

AAAC

All Aluminum Alloy Conductor



Complete Conductor:

AAAAC is a high-strength aluminum alloy, concentric- lay-stranded conductor. It is similar in construction and appearance to the AAC (all-aluminum conductor).

The AAAC conductor is manufactured in accordance with the requirements of the latest issue of ASTM B399. The AAAC conductor is manufactured from a heat-treated, magnesium-silicide high-strength 6201 T81 aluminum alloy.

The aluminum strands consist of a concentric- stranded cable of 7,19,37 or more wires. The sizes and standings listed are common examples used in overhead lines. Metric (mm) sizes are also available.

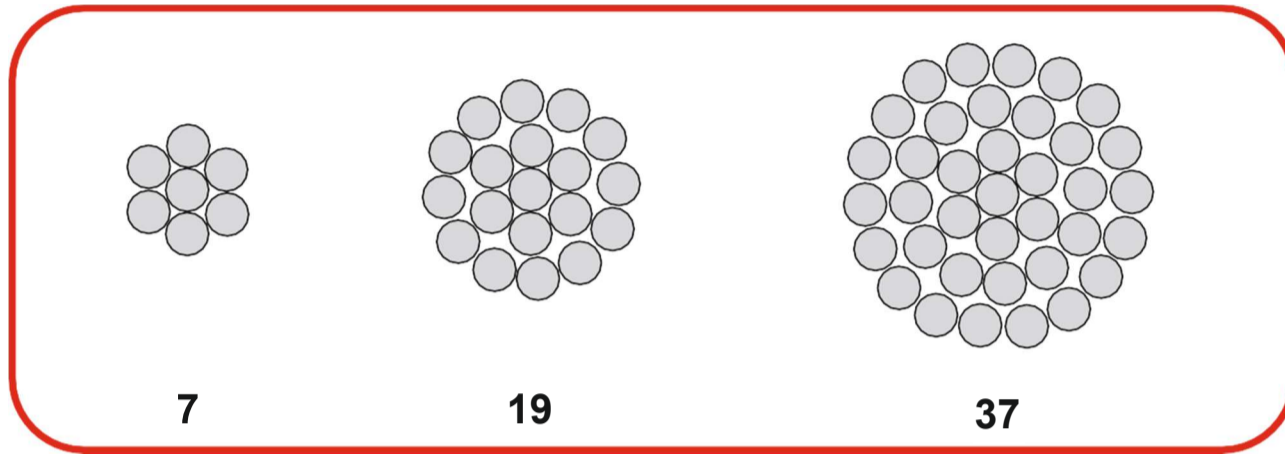
Features and Benefits:

- Aluminum alloy conductors have a number of advantages over the use of the ACSR or all- aluminum conductors.
- Lower power losses than for equivalent single- aluminum-layer ACSR conductors. (The inductive effect of the steel core in the ACSR is eliminated).
- Simpler fittings than those required for ACSR.
- Excellent corrosion resistance in environments conducive to galvanic corrosion in ACSR.
- Strength and sag approximately the same as for equivalent 6/1 and 26/7 ACSR conductors.
- Outside diameters are the same as for standard ACSR conductors, permitting interchangeability of fittings.
- Greater resistance to abrasion than that for 1350 wires in all-aluminum or ACSR conductors.

Applications:

AAAC aluminum alloy conductors are extensively used for overhead distribution and transmission lines adjacent to ocean coastlines where there can be a problem of corrosion in the steel of an ACSR construction.

AAAC cross section according to the number of layers:



ASTM B399

Total Area		Stranding & Wire Diameter	Overall diameter	Weight	Nominal Breaking Load	Maximum AC Resistance			Current Rating Ambient Temp	
AWG or MCM	mm ²					resistance at 20°C	25°C	75°C	25°C	40°C
		No./mm	kg/km	kgf	Ohm/km			A		
6	13.3	7/1.55	4.65	36	427	2.5361	2.59	3.098	84	71
4	21.1	7/1.96	5.88	58	682	1.5861	1.618	9379	115	96
2	33.5	7/2.47	7.41	92	1084	0.9987	1.019	2204	157	131
0	53.2	7/3.12	9.33	146	1718	0.6300	0.643	7701	213	178
2/0	67.4	7/3.50	10.5	185	2077	0.4974	0.507	6080	249	208
3/0	84.9	7/3.93	11.79	233	2619	0.3945	0.402	4825	290	243
4/0	107	7/4.42	13.23	293	3298	0.3133	0.320	3836	338	283
250	126	19/2.91	14.55	347	3955	0.2651	0.271	3249	379	318
300	152	19/3.19	15.95	417	4753	0.2206	0.226	2709	428	359
350	177	19/3.45	17.2	485	5276	0.1897	0.194	2329	473	397
400	202	19/3.69	18.4	554	6038	0.1658	0.170	2040	517	434
450	227	19/3.91	19.5	623	6781	0.1476	0.152	1822	558	468
500	253	19/4.12	20.6	695	7568	0.1322	0.136	1633	601	503
550	277	37/3.10	21.63	761	8498	0.1207	0.125	1497	638	535
600	303	37/3.23	22.61	832	9286	0.1105	0.114	1376	675	566
650	328	37/3.36	23.52	900	9591	0.1021	0.106	1272	711	596
700	354	37/3.49	24.43	971	10348	0.0946	0.099	1186	746	626
750	379	37/3.61	25.27	1039	11072	0.0885	0.092	1109	781	654
800	404	37/3.73	26.11	109	11820	0.0829	0.087	1046	813	681
900	456	37/3.96	27.72	1250	13323	0.0735	0.078	936	876	735
1000	505	37/4.17	29.19	1386	14773	0.07	10.1	10.08	939	787

1 Based on conductor temp.75°C ,0.6 m/s crosswind ,0.5 coefficient of emissivity , intensity of solar radiation 1033 w/m² ,height of sea level 1500 m.



German Sizes (DIN 4821)

Area Stranding & wire		Overall diameter	Weight	Nominal Breaking Load	Maximum Resistance at 20°C	Maximum AC Resistance		Current Rating Ambient Temp.		
Nominal	Actual					25°C	75°C	25°C	40°C	
mm ²		mm	kg/km	kgf	Ohm/km			A		
16	15.89	7/1.7	5.1	43	453	2.09127	2.1335	2.555	96	80
25	24.24	7/2.1	6.3	66	691	1.3705	1.3983	1.675	127	106
35	34.36	7/2.5	7.5	94	979	0.967	0.9872	1.182	160	134
50	49.48	7/3.0	9	135	1409	0.6715	0.6855	0.821	203	170
50	48.35	19/1.8	133	1377	0.6906	0.7050	0.7050	0.844	201	168
70	65.81	19/2.1	181	1875	0.5074	0.5180	0.5180	0.620	246	206
95	93.26	19/2.5	256	2657	0.3580	0.3660	0.3660	0.438	310	260
120	116.99	19/2.8	322	3333	0.3580	0.2918	0.2918	0.349	361	303
150	147.11	37/2.25	406	4191	0.2274	0.2328	0.2328	0.278	420	352
185	181.62	37/2.5	501	5174	0.1842	0.1889	0.1889	0.226	483	405
240	242.53	61/2.25	670	6909	0.1384	0.14	0.140	0.170	584	489
300	299.42	61/2.50	827	8530	0.1121	0.1160	0.1160	0.139	671	562
400	400.13	61/2.89	1105	11398	0.0839	0.0884	0.0884	0.105	807	676
500	499.82	61/3.23	1381	14238	0.0671	0.0714	0.0714	0.085	932	781
625	626.28	91/2.96	1733	17838	0.0537	0.0583	0.0583	0.069	1071	898
800	802.06	91/3.35	2220	22848	0.0419	0.0475	0.0475	0.56	1237	1036
1000	999.68	91/3.74	2767	28477	0.0337	0.0404	0.0404	0.48	1393	1166

French Sizes (NF C34-125)

