Product Overview

Cable Semiaislado o Ecológico, also known as a semi-insulated or ecological overhead conductor, is designed for medium-voltage overhead power distribution networks.

These conductors combine a conventional stranded aluminium-based conductor with one or more protective polymer covering layers. Depending on the required design, the conductor may be supplied with AAC, AAAC, or ACSR construction and XLPE-based protective covering.

Cable Semiaislado o Ecológico, semi-insulated conductors are designed to improve protection against incidental contact with vegetation and reduce the likelihood of certain external disturbances to overhead distribution lines. They are particularly suitable for networks installed in wooded areas, urban environments, and locations where compact overhead line configurations are required.

Important: A semi-insulated or covered conductor is not equivalent to a fully insulated medium-voltage power cable. Its covering does not make the energized conductor safe to touch.

Cable Semiaislado o Ecológico Conductor Construction

The construction is customized according to rated voltage, conductor type, utility requirements, and applicable technical specifications.

1. Conductor

Available conductor options include:

- **AAC:** All Aluminium Conductor, typically using hard-drawn aluminium wires.
- **AAAC:** All Aluminium Alloy Conductor, using aluminium alloy wires.
- **ACSR:** Aluminium Conductor Steel Reinforced, consisting of aluminium strands around a galvanized steel core.

2. Semi-Conductive Layer

An optional semi-conductive layer may be applied directly over the conductor when required by the specified design.

3. Insulating / Protective Covering

Depending on the design, the covering may include:

- XLPE: Cross-Linked Polyethylene
- XLPE-TR: Tree-Retardant Cross-Linked Polyethylene
- XLPE-TK: Tracking-Resistant Cross-Linked Polyethylene
- HDPE: High-Density Polyethylene, where specified

4. Multi-Layer Design

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Available configurations may include:

- Single-layer protective covering
- Double-layer covering
- Triple-layer covering with a semi-conductive layer and protective polymer layers

The exact layer arrangement, material grades, and thicknesses must follow the approved technical specification.

Cable Semiaislado Key Characteristics

- **Protective Covering:** Polymer covering provides additional protection against environmental exposure and incidental contact.
- **Vegetation-Area Applications:** Suitable for overhead distribution routes with nearby trees and vegetation, subject to the line design.
- **Flexible Conductor Selection:** AAC, AAAC, and ACSR options for different electrical and mechanical requirements.
- **Multi-Layer Construction:** Single-, double-, or triple-layer designs available according to project requirements.
- **Weather-Resistant Materials:** UV-resistant and tracking-resistant compounds can be specified where required.
- **Customized Manufacturing:** Conductor size, covering material, layer thickness, and rated voltage can be tailored to project specifications.

Applications

Semi-insulated ecological conductors are commonly used in:

- Medium-voltage overhead distribution networks
- Urban and suburban power distribution
- Rural electrification projects
- Overhead lines in vegetation-exposed areas
- Compact overhead distribution systems
- Distribution networks requiring additional conductor protection

Technical Specifications

Parameter	Available Options
Product Type	Semi-Insulated / Covered Overhead Conductor
Conductor Material	Aluminium / Aluminium Alloy / Aluminium with Steel Core
Conductor Types	AAC / AAAC / ACSR
Insulating Material	XLPE / XLPE-TR / XLPE-TK
Outer Covering	XLPE-TK / HDPE, where specified
Layer Configuration	Single / Double / Triple Layer
Semi-Conductive Layer	Optional, according to design
Rated Voltage	Project-specific; commonly designed for 15 kV, 25 kV, or 35 kV systems
Conductor Size	According to project requirements
Conductor Shape	Round stranded or compacted, as specified
Colour	Typically black

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Parameter	Available Options
Operating Temperature	According to the selected material and approved design

The above values describe available design options, not one universal construction. Final specifications must be confirmed against the project requirements and approved datasheet.

Applicable Standards

Depending on conductor type, covering design, and destination market, relevant standards may include:

- ASTM B230 – Aluminium 1350-H19 Wire for Electrical Purposes
- ASTM B231 – Concentric-Lay-Stranded Aluminium Conductors
- ASTM B232 – Concentric-Lay-Stranded Aluminium Conductors, Coated-Steel Reinforced (ACSR)
- ASTM B398 / ASTM B399 – Aluminium Alloy 6201-T81 Wire and Conductors
- ICEA S-121-733 – Tree Wire and Messenger-Supported Spacer Cable
- NTC 5909 – Colombian technical reference for covered overhead conductors, where applicable
- ANSI/NEMA WC-70 ICEA S-66-524: Weather-resistant conductors covered with cross-linked polyethylene (XLPE).
- ABNT EB-2173: Conductors covered with cross-linked polyethylene (XLPE), for use in wooded areas at 15 kV and 25 kV.
- ABNT/NBR 11873: Cables covered with XLPE polymeric material for compact overhead distribution networks at voltages from 13.8 kV to 34.5 kV.

