

CABLES FOR PHOTOVOLTAICS

FlexiSun® 2.5, 4, 6, 10, 16 mm² PV1-F



PRODUCT ADVANTAGES:

For use indoors, outdoors, in explosive areas, and in industrial, commercial, and agricultural applications

Can also be installed:

- underground
- in electrical installation pipes
- on, inside, and under plaster
- in electrical installation ducts
- in equipment

Suitable for use inside and connected to insulated equipment (protection class II)

VDE-tested (VDE reg. no. 8026)

TÜV 2 PfG 1169/08.2007, cert. no. R 60014271

For moveable, suspended or fixed installation in photovoltaic systems at temperatures ranging from -40 °C to +120 °C

Max. ambient temperature up to +120 °C (moveable and fixed)
Designed according to IEC 60216: constant temperature 120 °C = 20,000 h (= 2.3 years), constant temperature max. 90 °C = 30 years

Pollution- and halogen-free

Improved fire-resistant performance

Ammonia resistance

UV and ozone resistant

Protected against short circuits and ground leakages



REG.-Nr. 8026



TECHNICAL DATA

Electrical parameters

Nominal voltage (AC)	U0/U 0.6/1.0 kV
Max. PV system voltage (DC)	1.8 kV
Max. permitted operating voltage (AC)	0.7/1.2 kV conductor-ground/conductor-conductor
Max. permitted operating voltage (DC)	0.9/1.8 kV conductor-ground/conductor-conductor
Test voltage (AC/DC)	6 kV/10 kV (test duration 15 min.)
Current carrying capacity	According to requirements for cables for PV systems DKE/VDE AK 411.2.3
Tests	According to DIN VDE 0282 part 2, HD 22.2 and EN 50395 conductor resistance, AC and DC voltage test, dielectric strength, surface resistance, spark test, leakage resistance at 20 °C and 90 °C in water and at 120 °C in air. EN 50305 section 6, DC resistance (10 days, 85 °C in saltwater, 1.5 kV DC)

Thermal parameters

Ambient temperature	–40 °C to +120 °C (moveable and fixed), designed according to IEC 60216: constant temperature 120 °C = 20,000 h (2.3 years), constant temperature max. 90 °C = 30 years
Short circuit temperature	+250 °C (max. 5 sec on conductor)
Low-temperature resistance	Cold bending and elongation according to EN 60811-1-4, cold impact according to EN 50305
Damp / heat test	According to EN 60068-2-78, 1,000 h at 90 °C and 85 % humidity

Mechanical parameters

Tensile load	15 N/mm ² in use, 50 N/mm ² during installation
Bending radius	See table
Abrasion	Emery paper (int. test according to DIN 53516), sheath to sheath (int. test), sheath to metal (int. test), sheath to plastic (int. test)
Shore hardness	85 (int. test according to DIN 53505)
Rodent resistant (martens)	For absolute safety, use protective hoses or cables with metallic sheathing such as web covering or braided sleeving

Resistance to external influences

Resistance to petroleum	24 h, 100 °C (int. test according to DIN VDE 0473 811-2-1, DIN EN 60811-2-1)
Ozone resistance	Test according to DIN EN 50396, HD 22.2 test type B
UV resistance	Test according to UL 1581 (xeno-Test), ISO 4892-2 (meth. 1), HD 605/A1-2.4.20
Acid and base resistance	According to EN 60811-2-1, 7 days, 23 °C (N oxalic acid, N sodium hydroxide solution)
Ammonia resistance	30 days saturated ammonia atmosphere (int. test)
Water absorption (gravimetric)	Int. test according to DIN EN 60811-1-3 and DIN VDE 0473-811-1-3

Reaction to fire

Flame spread, individual cable	DIN EN 60332-1-2 and DIN VDE 0482 part 332-1-2
Flame spread, bundle of cables	Int. test according to DIN EN 50305-9 and DIN VDE 0482 part 266-2-5
Smoke emission, light transmission > 70 %	Int. test according to DIN EN 50268-2 and DIN VDE 0482 part 268-2
Low corrosiveness	DIN EN 50264-1
Low toxicity	Int. test according to DIN EN 50305 (ITC index less than 3)
Ecological safety measures	Have been taken concerning recycling and disposal as well as energy-saving production (free of pollutants and halogen; no environmentally harmful pollutants are released during thermal recycling)

Design criteria

Conductor	Electrolytic copper, tin-plated, class 5 according to IEC 60228 (DIN VDE 0295)
Insulation	Halogen-free, heat- and ozone-resistant, special mixture of cross-linked hard ethylene propylene rubber-based elastomer (HEPR) 120 °C according to IEC 60502-1, (mixture type EI6/EI8)
Sheath	Halogen-free, heat- and cold-resistant, special mixture of cross-linked ethylene vinyl acetate-based elastomer (EVA). Ozone-, UV-, oil-, and chemical-resistant. According to HD 22.1 (mixture type EM4/EM8)
Labeling	IBC FlexiSun® (cross section) PV1-F 0.6/1 kV, VDE reg. no. 8026/TÜV cert. R 60014271

Nominal cross section	mm ²	2.5	4	6	10	16
Conductor diameter	mm	1.9	2.4	2.9	4.0	5.5
Outer diameter (minimum)	mm	4.9	5.2	5.7	6.8	8.3
Outer diameter (maximum)	mm	5.1	5.6	6.1	7.2	9.0
Net cable weight, approximate	kg/km	43	58	77	120	178
Min. bending radius	mm	15	17	18	22	36
Max. permissible tensile load	N	38	60	90	150	240
Max. current load at 60 °C	A	41	55	70	98	132
Permitted short circuit current (1 sec)	kA	0.32	0.50	0.76	1.26	2.01
Item numbers		7000202003	7000202004	7000202006	7000202010	7000202016

Subject to technical changes for further improvements.

08-2008