GRANDCABLE

BS 215-1 · ALUMINUM 1350 · INSECT CODE NAMES

AAC

All Aluminum Conductor — Bare, Overhead Distribution & Transmission



22	850	7–61	31
MM² MIN.	MM² MAX.	WIRES	CODE NAMES

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Overhead Bare Conductor · Yixing, Jiangsu, China

All Aluminum Conductor (AAC) — BS 215-1

AAC to BS 215-1 is a bare conductor stranded from hard-drawn aluminum 1350 round wires in a concentric-lay construction, identified by the insect code names of the British Standard. BS 215-1 remains the reference specification on British-pattern networks and in many Commonwealth markets; the harmonized successor is BS EN 50182.

Also manufactured to

The same construction is available to other national and international AAC standards on request:

IEC 61089 | ASTM B 231 / B 231M | DIN 48 201-5 | AS 1531 | UNE 21018 | SANS 182-2 | JIS C 3109 | GOST 839

Typical applications

Primary and secondary overhead distribution lines with short spans where high mechanical strength is not required; river and valley crossings; busbar and jumper connections in substations. As a homogeneous aluminum conductor, the ampacity of AAC is used to best advantage.

Wire material

Hard-drawn aluminum 1350 round wires with a maximum resistivity of 0.028264 Ω·mm²/m at 20 °C (equivalent to 61.0 % IACS conductivity). Wires are concentric-lay stranded in successive layers with opposite lay direction; several sizes are offered in two strandings.

Construction summary

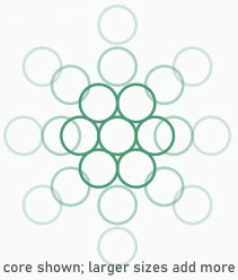
Standard	BS 215-1 — Aluminium stranded conductors (harmonized successor: BS EN 50182)
Designation	Code name + nominal area, e.g. ANT — 50 mm²
Wire material	Hard-drawn aluminum, resistivity at 20 °C max. 0.028264 Ω·mm²/m
Size range	22 – 850 mm², 28 nominal sizes (several in two strandings)
Constructions	7, 19, 37, 61 or 91 wires — according to size
Surface	Bare — no insulation or covering

Concentric-lay stranding

BS 215-1 conductors are built up in concentric layers around a central wire: 7, 19, 37 and 61-wire constructions cover the range from 22 to 850 mm². Successive layers are laid up with opposite directions of lay, and the outermost layer is right-hand (Z) lay as standard.

1. **Central wire** — single hard-drawn aluminum wire at the core.
2. **Concentric layers** — 6, 12, 18 and 24 wires added per layer, giving the 7 / 19 / 37 / 61 / 91-wire series.
3. **Lay direction** — successive layers opposite; outer layer right-hand (Z) as standard. Left-hand outer lay on request.

> Several sizes are listed in two strandings (e.g. WASP/BEETLE at 100 mm², CRICKET/HORNET at 150 mm², MOTH/DRONE and LOCUST/CENTIPEDE at 350 and 400 mm²) — the nominal area and resistance are matched, while weight, diameter and breaking load differ slightly. Both constructions are to BS 215-1; select per project preference.



7-wire core shown; larger sizes add more layers

Concentric-lay stranding — schematic; numbers refer to the layers listed opposite.

Design options

Stranding	Standard geometries per BS 215-1; compressed or compacted constructions on request
Lay direction	Right-hand outer layer (Z) standard; left-hand (S) on request
Jointing	Fully compatible with standard compression fittings and automatic splices
Packaging	Returnable steel or wooden reels, lengths to suit project stringing plans

Why homogeneous aluminum

With no steel core there is no bi-metallic corrosion cell, no magnetic loss and no need for grease — the full cross-section conducts, and the ampacity of AAC is used to best advantage. The trade-off is lower rated strength, which is why AAC is normally chosen for shorter spans.

Quality & testing

Wire samples are tested for resistivity, elongation and torsional ductility to the BS wire specification before stranding; finished conductor is checked for lay length, diameter and D.C. resistance on every production lot. Third-party inspection on request.

BS 215-1 — dimensions & technical data

Nominal sizes 22 to 850 mm². Both the code name and section columns refer to the nominal cross-section.