The applicable standard and its edition must be confirmed for each product design. Conductor standards alone do not establish compliance of the complete covered conductor.

Why Choose QZ Cable?

- **Direct Manufacturer:** Factory-direct supply from Qingzhou Cable, part of Qingzhou Group since 1969.
- **Multiple Conductor Options:** AAC, AAAC, and ACSR designs for different overhead distribution requirements.
- **Customized Construction:** Production according to customer drawings, technical specifications, and applicable standards.
- **Project-Oriented Supply:** Support for utilities, EPC contractors, distributors, and power distribution projects.
- **Manufacturing Experience:** Focused on overhead conductors and power cable products for international markets.

Contact QZ Cable for technical specifications, drawings, and quotations for your semi-insulated overhead conductor projects.

Technical Specifications

AAC Ecological Cable – 15kV

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Size (AWG/kcmil)	Area (mm²)	Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)	Current (A)
2/0	67.44	19	10.63	0.7	3.1	18.23	359.41	1,212	270
3/0	85.02	19	11.94	0.7	3.1	19.54	425.50	1,500	310
4/0	107.20	19	13.40	0.7	3.1	21.00	506.71	1,822	355
266.8	135.20	19	15.05	0.7	3.1	22.65	607.05	2,254	410
336.4	170.50	19	16.91	0.7	3.1	24.51	722.86	2,789	485
477	241.70	37	20.19	0.7	3.1	27.79	964.38	3,941	585
500	253.30	37	20.66	0.7	3.1	28.26	1,002.93	4,133	605

AAC Ecological Cable – 25kV

Size (AWG/kcmil)	Area (mm²)	Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)	Current (A)
2	33.62	7	7.42	0.7	4.1	17.02	274.46	612	175
1/0	53.49	19	9.46	0.7	4.1	19.06	357.82	980	235
2/0	67.44	19	10.63	0.7	4.1	20.23	415.17	1,212	270
3/0	85.02	19	11.94	0.7	4.1	21.54	485.06	1,500	310
4/0	107.20	19	13.40	0.7	4.1	23.00	570.50	1,822	355
266.8	135.20	19	15.05	0.7	4.1	24.65	675.63	2,254	410
336.4	170.50	19	16.91	0.7	4.1	26.51	796.82	2,789	485
477	241.70	37	20.19	0.7	4.1	29.79	1,047.85	3,941	585
500	253.30	37	20.66	0.7	4.1	30.26	1,087.77	4,133	605

ACSR Ecological Cable – 15kV

Size (AWG/kcmil)	Area (mm²)	Aluminium / Steel Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)	Current (A)
4	21.15	6/1	6.36	0.7	3.1	13.96	206.66	843	135
2	33.62	6/1	8.02	0.7	3.1	15.62	280.02	1,292	175
1/0	53.49	6/1	10.11	0.7	3.1	17.71	390.56	1,986	230
2/0	67.43	6/1	11.35	0.7	3.1	18.95	465.38	2,404	260
3/0	85.01	6/1	12.74	0.7	3.1	20.34	557.98	3,002	295
4/0	107.20	6/1	14.31	0.7	3.1	21.91	672.75	3,786	330
266.8	135.19	18/1	15.46	0.7	3.1	23.06	671.95	3,120	415
266.8	135.19	26/7	16.30	0.7	3.1	23.90	798.34	5,125	425
336.4	170.45	18/1	17.36	0.7	3.1	24.96	812.02	3,936	480

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336.4	170.45	26/7	18.29	0.7	3.1	25.89	970.69	6,393	490
397.5	201.41	18/1	18.87	0.7	3.1	26.47	933.17	4,508	535
397.5	201.41	26/7	19.88	0.7	3.1	27.48	1,118.43	7,393	545
477	241.70	18/1	20.68	0.7	3.1	28.28	1,089.06	5,352	595
477	241.70	26/7	21.80	0.7	3.1	29.40	1,310.68	8,845	610

