

AAAC - ASTM - B All Aluminium Alloy Conductor



Eland Product Group: **A4A**

APPLICATION

AAAC is used as a bare overhead conductor for power transmission and distribution lines, on aerial circuits that require a larger mechanical resistance than AAC, and a better corrosion resistance than ACSR. The sag characteristics and the strength-to-weight ratio of AAAC is better than both AAC / ACSR.

CABLE STANDARDS

ASTM - B 399 Metric Units, ASTM - B 231, TS IEC 1089, DIN 48201, BS 215, UNE 21.018



The electrical and dimensional properties of this product are measured by the Technical and Quality Assurance department at the Eland Cables laboratory. Cable performance in respect of conductor resistance, construction quality (workmanship), dimensional consistency, and other parameters are verified to published standards and approved product drawings. Conformance to RoHS (Restriction of the use of Hazardous Substances) is determined and confirmed.

CONSTRUCTION

Conductor

Aluminium alloy conductor Type AL2 to AL7 as per EN 50183 to BS 215

DIMENSIONS

ASTM Sizes

CODE	SIZE KCM	STRANDING	DIAMETER inches		NOMINAL CROSS SECTIONAL AREA (sq ins)	WEIGHT lbs/1000ft	RATED STRENGTH (lbs)	RESISTANCE ohms/1000ft		CURRENT RATING Amps	SIZE	ACSR WITH EQUIV. DIAM. STRANDING Alt/Stl
			Individual wires	Total				DC 20°C	AC 75°C			
AKRON	30.58	7	0.0661	0.198	0.024	28.7	1110	0.659	0.785	107	6	6\1
ALTON	48.69	7	0.0834	0.25	0.0382	45.7	1760	0.414	0.493	143	4	6\1
AMES	77.47	7	0.1052	0.316	0.0608	72.7	2800	0.26	0.31	191	2	6\1
AZUSA	123.3	7	0.1327	0.398	0.0968	115.7	4460	0.163	0.195	256	1/0	6\1
ANAHEIM	155.4	7	0.149	0.447	0.1221	145.9	5390	0.13	0.154	296	2/0	6\1
AMHERST	195.7	7	0.1672	0.502	0.1537	183.7	6790	0.103	0.1230	342	3/0	6\1
ALLIANCE	246.9	7	0.1878	0.563	0.1939	231.8	8560	0.0816	0.0973	395	4/0	6\1
BUTTE	312.8	19	0.1283	0.642	0.2456	293.6	11000	0.0644	0.0769	460	266.8	26\7
CANTON	394.5	19	0.1441	0.721	0.3098	370.3	13300	0.0511	0.061	532	336.4	26\7
CAIRO	465.4	19	0.1565	0.783	0.3655	436.9	15600	0.0433	0.0518	590	397.5	26\7
DARIEN	559.5	19	0.1716	0.858	0.4394	525.2	18800	0.036	0.0431	663	477	26\17
ELGIN	652.4	19	0.1853	0.927	0.5124	612.4	21900	0.0309	0.0371	729	556.5	26\17
FLINT	740.8	37	0.1415	0.991	0.5818	695.5	24400	0.0272	0.0327	790	636	26\7
GREELY	927.2	37	0.1583	1.108	0.7282	870.4	30500	0.0217	0.0263	908	795	26\7

1. Resistance is calculated using ASTM standard increments of stranding, and metal conductivity of 52.5% IACS. AC resistance at 60 Hz.

2. Current ratings are based on 75°C conductor temperature, 250°C ambient, 2 ft/s wind, 96/watts/sq.foot sun, 0.5 coefficients of emissivity and absorption.

