GRANDCABLE

SANS 182-2 · HARD-DRAWN ALUMINUM · SOUTH AFRICAN SIZES

AAC

All Aluminum Conductor — Bare, Overhead Distribution & Transmission



25	869	7–61	11
MM² MIN.	MM² MAX.	WIRES	NOMINAL SIZES

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Overhead Bare Conductor · Yixing, Jiangsu, China

All Aluminum Conductor (AAC) — SANS 182-2

AAC to SANS 182-2 is a bare conductor stranded from hard-drawn aluminum round wires in a concentric-lay construction, specified by nominal section from 25 to 869 mm². SANS 182-2:2008 "Conductors for overhead electrical transmission lines — Part 2: Stranded aluminium conductors" is the South African national standard and remains the reference specification on South African and Southern African power networks.

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 | BS 215-1 | AS 1531 | UNE 21018 | JIS C 3109 | GOST 839

Typical applications

Overhead distribution and transmission lines across South African and Southern African networks (SABS-certified supply), on short to medium spans; 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 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; the outermost layer is right-hand (Z) lay.

Construction summary

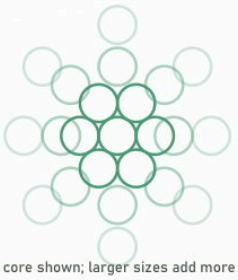
Standard	SANS 182-2 — Stranded aluminium conductors for overhead lines
Designation	Nominal section + stranding, e.g. 158 mm² — 19/3.25
Wire material	Hard-drawn aluminum, resistivity at 20 °C max. 0.028264 Ω·mm²/m
Size range	25 – 869 mm², 11 nominal sizes, each in a single stranding
Constructions	7, 19, 37 or 61 wires — according to size
Surface	Bare — no insulation or covering

Concentric-lay stranding

SANS 182-2 conductors are built up in concentric layers around a central wire: 7, 19, 37 and 61-wire constructions cover the range from 25 to 869 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-wire series.
3. **Lay direction** — successive layers opposite; outer layer right-hand (Z) as standard. Left-hand outer lay on request.

> Constructions follow the fixed geometries of the standard: 7-wire (25 to 100 mm²), 19-wire (158 to 323 mm²), 37-wire (415 to 527 mm²) and 61-wire (685 and 869 mm²). Each nominal size is listed in a single stranding.



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 SANS 182-2; 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 before stranding; finished conductor is checked for lay length, diameter and D.C. resistance on every production lot. Third-party inspection on request.

SANS 182-2 — dimensions & technical data

Nominal sections 25 to 869 mm². Overall diameter and resistance are the maximum values of the standard; weight and breaking load are calculated values.

Nominal Section mm²	Stranding No. × Ø mm	Overall Dia. mm	Weight kg/km	Breaking Load kN	D.C. Resistance at 20 °C, Ω/km
25	7/2.12	6.42	68	4.12	1.182
39	7/2.65	8.03	106	6.12	0.7563
58	7/3.25	10.15	152	8.82	0.5029
100	7/4.26	12.91	273	14.60	0.2929
158	19/3.25	16.92	434	23.40	0.1962
273	19/4.26	21.52	745	38.80	0.1084
323	19/4.65	23.49	888	46.20	0.09096
415	37/3.78	26.73	1145	59.90	0.07085
527	37/4.26	30.12	1454	75.60	0.05580
685	61/3.78	34.36	1891	96.60	0.04307
869	61/4.26	38.73	2402	122.00	0.03392

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. **Breaking load** 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	SANS 182-2
Size and stranding	158 mm² — 19/3.25
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: 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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