DESIGNATION	Area	Stranding and wire diameter		Overall diameter	Nominal breaking load	Maximum de resistance at 20°C	Standard weight
	mm ²	No.	mm	mm	daN	Ohm/km	kg/km
ASTER 22	21.99	7	2.00	6	710	1.5	60.2
ASTER 34-4	34.36	7	2.50	7.5	1105	0.958	94
ASTER 54-6	54.55	7	3.15	9.45	1755	0.603	149
ASTER 75-5	75.54	19	2.25	11.25	2430	0.438	208
ASTER 93-3	93.27	19	2.50	12.50	3000	0.354	257
ASTER 117	116.98	19	2.80	14	3765	0.283	322
ASTER 148	148.01	19	3.15	15.75	4765	0.224	407
ASTER 181-6	181.62	37	2.50	17.5	5845	0.183	500
ASTER 228	227.83	37	2.80	19.6	7340	0.146	627
ASTER 288	288.34	37	3.15	22.05	9280	0.115	794
ASTER 366	366.22	37	3.55	24.85	11785	0.0905	1009
ASTER 570	570.22	61	3.45	31.05	18360	0.0583	1574
ASTER 851	850.69	91	3.45	37.95	27390	0.0391	2354
ASTER 1144	1143.54	91	4.0	44	36260	0.0292	3164
ASTER 1600	1595.93	127	4.0	52	50640	0.0209	4425

British Sizes BS3242

Code Name	Nominal Aluminium Area	Stranding and wire diameter	Overall diameter	Total Area
	mm ²	mm		mm ²
-	10	7/1.47	4.41	11.88
Box	15	7/1.85	5.55	18.82
Acacia	20	7/2.08	6.24	23.78
Almond	25	7/2.34	7.02	30.1
Cedar	30	7/2.54	7.62	35.47
-	35	7/2.77	8.31	42.18
Fir	40	7/2.95	8.85	47.84
Hazel	50	7/3.30	9.90	59.87
Pine	60	7/3.61	10.83	71.65
-	70	7/3.91	11.73	84.05
Willow	75	7/4.04	12.12	89.73
-	80	7/4.19	12.57	96.52
-	90	7/4.45	13.35	108.87
Oak	100	7/4.65	13.95	118.87
-	100	19/2.82	14.1	118.67
Mulberry	125	19/3.18	519	150.90
Ash	150	19/3.45	17.4	180.71
Elm	175	19/3.76	18.8	210.96
Poplar	200	37/2.87	20.09	239.36
-	225	37/3.05	21.35	270.32
Sycamore	250	37/3.23	22.61	303.17
Upas	300	37/3.53	24.71	362.10
-	350	37/3.81	26.67	421.82
Yew	400	37/4.06	28.42	478.99



Weight	Nominal breaking load	Maximum de Resistance at 20°C	Maximum AC Resistance		Current Rating Ambient Temp.	
			25°C	75°C	25°C	40°C
kg/km	kgf	Ohm/km	Ohm/km		A	
32	340	2.7969	2.8534	3.4169	79	66
51	538	1.7659	1.8016	2.1574	107	90
65	680	1.397	1.4253	1.7068	125	105
82	860	1.1038	1.1262	1.3486	146	12
97	1014	0.9368	0.9560	1448	163	137
115	1206	0.7877	0.8038	9626	183	153
131	368	0.6945	0.7087	8487	199	167
164	1711	0.5550	0.5666	6785	231	193
196	2048	0.4638	0.4737	5672	260	218
230	2402	0.3953	0.4038	4835	289	242
245	2565	0.3703	0.3782	4529	302	253
264	2759	0.3443	0.3519	4215	317	266
298	3112	0.3052	0.3120	0.3736	343	288
325	3398	0.2795	0.2861	3426	364	305
326	3392	0.2814	0.2880	0.3449	364	305
415	4313	0.2213	0.2269	2717	427	358
497	5165	0.1848	0.1895	2269	481	404
580	6030	0.1583	0.1627	1948	533	447
659	6842	0.1398	0.1441	1726	579	486
744	7727	0.1238	0.1281	1534	627	526
835	8666	0.1104	0.0966	1393	671	562
997	10350	0.0924	0.0966	1157	758	636
1 62	12057	0.0793	0.0836	1001	836	701
1319	13691	0.0699	0.0743	889	907	760

