PAKISTAN CABLES

TRUSTED NOT TO COMPROMISE

SOLAR CABLES

FOR PHOTOVOLTAIC (PV) MODULES & SOLAR POWER PLANTS (H1Z2Z2-K)

A member of ASC AMIR S. CHINOY GROUP

ABOUT US

Pakistan Cables is the premier and most reputable wires and cables manufacturer in Pakistan since 1953. Being the first and most trusted wires and cables manufacturer, it has the largest geographical footprint in Pakistan with presence in over 200 cities and towns. It is listed on PSX since 1953 and also a member company of the Amir S. Chinoy group. It is ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certified and various cables type tested by KEMA, Netherlands. The Company's science-based emission reduction targets are validated and approved by SBTi. It is also a signatory of the UN Global Compact and net zero commitment.

SOLAR CABLES

Solar Power gets attention due to being the most promising environment-friendly source, and is expected to have a significant role in mitigating Earth's bulging energy problem. Allowing energy production decentralization, having no moving parts (all other sources involve a mechanical process leading to wear & tear), improved efficiencies through innovation, and declining CapEx costs are just some of the factors favoring SOLAR.

APPLICATION

Single Core Solar PV cable intended for the interconnection within photovoltaic systems such as solar panel arrays. This versatile single-conductor cable is designed to meet the varying needs of the solar industry. Highly flexible cable, compatible with all major connectors. Suitable for wet, damp and humid locations as well as installations where fire, smoke emissions and toxic fumes create a potential risk to life and equipment.

FEATURES

ESTIMATED LIFETIME
30 years based on **EN 60216-2**

OUTDOOR DURABILITY
Wide thermal range **(-40°C to +120°C)** and ozone resistant

ULTRA VIOLET (UV) RESISTANCE
Full protection as per **EN 50618**

HALOGEN-FREE
Low Smoke Emission & Low Toxicity/Corrosivity during fire

PROPERTIES AGAINST FIRE
Flame retardant to **IEC 60332-1-2**

FLEXIBILITY AND STRIPABILITY
To set up a quick connection

EASY INSTALLATION
With color identification (as required by customer)

CONNECTORS
Compatible with all types of common connectors.

CHARACTERISTICS

ELECTRICAL

Voltage Rating (Uo/U):
AC 600/1000 V / DC 1500/1500 V
Max Voltage:
1.8 kV DC conductor/conductor, non-earthed system, circuit not under load
Test Voltage:
6.5 kV AC /15 kV DC for 5 minutes

TEMPERATURE

Fixed: -40°C to +90°C
Permissible Normal Operating: +90°C
Max Conductor Temperature:
+120°C (for 20,000 hours) at a max. ambient temperature of 90°C

MINIMUM BENDING RADIUS

Fixed: 4 x overall diameter
Flexing: 5 x overall diameter

MECHANICAL

Resistant to impact, tear and abrasion
Safe pulling force -50 N/mm^2

CONSTRUCTION

Conductor ------- Insulation --------- Sheath

Class 5 (flexible) tinned copper, based on IEC 60228

Cross Linked, Halogen-Free, Flame-Retardant Polyolefin (XLPO) Compound

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CABLE STANDARDS

GENERALLY	EN 50618, IEC 62930, TUV-2 PFG 1169	2015
LIFE EXPECTANCY	IEC 60216	Estimated design lifetime 30 years
WEATHER RESISTANCE	IEC 60811-1-3 IEC 60811-2-1 EN 50618 / UL 1581 IEC 60811-1-4 IEC 60216	Resistance to weather absorption Resistance to Ozone Resistance to UV rays Minimum service temperature -40°C Maximum conductor temperature +120°C (20,000 hours)
MECHANICAL RESISTANCE	IEC 60811-1-4 EN 50305 IEC 61034-2	Impact Resistance Abrasion resistance Tear resistance
FIRE AND FLAME RETARDANT	IEC 60754-1 IEC 60754-2 IEC 61034-2 IEC 60332-1-2	Low Smoke Zero Halogen (LSZH) Low Corrosive Gas Emission Low Smoke Emission (light transmittance >= 60%) Vertical flame propagation on complete cable
CHEMICAL	EN 60811-2-1	Resistant to chemicals, oils, grease, mineral oils, acids and alkaline

