded semi conductor insulation : dry cured XLPE
  Outer covering of each core : uv resistant HDPE
  Messenger : steel wires
  Insulation of messenger : uv resistant PVC
- **abbreviation :**
  AL/SC/XLPE/SC/SC TAPE/CWS/PET/HDPE
- **standard :**IEC 60502-2, IEC 60228