ASTM Sizes

CONDUCTOR SIZE c mil	AREA mm ²	NO. AND DIAMETER OF WIRES		OVERALL DIAMETER OF CONDUCTOR		LINEAR WEIGHT		RATED STRENGTH lb	MAXIMUM DC RESISTANCE AT 20°C ohms/km
		inch	mm	inch	mm	kg/km	daN		
66360	33.62	7 x 0.0974	7 x 2.47	0.291	7.41	93	1068	24	0.9942
105600	53.5	7 x 0.1228	7 x 3.12	0.368	9.36	148	1697	3815	0.6256
133100	67.44	7 x 0.1379	7 x 3.5	0.413	10.5	187	2052	4612	0.4959
167800	85.02	7 x 0.1548	7 x 3.93	0.464	11.8	235	2586	581	0.3936
211600	107.21	7 x 0.1739	7 x 4.42	0.522	13.26	296	3263	7332	0.3119
400000	202.68	19 x 0.1451	19 x 3.68	0.724	18.4	560	5974	13426	0.165
450000	228	19 x 0.1539	19 x 3.91	0.769	19.55	630	6719	151	0.1487
500000	253.35	19 x 0.1622	19 x 4.12	0.811	20.6	700	4764	16774	0.1321
550000	278.68	37 x 0.1219	37 x 3.1	0.854	21.7	769	8380	18835	0.1202
600000	304	37 x 0.1273	37 x 3.23	0.89	22.6	839	9138	20535	0.1102
650000	329.35	37 x 0.1325	37 x 3.36	0.926	23.52	910	9494	21336	0.1016
700000	354.7	37 x 0.1375	37 x 3.49	0.962	24.43	978	10220	22967	0.0944
750000	380	37 x 0.1424	37 x 3.61	0.995	25.27	1050	10940	2463	0.088
800000	405.36	37 x 0.147	37 x 3.73	1.02	26.1	1118	11680	26248	0.0826
900000	456	37 x 0.156	37 x 3.96	1.09	27.72	1260	13150	29551	0.0733
1000000	506.7	37 x 0.1644	37 x 4.17	1.15	29.2	1400	14610	32832	0.066

ASTM Sizes Metric Units

CODE	SIZE KCM	NOMINAL SIZE mm ²	STRANDING	DIAMETER inches		WEIGHT ¹ lbs/1000ft	RATED STRENGTH ² kg	RESISTANCE ³ ohms/1000ft		CURRENT RATING ⁴ Amps	SIZE mm ²	ACSR WITH EQUIV. DIAM. STRANDING alt/stl
				Individual Wires	Total			DC at 20°C	AC at 75°C			
AKRON	30.58	15.5	7	1.679	5.04	42.7	503	2.16	2.57	107	13.3	6/1
ALTON	48.69	24.67	7	2.118	6.36	68	798	1.36	1.62	143	21.15	6/1
AMES	77.47	39.25	7	2.672	8.02	108.2	1270	0.853	1.02	191	33.63	6/1
AZUSA	123.3	62.48	7	3.371	10.11	172.2	2023	0.536	0.639	256	53.31	6/1
ANAHEIM	155.4	78.74	7	3.785	11.35	217.1	2445	0.425	0.509	296	67.44	6/1
AMHERST	195.7	99.16	7	4.247	12.74	273.3	3080	0.338	0.403	342	85.03	6/1
ALLIANCE	246.9	125.1	7	4.77	14.31	344.9	3883	0.268	0.319	395	107.22	6/1
BUTTE	312.8	158.5	19	3.259	16.29	436.9	4989	0.211	0.252	460	135.19	26/7
CANTON	394.5	199.9	19	3.66	18.3	551.1	6033	0.168	0.2	532	170.46	26/7
CAIRO	465.4	235.8	19	3.975	19.88	650	7076	0.142	0.17	590	201.42	26/7
DARIEN	559.5	283.5	19	4.359	21.79	781.5	8527	0.118	0.142	663	241.7	26/7
ELGIN	652.4	330.6	19	4.707	23.53	911.3	9934	0.101	0.122	729	281.98	26/7
FLINT	740.8	375.4	37	3.594	25.16	1035	11068	0.0892	0.107	790	322.27	26/7
GREELY	927.2	469.8	37	4.021	28.15	1295	13834	0.0713	0.0863	908	402.83	26/7

1. Weights are calculated using ASTM standard increments of stranding.

2. Rated strengths are calculated by ASTM methods and converted to metric units after rounding.

3. Resistance is calculated using ASTM standard increments of stranding, and metal conductivity of 52.5% IACS, AC resistance at 60 Hz.