DIMENSIONAL AND INSULATION RESISTANCE VALUES

Table 1

NUMBER AND NOMINAL CROSS SECTIONAL AREA OF CONDUCTORS	THICKNESS OF INSULATION SPECIFIED VALUE	THICKNESS OF SHEATH SPECIFIED VALUE	MEAN OVERALL DIAMETER UPPER LIMIT INFORMATIVE VALUE	MINIMUM INSULATION RESISTANCE AT 20°C	MINIMUM INSULATION RESISTANCE AT 90°C
mm²	mm	mm	mm	MΩ.km	MΩ.km
1 x 1.5	0.7	0.8	5.4	860	0.86
1 x 2.5	0.7	0.8	5.9	690	0.69
1 x 4	0.7	0.8	6.6	580	0.58
1 x 6	0.7	0.8	7.4	500	0.50
1 x 10	0.7	0.8	8.8	420	0.42
1 x 16	0.7	0.9	10.1	340	0.34
1 x 25	0.9	1.0	12.5	340	0.34
1 x 35	0.9	1.1	14.0	290	0.29
1 x 50	1.0	1.2	16.3	270	0.27
1 x 70	1.1	1.2	18.7	250	0.25
1 x 95	1.1	1.3	20.8	220	0.22
1 x 120	1.2	1.3	22.8	210	0.21
1 x 150	1.4	1.4	25.5	210	0.21
1 x 185	1.6	1.6	28.5	200	0.20
1 x 240	1.7	1.7	32.1	200	0.20

ELECTRICAL CHARACTERISTICS

Table 2

NOMINAL CROSS-SECTIONAL AREA	MAXIMUM DIAMETER OF WIRES IN CONDUCTOR	MAXIMUM RESISTANCE OF METAL-COATED CONDUCTOR AT 20°C	*SHORT CIRCUIT CURRENT RATING FOR 1 SEC. DURATION
mm²	mm	Ω/km	KA
1.5	0.26	13.7	0.189
2.5	0.26	8.21	0.315
4	0.31	5.09	0.504
6	0.31	3.39	0.756
10	0.41	1.95	1.260
16	0.41	1.24	2.016
25	0.41	0.795	3.150
35	0.41	0.565	4.410
50	0.41	0.393	6.300
70	0.51	0.277	8.820
95	0.51	0.210	11.970
120	0.51	0.164	15.120
150	0.51	0.132	18.900
185	0.51	0.108	23.310
240	0.51	0.0817	30.240
*The Short circuit rating is calculated based on the initial conductor operating temperature 120°C and maximum temperature 250°C			

CURRENT CARRYING CAPACITY OF PV CABLES

Table **3**

NOMINAL CROSS SECTIONAL AREA	CURRENT CARRYING CAPACITY ACCORDING TO METHOD OF INSTALLATION		
	SINGLE CABLE FREE IN AIR	SINGLE CABLE ON A SURFACE	TWO LOADED CABLES TOUCHING, ON A SURFACE
mm^2	A	A	A
1.5	30	29	24
2.5	41	39	33
4	55	52	44
6	70	67	57
10	98	93	79
16	132	125	107
25	176	167	142
35	218	207	176
50	276	262	221
70	347	330	278
95	416	395	333
120	488	464	390
150	566	538	453
185	644	612	515
240	775	736	620
Ambient temperature: 60°C (see Table 4 for other ambient temperatures) **Max. conductor temperature:** 120°C			
NOTE: The expected period of use at a max. Conductor Temperature of 120°C and at a max. Ambient temperature of 90°C is limited to 20,000 hours.			

CURRENT RATING CONVERSION FACTORS FOR DIFFERENT AMBIENT TEMPERATURES

Table **4**

AMBIENT TEMPERATURE	CONVERSION FACTOR
C°	
up to 60	1.00
70	0.92
80	0.84
90	0.75

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ISO9001 2015 Quality Management System

ISO 14001 Environmental Management System

OHSAS 18001 Occupational Health and Safety Management System

KEMA TYPE TESTED

DCRP OMAN APPROVED

CE

TÜV SÜD

BUREAU VERITAS 1828

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