

## All Aluminum Alloy Conductor (AAAC) Cables

### BS 3242

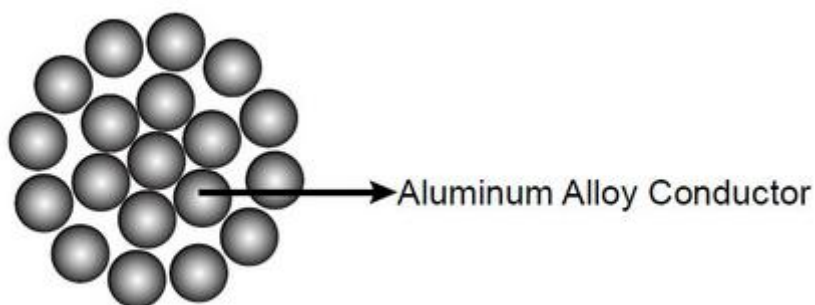
#### Application

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 BS 3242 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

##### BS 3242

AL Nominal Area	Cu Nominal Area Equivalent	Total Area	Stranding	Overall Diameter	Weight
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mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	No. xmm	mm	kg/km
-	6.45	11.7	7/1.47	4.41	32.2
-	9.68	18.8	7/1.85	5.55	51.7
-	12.9	21.9	7/2.08	6.24	66.1
25	16.1	30.1	7/2.34	7.02	82.9
30	19.4	35.5	7/2.54	7.62	97.8
40	22.6	42.2	7/2.77	8.31	116.4
50	25.8	47.8	7/2.95	8.85	131.8
100	32.3	59.9	7/3.30	9.9	165
-	38.7	71.7	7/3.61	10.83	197.7
-	45.2	84.1	7/3.91	11.73	231.6
150	48.4	89.8	7/4.04	12.12	247.5
175	51.6	96.5	7/4.19	12.57	266.2
300	58.1	108.8	7/4.45	13.35	299.8
-	64.5	118.9	7/4.65	13.95	327.8
-	80.6	118.8	19/2.82	14.1	327.6
-	96.8	151.1	19/3.18	15.9	416.7
-	113	180.7	19/3.48	17.4	498.1
-	129	211	19/3.76	18.8	582.1
-	145	239	37/2.87	20.09	658.8
-	161	270.8	37/3.05	21.35	746.7
-	194	303	37/3.23	22.61	834.9
-	226	362.1	37/3.53	24.71	998.6
-	258	421.8	37/3.81	26.47	1163
-	-	479.9	37/4.06	28.42	1323

(\*) 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