

## All Aluminum Alloy Conductor (AAAC) Cables

### ASTM B 399/B 399M

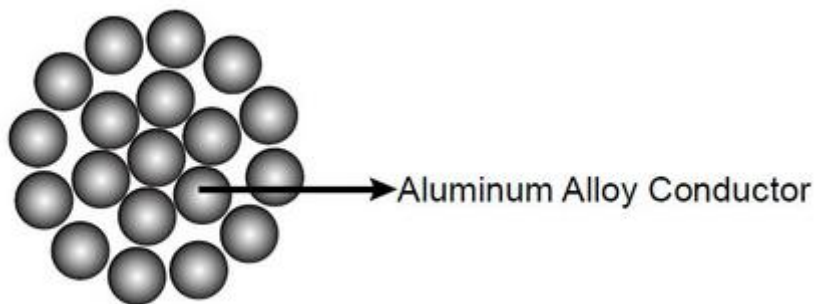
#### Application

AAAC is mainly used as bare overhead transmission cable and as primary and secondary distribution cable. It is also suitable for laying across basins, rivers and valleys where special geographical features exist.

#### Standard

Basic design to ASTM B 399/B 399M standards

#### Construction



AAAC cable consists of aluminum alloy wires. The aluminum alloy wires are concentrically stranded. This section deals with heat-treatable magnesium silicon type aluminium alloys to the applicable International Standard, the electrical and mechanical properties of which all fall within the values suggested by relevant standard. Conductors to all other recognized specifications can also be supplied. The alloys referred to have higher strength but lower conductivity than pure aluminium. Being lighter, alloy conductors can sometimes be used to advantage in place of the more conventional ACSR; Having lower breaking loads than the latter, their use becomes particularly favourable when ice and wind loadings are low.

#### Electrical Properties

Density@20°C	2.70 kg/dm
Temperature Coefficient@20°C	0.00360 (°C)
Resistivity@20°C	0.0326 Ohms mm <sup>2</sup> /m
Linear Expansivity	23 x10-6(°C)

#### Service Conditions

Ambient Temperature	-5°C - 50°C
Wind Pressure	80 - 130kg/m <sup>2</sup>
Seismic Acceleration	0.12 - 0.05g
Isokeraunic Level	10 - 18
Relative Humidity	5 - 100%

## Construction Parameters

### ASTM B 399/B 399M

Nominal Area		Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
AWG&MCM	mm <sup>2</sup>						
6	13.2	7/1.55	4.65	36.2	4.18	2.5361	69
4	21.1	7/1.96	5.88	57.9	6.69	1.586	93
2	33.5	7/2.47	7.41	92	10.6	0.9987	123
0	53.5	7/3.12	9.36	146.8	17	0.62592	165
2/0	67.3	7/3.50	10.5	184.8	20.4	0.49738	190
3/0	84.9	7/3.93	11.79	233	25.7	0.3945	219
4/0	107	7/4.42	13.26	294.7	32.5	0.31188	253
250	126	19/2.91	14.55	346.7	38.8	0.26509	280
300	152	19/3.19	15.95	416.7	46.6	0.22059	313
350	178	19/3.45	17.25	487.3	52	0.1886	345
400	203	19/3.69	18.45	557.5	59.5	0.16486	375
450	228	19/3.91	19.55	626	66.8	0.14683	402
500	253	19/4.12	20.6	695	74.2	0.13224	429
550	279	37/3.10	21.7	766.2	83.9	0.11995	455
600	303	37/3.23	22.61	831.9	91	0.11049	478
650	330	37/3.37	23.59	905.5	94.9	0.1015	504
700	354	37/3.49	24.43	971.2	101	0.09464	525
750	381	37/3.62	25.34	1045	109	0.08796	549
800	404	37/3.73	26.11	1109	116	0.08285	569
900	456	37/3.96	27.72	1250	131	0.07351	612
1000	508	37/4.18	29.26	1393	146	0.06597	653
1250	631	61/3.63	32.67	1732	179	0.05306	743
1500	759	61/3.98	35.82	2082	215	0.04414	827
1750	886	61/4.30	38.7	2431	251	0.03781	904

(\*) Note: The values of current rating mentioned in above Table are based on wind velocity of 0.6 metre/second, solar heat radiation of 1200 watt/metre<sup>2</sup>, ambient temperature of 50° C & conductor temperature of 80°C.

### Technical Data

Code	AL Nominal Area	Maximum Resistance DC at 20°		Current Rating	
				Temperate	Tropical
	mm <sup>2</sup>	Ω / km	Ω / 1000ft	Amp	Amp
-	-	2.87	0.873	90	73
Box	-	1.79	0.544	121	98
Acacia	-	1.4	0.426	140	114

Almond	25	1.11	0.339	162	131
Ceda	30	0.944	0.288	180	145
-	40	0.794	0.242	200	162
Fir	50	0.7	0.213	217	175
Hazel	100	0.559	0.17	250	201
Pine	-	0.467	0.142	279	224
-	-	0.398	0.121	309	247
Willow	150	0.373	0.114	322	258
-	175	0.347	0.106	337	270
-	300	0.308	0.0938	343	290
Oak	-	0.282	0.0859	384	307
-	-	0.282	0.086	385	307
Mulberry	-	0.222	0.0676	448	356
Ash	-	0.185	0.0565	501	398
Elm	-	0.159	0.048	553	438
Poplar	-	0.14	0.0427	598	473
-	-	0.124	0.0337	647	511
Sycamore	-	0.111	0.0377	694	547
Upas	-	0.0925	0.0282	776	610
-	-	0.0794	0.0242	854	669
Yew	-	0.0698	0.0213	925	723