4. Current ratings are based on 751°C conductor temperature, 250°C ambient, 0.61 m/s wind, 1033 watts/sq. meter sun, 0.5 coefficients of emissivity and absorption.

ASTM Sizes Metric Units

CONDUCTOR SIZE mm ²	NO. OF WIRES	DIAMETER OR WIRE mm	OVERALL DIAMETER OF CONDUCTOR mm	LINEAR WEIGHT kg/km	RATED STRENGTH daN	MAXIMUM DC RESISTANCE AT 20°C ohms/km
40	7	2.7	8.1	110	1270	0.837
50	7	3.02	9.06	138	1590	0.67
63	7	3.39	10.17	173	1910	0.532
80	7	3.81	11.43	220	2410	0.418
100	7	4.26	12.78	275	3020	0.335
112	7	4.51	13.53	308	3380	0.3
125	19	2.89	14.45	343	3830	0.268
140	19	3.06	15.3	385	4290	0.24
160	19	3.27	16.35	440	4670	0.21
180	19	3.47	17.35	494	5260	0.186
200	19	3.66	18.3	550	5860	0.167
224	19	3.87	19.35	615	6550	0.15
250	19	4.09	20.45	686	7310	0.134
280	37	3.1	21.7	770	8390	0.12
315	37	3.29	23.03	865	9020	0.106
355	37	3.5	24.5	975	10200	0.0943
400	37	3.71	25.97	1098	11500	0.0837
450	37	3.94	27.58	1235	12900	0.0744
500	37	4.15	29.05	1372	14300	0.067
560	37	4.39	30.73	1537	16100	0.0598
630	37	4.66	32.62	1730	18100	0.0531

British Sizes

CODE	N	RATED STRENGTH ¹ kgF	LBS FORCE	MAXIMUM DC RESISTANCE AT 20°C ²		CURRENT RATING ³	
				ohms/km	ohms/1000ft	Temperate Amps	Tropical Amps
-	3714	379	835	2.87	0.873	90	73
BOX	5960	608	1340	1.79	0.544	121	98
ACACIA	7606	776	1710	1.4	0.426	140	114
ALMOND	9563	975	2150	1.11	0.339	162	131
CEDA	11253	1148	2530	0.944	0.288	180	145
-	13433	1370	3020	0.794	0.242	200	162
FIR	15168	1547	3410	0.7	0.213	217	175
HAZEL	18993	1937	4270	0.559	0.17	250	201
PINE	21840	2227	4910	0.467	0.142	279	224
-	25576	2608	5750	0.398	0.121	309	247
WILLOW	27355	2790	6150	0.373	0.114	322	258
-	29401	2998	6610	0.347	0.106	337	270
-	33093	3375	7440	0.308	0.0938	336	290
OAK	36207	3692	8140	0.282	0.0859	384	307
-	36563	3729	8220	0.282	0.086	385	307
MULBERRY	46704	4763	10500	0.222	0.0676	448	356
ASH	53376	5443	12000	0.185	0.0565	501	398
ELM	62272	6350	14000	0.159	0.048	553	438

CODE	N	RATED STRENGTH ¹ kg	LBS FORCE	MAXIMUM DC RESISTANCE AT 20°C ²		CURRENT RATING ³	
				ohms/km	ohms/1000ft	Temperate Amps	Tropical Amps
POPLAR	72058	7348	16200	0.14	0.0427	598	473
-	81398	8301	18300	0.124	0.0337	647	511
SYCAMORE	91184	9299	20500	0.111	0.0377	694	547
UPAS	104528	10659	23500	0.0925	0.0282	776	610
-	121875	12428	27400	0.0794	0.0242	854	669
YEW	138333	14107	31100	0.0698	0.0213	925	723