ACSR Ecological Cable – 25kV

Size (AWG/kcmil)	Area (mm²)	Aluminium / Steel Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)	Current (A)
4	21.15	6/1	6.36	0.7	4.1	15.96	250.02	843	135
2	33.62	6/1	8.02	0.7	4.1	17.62	328.20	1,292	175
1/0	53.49	6/1	10.11	0.7	4.1	19.71	444.81	1,986	230
2/0	67.43	6/1	11.35	0.7	4.1	20.95	523.21	2,404	260
3/0	85.01	6/1	12.74	0.7	4.1	22.34	619.86	3,002	295
4/0	107.20	6/1	14.31	0.7	4.1	23.91	739.18	3,786	330
266.8	135.19	18/1	15.46	0.7	4.1	25.06	741.72	3,120	415
266.8	135.19	26/7	16.30	0.7	4.1	25.90	870.54	5,125	425
336.4	170.45	18/1	17.36	0.7	4.1	26.96	887.29	3,936	480
336.4	170.45	26/7	18.29	0.7	4.1	27.89	1,048.66	6,393	490
397.5	201.41	18/1	18.87	0.7	4.1	28.47	1,012.83	4,508	535
397.5	201.41	26/7	19.88	0.7	4.1	29.48	1,201.01	7,393	545
477	241.70	18/1	20.68	0.7	4.1	30.28	1,173.95	5,352	595
477	241.70	26/7	21.80	0.7	4.1	31.40	1,398.83	8,845	610

AAAC Ecological Cable – 15kV, Three-Layer Construction

Size (kcmil)	Area (mm²)	Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Insulation (mm)	Outer Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)
48.69	24.7	7	6.36	0.38	1.91	1.91	14.74	205.0	798
77.47	39.2	7	8.01	0.38	1.91	1.91	16.39	269.1	1,270
123.3	62.4	7	10.11	0.38	1.91	1.91	18.49	364.9	1,936
155.4	78.6	7	11.34	0.38	1.91	1.91	19.73	429.0	2,444
195.7	99.3	7	12.75	0.38	1.91	1.91	21.13	508.7	3,079
246.9	125	7	14.30	0.38	1.91	1.91	22.69	605.3	3,882
312.8	159	19	16.32	0.38	1.91	1.91	24.70	724.8	4,988
394.5	200	19	18.30	0.38	1.91	1.91	26.69	870.7	6,032

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465.4	236	19	19.88	0.51	1.91	1.91	28.52	1,008.8	7,076
559.5	284	19	21.81	0.51	1.91	1.91	30.45	1,175.6	8,527
652.4	331	19	23.55	0.51	1.91	1.91	32.18	1,336.7	9,933

AAAC Ecological Cable – 25kV, Three-Layer Construction

Size (kcmil)	Area (mm²)	Stranding	Conductor Diameter (mm)	Semiconductor (mm)	Insulation (mm)	Outer Covering (mm)	Cable Diameter (mm)	Approx. Weight (kg/km)	Breaking Load (kgf)
48.69	24.7	7	6.36	0.38	3.18	3.18	19.84	334.4	798
77.47	39.2	7	8.01	0.38	3.18	3.18	21.49	410.8	1,270
123.3	62.4	7	10.11	0.38	3.18	3.18	23.59	522.3	1,936
155.4	78.6	7	11.34	0.38	3.18	3.18	24.83	595.6	2,444
195.7	99.3	7	12.75	0.38	3.18	3.18	26.23	685.7	3,079
246.9	125	7	14.30	0.38	3.18	3.18	27.79	793.9	3,882
312.8	159	19	16.32	0.38	3.18	3.18	29.80	928.6	4,988
394.5	200	19	18.30	0.38	3.18	3.18	31.79	1,089.3	6,032
465.4	236	19	19.88	0.51	3.18	3.18	33.62	1,241.0	7,076
559.5	284	19	21.81	0.51	3.18	3.18	35.55	1,422.0	8,527
652.4	331	19	23.55	0.51	3.18	3.18	37.28	1,596.2	9,933

Technical Data Note: The tables above reproduce the values available in the supplied reference. Current-carrying capacities, conductor configurations, dimensions and weights should be checked against the approved manufacturing specification before being used for procurement or engineering design.

Manufacturing & Customization

QZ Cable can review project requirements for AAC, AAAC and ACSR ecological covered conductors.

Customization can be discussed according to:

- Conductor material and size
- Rated system voltage
- XLPE covering thickness
- Single-layer or multi-layer construction, where specified
- Applicable national or international standards
- Reel length and packaging requirements

Please send your technical specification, project standard or cable schedule for evaluation and quotation.

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