GRANDCABLE

GOST 839-2019 · HARD-DRAWN ALUMINUM · CIS MARKETS

AAC

All Aluminum Conductor — Bare, Overhead Distribution & Transmission



16	800	7–61	21
MM² MIN.	MM² MAX.	WIRES	NOMINAL SIZES

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Overhead Bare Conductor · Yixing, Jiangsu, China

All Aluminum Conductor (AAC) — GOST 839-2019

AAC to GOST 839-2019 is a bare conductor stranded from hard-drawn aluminum round wires in a concentric-lay construction, designated by nominal section (grade A) from 16 to 800 mm². GOST 839-2019 is the current edition of the Russian and CIS interstate standard for bare overhead conductors — effective since May 2020, it replaces the classic GOST 839-80, and its size list is aligned with IEC 61089. Amendment No. 1 (2023) completes the range with the 800 mm² size.

Russian designation: in Russian-language documents, drawings and contracts this conductor is ordered as **Conductor A 150 GOST 839-2019** (Провод А 150 ГОСТ 839—2019) — the letter A stands for aluminium. The steel-reinforced equivalent (ACSR) is designated **AC** (e.g. AC 150/24), and the corrosion-protected versions ASK / ASKP.

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 | SANS 182-2 | JIS C 3109

Typical applications

Overhead distribution and transmission lines across Russian and CIS networks, 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

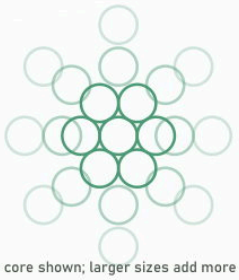
Standard	GOST 839-2019 (incl. Amendment No. 1:2023) — Non-insulated conductors for overhead power lines; supersedes GOST 839-80
Designation	Conductor A 150 GOST 839-2019 (Russian: Провод А 150 ГОСТ 839—2019)
Wire material	Hard-drawn aluminum, resistivity at 20 °C max. 0.028264 Ω·mm²/m
Size range	16 – 800 mm², 21 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

GOST 839-2019 conductors are built up in concentric layers around a central wire: 7, 19, 37 and 61-wire constructions cover the range from 16 to 800 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 (16 to 95), 19-wire (120 to 240), 37-wire (300 to 500) and 61-wire (550 to 800), one stranding per size.



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 GOST 839-2019; 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.

GOST 839-2019 — dimensions & technical data

Nominal sections 16 to 800 mm². Sections and parameters follow the standard's calculated values.

Code Name	Stranding No. × Ø mm	Section mm²	Overall Dia. mm	Weight kg/km	Breaking Load min., kN	D.C. Resistance at 20 °C, Ω/km
16	7/1.70	15.9	5.10	43.0	3.021	1.8007
25	7/2.13	24.9	6.40	68.0	4.500	1.1498
35	7/2.50	34.3	7.50	94.0	5.913	0.8347
50	7/3.00	49.5	9.00	135.0	8.198	0.5784
70	7/3.55	69.3	10.70	189.0	11.288	0.4131
95	7/4.10	92.4	12.30	252.0	14.784	0.3114
120	19/2.80	117.0	14.00	321.0	19.890	0.2459
150	19/3.15	148.0	15.80	406.0	24.420	0.1944
185	19/3.50	182.8	17.50	502.0	29.832	0.1574
240	19/4.00	238.7	20.00	655.0	38.192	0.1205
300	37/3.15	288.3	22.10	794.0	47.569	0.100
350	37/3.45	345.8	24.20	952.0	57.057	0.0833
400	37/3.66	389.2	25.60	1072.0	63.420	0.074
450	37/3.90	449.1	27.30	1206.0	71.856	0.0642
500	37/4.15	500.4	29.10	1378.0	80.000	0.0576
550	61/3.37	544.0	30.30	1500.0	89.760	0.0529
600	61/3.50	586.8	31.50	1618.0	95.632	0.0491
650	61/3.66	641.7	32.90	1771.0	104.575	0.045
700	61/3.80	691.7	34.20	1902.0	112.725	0.0417
750	61/3.95	747.4	35.60	2062.0	119.584	0.0386
800	61/4.10	805.4	36.90	2219.0	128.856	0.0358

Source: GOST 839-2019, Appendix A Table A.2 (as amended by Amendment No. 1:2023) and Table 2. Sizes shown are the complete current-edition range — the supplementary intermediate sizes of the previous GOST 839-80 edition (10, 40, 63, 100 … 710 mm²) are not part of GOST 839-2019. Electrical resistance: maximum D.C. values at 20 °C. Weights nominal. Breaking load = sum of wire minimum breaking loads.

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	GOST 839-2019 (incl. Amendment No. 1:2023)
Size and stranding	Conductor A 150 GOST 839-2019 — 19/3.15, 148.0 mm² (Russian designation A 150)
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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