

CERTIFICATE OF CONFORMANCE

Cable type: TOPSOLAR PV H1Z2Z2-K

Top Cable, S.A. certifies

Cables of the type described supplied by Top Cable, are designed, manufactured and tested according to the latest revisions to the following standards:

- EN 50618
- TÜV 2Pfg1169-08
- UTE C 32-502

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

Life expectancy estimated of the cable under other temperatures:

90 °C	100 °C	110 °C	120 °C	130 °C	140 °C	150 °C	160 °C
270.000 h	120.000 h	50.000 h	24.000 h	12.000 h	6.000 h	3.000 h	1.500 h

These cables have the next main features and comply with the following standards:

- Voltage* : 1,8 kV DC
- Tinned copper conductor class 5 : EN 60228; IEC 60228
- Range temperature ambient : -40 to +90 °C
- Max. temperature at conductor : + 120 °C
- No flame propagation : EN 60332-1-2; IEC 60332-1-2
- Halogen free, < 0,5% HCl : EN 50267-2-1; IEC 60754
- Low smoke and fumes emission : EN 61034-2
- Resist. to ozone : EN 50396 clause 8.1.3 (Method B)
- Weathering-UV resistance : EN 50618 Annex E
- Long term resistance of insulation to D.C. : EN 50395 Clause 9
- Resist. against acid and alkaline solution : EN 60811-404

* In relation to use in DC circuits, and as in any electric cable, the voltage $U_0/U/(U_m)$ of the photovoltaic cables is 1,5 times the AC voltage.

- Topsolar PV H1Z2Z2-K for DC: 1,5/1,5 / (1,8) kV
- Topsolar PV H1Z2Z2-K for AC: 1/1 kV

U_0 = is the r.m.s. value between any insulated conductor and earth,

U = is the r.m.s. value between any two phases.

U_m = is the maximum permitted operating DC voltage of the system.

These cables are suitable for use in safety **class II** (EN 50618:2014) because they have a double layer of insulation (two layers of Low Smoke Zero Halogen (LSZH) rubber).

These cables are suitable to be installed in open air, underground pipes and for direct burial.

They have the AD7 environmental conditions in presence of water according to A.1 table of the EN 50618 standard. Also, these cables also meet the requirements of Section 5 and Annexes D and E of the standard for rubber cables UNE-EN 50525-2-21. We certify that these tests allow can declare it as a suitable cable for any installations of complete and permanent immersion in water. This classification is AD8 in relation to external environmental conditions of the UNE 20460-3: "Immersion AD8 - Ability to use covered by water permanently and totally".

All the tests carried-out on these cables ensure their perfect performance once in service, provided that the conditions of installation and operation are adequate in accordance with the service for which they were manufactured.

Rubí, April 18th, 2018



Felipe Díaz
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