Code Name mm²	Stranding No. × Ø mm	Section mm²	Overall Dia. mm	Weight kg/km	Rated Strength kN	D.C. Resistance at 20 °C, Ω/km
MIDGE	7/2.06	22	6.18	64.1	3.99	1.227
APHIS	3/3.35	25	7.20	73.1	4.11	1.081
GNAT	7/2.21	25	6.60	73.4	4.59	1.066
WEEVIL	3/3.66	30	7.90	86.5	4.86	0.9082
MOSQUITO	7/2.59	35	7.80	100.0	6.03	0.7762
LADYBIRD	7/2.79	40	8.40	117.0	6.87	0.6689
ANT	7/3.10	50	9.30	145.0	8.28	0.5419
FLY	7/3.40	60	10.20	174.0	9.90	0.4505
BLUEBOTTLE	7/3.66	70	11.00	202.0	11.34	0.3881
EARWIG	7/3.78	75	11.40	215.0	11.94	0.3644
GRASSHOPPER	7/3.91	80	11.70	230.0	12.78	0.3406
CLEGG	7/4.17	90	12.50	262.0	14.53	0.2994
WASP	7/4.39	100	13.20	290.0	16.00	0.2702
BEETLE	19/2.67	100	13.40	293.0	17.42	0.2704
BEE	7/4.90	125	14.70	361.0	19.94	0.2169
CRICKET	7/5.36	150	16.10	432.0	23.85	0.1818
HORNET	19/3.25	150	16.30	434.0	25.70	0.1825
CATERPILLAR	19/3.53	175	17.70	512.0	28.63	0.1547
CHAFFER	19/3.78	200	18.90	587.0	32.40	0.1349
SPIDER	19/3.99	225	20.00	652.0	36.01	0.1211
COCKROACH	19/4.22	250	21.10	731.0	40.40	0.1083
BUTTERFLY	19/4.65	300	23.30	888.0	48.75	0.0892
MOTH	19/5.00	350	25.00	1027.0	56.37	0.0771
DRONE	37/3.58	350	25.10	1029.0	57.45	0.0774
LOCUST	19/5.36	400	26.80	1179.0	64.73	0.0671
CENTIPEDE	37/3.78	400	26.50	1145.0	63.10	0.0694
MAYBUG	37/4.09	450	28.60	1342.0	74.01	0.0593
SCORPION	37/4.27	500	29.90	1460.0	79.98	0.0544
CICADA	37/4.65	600	32.60	1733.0	94.95	0.0459
TARANTULA	37/5.23	750	36.60	2191.0	120.10	0.0363
BULL	61/4.25	850	38.30	2395.0	134.30	0.0334

Electrical resistance: maximum D.C. values at 20 °C for hard-drawn aluminum. Weights nominal. Breaking load = sum of wire minimum breaking loads. For A.C. ratings add skin and proximity effects per project conditions.

Reading the table

Stranding is the number of aluminum wires and their individual diameter. **Rated strength** is the sum of the wire breaking loads — for engineering use apply the stringing limits of the project. **Resistance** is the maximum D.C. value at 20 °C.

Ampacity

Steady-state ampacity of bare AAC depends on ambient temperature, wind and emissivity and is calculated per IEEE 738 on request for the specific span conditions. As a homogeneous aluminum conductor, AAC gives the highest ampacity per unit weight of any stranded overhead type.

How to specify

Information needed	Example
Type designation	AAC — All Aluminum Conductor, bare
Standard	BS 215-1
Code name and size	ANT — 50 mm² (7 wires × 3.10 mm)
Lay direction	Concentric lay, right-hand outer layer
Options and delivery	Reel lengths to suit stringing plans · left-hand outer lay on request

Quality & testing

Routine tests — every production lot

Wire samples per the BS wire specification: resistivity, elongation and torsional ductility. Finished conductor: lay length, overall diameter and D.C. resistance measured on every production lot before despatch.

Certification & documentation

Mill certificates for the wire, routine test reports and inspection certificates issued on request. Third-party inspection (SGS, BV or nominated) welcome before shipment.

Packing & delivery

Reels & lengths

Supply on returnable steel or wooden reels in single lengths to suit the project stringing plan. Conductor ends are secured and tagged; reels are battened and marked for identification.

Export packing

Reel lagging and additional weather protection available for sea freight and long-term outdoor storage. Delivery ex works or CIF — Incoterms 2020 — as agreed.

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