TOP SOLAR PV ZZ-F (AS)

1. Object.

This document defines the design and manufacturing characteristics of the cables type TOP SOLAR PV ZZ-F (AS) manufactured by Top Cable.

2. Design.

This type of cables are designed, manufactured and tested according to the latest revision of the specification EA 0038 (AENOR - Electric cables for use in circuits of photovoltaic systems), TÜV 2 PfG 1169/08.2007 standard and UTE C-32 502 standard.

3. Applications.

Flexible cables suitable for mobile and fixed installation. Suitable for connection between photovoltaic panels, and photovoltaic panels to the AC inverter. High security cable (AS): no fire propagation, low smoke emissions and halogen-free. Suitable for indoor and outdoor use. These cables meet the HD 605/A1 weather-UV test.

The materials used in the construction of these cables exceed the thermal endurance test specified in the standard UNE-EN 60216 for +120 ºC (temperature index). Compliance with this test provides that, with proper installation, operation and maintenance, the estimated life of the cable is 30 years at 90 °C.

4. Characteristics.

Nominal voltage: 1,8 kV DC.

Ambient temperature range: -40 °C to + 90 ºC.

Range service temperature: -40 °C to + 120 ºC.

Maximum short-circuit temperature: 250 °C (maximum 5 s).

Minimum bending radius (fixed): 5 x cable Ø.

No flame propagation: IEC 60332-1-2.

No fire propagation: category C (according to EN 50266 / IEC 60332-3).

Halogen free: HCl content < 0,5%.
pH > 4,3 ; conductivity < 10 µS/mm.

Smoke density: light transmitance > 60% (according to IEC 61034).

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5. General make-up of the cable.

5.1 Conductor.

Electrolytic annealed tinned copper conductor, class 5 according to EN 60228 / IEC 60228.

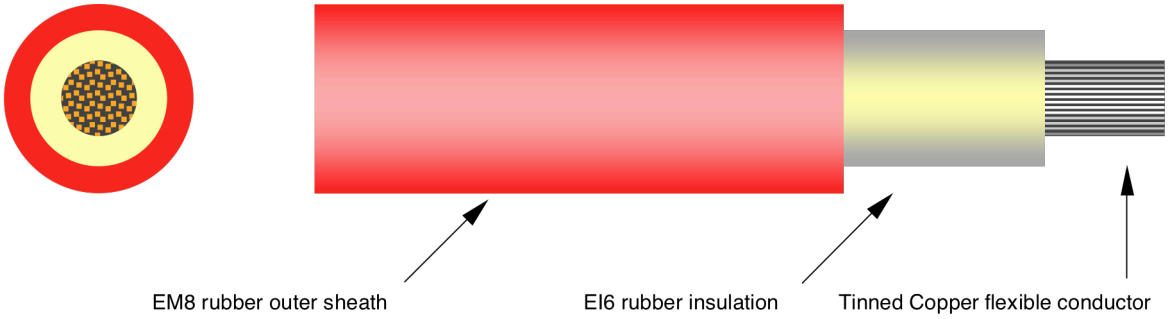
5.2 Insulation.

Halogen free thermosetting rubber insulation, type EI6 according to EN 50363-1.

5.3 Outer sheath.

Halogen free thermosetting rubber outer sheath, type EM8 according to EN 50363-1. Red or black color.

5.4 Diagram representation.



6. Current-carrying capacities.

6.1 Nominal current-carrying capacities.

Table 1 show the current-carrying capacities and electric parameters detailed for every cable.

Current-carrying capacities, in ampers, are calculated according to EA 0038 and for the following conditions:

- Open air installation: one single-core cable and ambient temperature of 60 °C; with adequate ventilation (supported by cleats and hangers or on perforated tray).
- Adjacent surface installation: one single-core cable directly on a wall with low thermal conductivity; ambient temperature of 60 °C.
- In all cases it is supossed a direct current circuit.

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Voltage drop is calculated with conductor temperature of 120 ºC.

For conditions other than this apply the adequate correction factors (point 6.2).

Cross-section mm^2	Open air A	Surface A	Voltage drop V/A·km
1 x 2,5	41	33	23,0
1 x 4	55	44	14,3
1 x 6	70	57	9,49
1 x 10	98	79	5,46
1 x 16	132	107	3,47
1 x 25	176	142	2,23
1 x 35	218	176	1,58

Table 1

6.2 Correction factors.

The current-carrying capacities must be multiplied with the adequate correction factor when the installation conditions differs from point 6.1

Correction factors for air temperatures other than 60°C.

Air Temp. (ºC)	50	55	60	65	70	75	80	85	90
Factor	1,08	1,04	**1**	0,96	0,91	0,87	0,82	0,76	0,71

Table 2

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7. Dimensions.

Table 3 show diameters and weight detailed for every cable.

Cross-section mm^2	Outer Ø mm	Weight kg/km
1 x 2,5	5,6	52
1 x 4	6,1	68
1 x 6	6,7	89
1 x 10	7,8	136
1 x 16	8,8	193
1 x 25	10,8	294
1 x 35	11,9	390

Table 3