1. Rated strengths are calculated by ASTM methods and converted to metric units after rounding.

2. Resistance is calculated using ASTM standard increments of stranding, and metal conductivity of 52.5% IACS.

3. Current ratings are based on 50 Hz AC, 75°C conductor temperature, and 0.61 m/s (2 ft/s) wind, 0.5 coefficients of emissivity and absorption, Temperate rating - 250°C ambient, 1000 watts/sq. meter sun, Tropical rating - 400°C ambient, 1200 watts/sq. meter sun.

British Sizes

CODE	NOMINAL AREA mm ²	EQUIVALENT Cu AREA kg		STRANDING AND WIRE		APPROXIMATE OVERALL DIAMETER		TOTAL AREA		WEIGHT ¹	
		mm ²	inch ²	mm	inch	mm ²	inch ²	mm ²	inch ²	kg/km	lb/M ft
-	-	6.45	0.01	7/1.47	7/0.0574	4.41	0.174	11.7	0.01812	32.2	21.7
BOX	-	9.68	0.015	7/1.85	7/0.0727	5.55	0.219	18.8	0.02908	51.7	34.7
ACACIA	-	12.9	0.02	7/2.08	7/0.0822	6.24	0.246	23.9	0.03711	66.1	44.4
ALMOND	25	16.1	0.025	7/2.34	7/0.0921	7.02	0.276	30.1	0.04666	82.9	55.7
CEDA	30	19.4	0.03	7/2.54	7/1000	7.62	0.3	35.5	0.05498	97.8	65.7
-	40	22.6	0.035	7/2.77	7/1091	8.31	0.327	42.2	0.06543	116.4	78.2
FIR	50	25.8	0.04	7/2.95	7/161	8.85	0.348	47.8	0.07415	131.8	88.6
HAZEL	100	32.3	0.05	7/3.30	7/0.1299	9.9	0.39	59.9	0.0928	165	110.9
PINE	-	38.7	0.06	7/3.61	7/0.422	10.83	0.426	71.7	0.1111	197.7	132.9
-	-	45.2	0.07	7/3.91	7/1539	11.73	0.462	84.1	0.1303	231.6	155.6
WILLOW	150	48.4	0.075	7/4.04	7/1591	12.12	0.477	89.8	0.1392	247.5	166.3
-	175	51.6	0.08	7/4.19	7/1650	12.57	0.495	96.5	0.1490	266.2	178.9
-	300	58.1	0.09	7/4.45	7/0.1751	13.35	0.526	108.8	0.1686	299.8	201.5
OAK	-	64.5	0.1	7/4.65	7/0.831	13.95	0.549	118.9	0.1843	327.8	220.3
-	-	64.5	0.1	19/2.82	19/0.111	14.1	0.555	118.8	0.1841	327.6	220.2
MULBERRY	-	80.6	0.125	19/3.18	19/1253	15.9	0.626	151.1	0.2342	416.7	280
ASH	-	96.8	0.15	19/3.48	19/1370	17.4	0.685	180.7	0.2801	498.1	334.8
ELM	-	113	0.175	19/3.76	19/1481	18.8	0.74	211	0.3271	582.1	391.2
POPLAR	-	129	0.2	37/2.87	37/1129	20.09	0.791	239	0.3705	658.8	442.7
-	-	145	0.225	37/3.05	37/1202	21.35	0.841	270.8	0.4197	746.7	501.8
SYCAMORE	-	161	0.25	37/3.23	37/0.1271	22.61	0.89	303	0.4697	834.9	561.1
UPAS	-	194	0.3	37/3.53	37/1390	24.71	0.973	362.1	0.5613	998.6	671.1
-	-	226	0.35	37/3.81	37/0.500	26.47	1.05	421.8	0.6538	1163	781.5
YEW	-	258	0.4	37/4.06	37/0.600	28.42	1.119	479.9	0.7439	1323	889.2

1. Weights are calculated using ASTM standard increments of stranding.

French Sizes

CODE	AREA mm ²	NO. OF WIRES	DIAMETER OF WIRES mm	OVERALL DIAMETER OF CONDUCTOR mm	TENSILE STRENGTH OF WIRE hbar	RATED STRENGTH OF CONDUCTOR daN	MAXIMUM DC RESISTANCE AT 20°C km	LINEAR WEIGHT kg/km	ELASTICITY MODULUS* hbar	COEFFICIENT OF LINEAR EXPANSION */oc
ASTER 22	21.99	7	2	6	32.4	710	1.5	60.2	6200	23.10-6
ASTER 34.4	34.36	7	2.5	7.5	32.4	1105	0.958	94.1	6200	23.10-6
ASTER 54.6	54.55	7	3.15	9.45	32.4	1755	0.603	149	6200	23.10-6
ASTER 75.5	75.54	19	2.25	11.25	32.4	2430	0.438	208	6000	23.10-6
ASTER 117	116.98	19	2.8	14	32.4	3765	0.283	322	6000	23.10-6
ASTER 148	148.01	19	3.15	15.75	32.4	4765	0.224	407	6000	23.10-6
ASTER 181.6	181.62	37	2.5	17.5	32.4	5845	0.183	500	5700	23.10-6
ASTER 228	227.83	37	2.8	19.6	32.4	7340	0.146	627	5700	23.10-6
ASTER 288	288.34	37	3.15	22.05	32.4	9280	0.115	794	5700	23.10-6
ASTER 366	366.22	37	3.55	24.85	32.4	11785	0.0905	1009	5700	23.10-6
ASTER 570	570.22	61	3.45	31.05	32.4	18360	0.0583	1574	5400	23.10-6
ASTER 851	850.66	91	3.45	37.95	32.4	27390	0.0391	2354	5250	23.10-6
ASTER 1144	1143.51	91	4	44	31.9	36260	0.0292	3164	5250	23.10-6
ASTER 1600	1595.93	127	4	52	31.9	50640	0.0206	4425	5050	23.10-6

* These values are given for information only

German Sizes

CONDUCTOR SIZE mm ²	ALLOY AREA mm ²	NO. OF WIRES	DIAMETER mm	OVERALL DIAMETER OF CONDUCTOR mm	LINEAR WEIGHT kg/km	RATED STRENGTH daN	MAXIMUM DC RESISTANCE AT 20°C ohms/km
16	15.89	7	1.7	5.1	43	444	2.091
25	24.26	7	2.1	6.3	66	677	1.3703
35	34.36	7	2.5	7.5	94	690	0.9669
50	49.48	7	3	9	135	1382	0.6714
50	48.35	19	1.8	9	133	1350	0.6905
70	65.81	19	2.1	10.5	181	1838	0.5073
95	93.27	19	2.5	12.5	256	2605	0.3579
120	116.99	19	2.8	14	322	3268	0.2854
150	147.11	37	2.25	15.8	406	4109	0.2274
185	181.62	37	2.5	17.5	500	5073	0.1842
240	242.54	61	2.25	20.3	670	6774	0.1383
300	299.43	61	2.5	22.5	827	8363	0.112
400	400.14	61	2.89	26	1104	11176	0.0838
500	499.83	61	3.23	29.1	1379	13960	0.06709
625	626.2	91	2.96	32.6	1732	17490	0.054
800	802.09	91	3.35	36.9	2218	22402	0.0418
1000	999.71	91	3.74	41.1	2767	27922	0.0335

1. Weights are calculated using ASTM standard increments of stranding.