

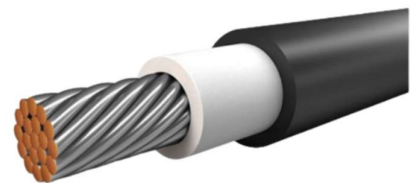


OSWAL
CABLES

Solar Cables



CABLES



INTRODUCTION

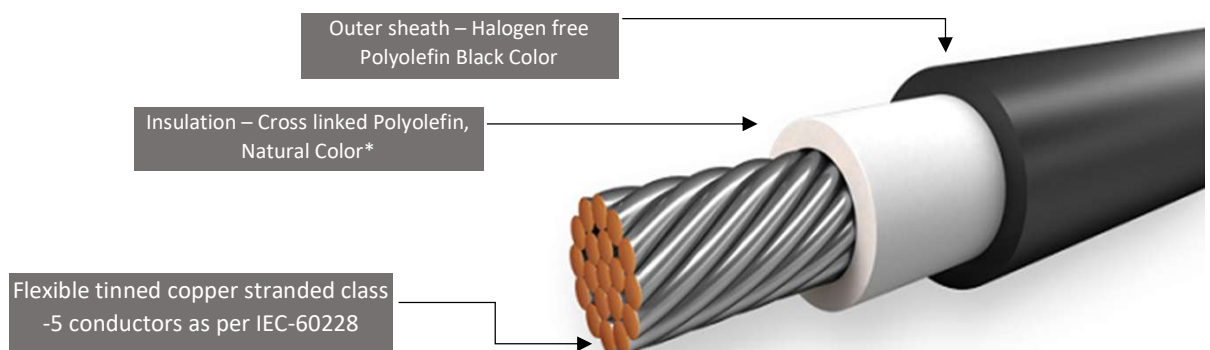
Solar photovoltaic industry gets more attention as the most promising environment- friendly industry, and it is expected to have the significant role in resolving the earth's energy problem. As production costs diminish, users increasingly view these energy sources as clean, cheap and reliable. In this background, the demand for "SOLAR CABLE", which is the current transmission medium of solar energy power generation, is expected to increase with the expansion of market.

SPECIAL PROPERTIES OF SOLAR CABLES

- Lifetime reliability: lasts up to 30 years even under tough external conditions.
- Outdoor durability: resists extreme temperatures (-40°C to 120°C maximum at the core) and ozone resistant.
- UV resistance: full protection against ultraviolet rays.
- Halogen-free: Low Smoke Emission & Low Toxicity/Corrosivity during fire.
- Properties against fire: flame retardant, fire retardant.
- Flexibility and stripability: for fast and easy installation.
- Fully recyclable: in accordance with new environmental regulations.
- Easy installation with color identification (blue, red).
- Suitable to common connector types.
- UL, TÜV, UTE and IMQ-certified.

Constituents OSWAL SOLAR CABLES are manufactured with the following materials.

1. ANNEALED TINNED COPPER CONDUCTOR
2. CROSS LINKED POLYOLEFIN COMPOUND
3. ZERO HALOGEN POLYOLEFIN COMPOUND



REQUIRED FEATURES OF SOLAR CABLE

CHEMICAL FEATURES

- Weather resistant
- Resistant to mineral oils
- Resistant to acids & alkaline

THERMAL FEATURES

- Maximum conductor temperature of operation-120° C during 20000 hours.
- Minimum operating temperature : - 40° C

ELECTRICAL FEATURES

- Voltage rating : 1.5 (1.8) KV DC / 0.6/1.0 (1.2) KV AC
- High voltage test: 6.5 KV DC for 5 minutes.

MECHANICAL FEATURES

- Resistant to Impact , tear & abrasion
- Minimum bending radius – 4 times of overall diameter.
- Safe pulling force -50 N/sqmm.



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SIZE cross sectional area in (sqmm)	Max. Conductor D.C. Resistance at 20 °C in ohm/ (km)	Average Diameter of Conductor (in mm)	Approx. Overall Diameter of cable (in mm)		Approximate Overall weight (in kg/km)	Minimum Bending radius (in mm)	Current rating under continous operation 90°C and ambient temperature 40°C (in A)	Short circuit current rating for 1 sec. duration (in KA)
1.5	13.7	1.46	4.46	4.86	35	19	22	0.189
2.5	8.21	1.88	4.88	5.28	46	21	30	0.315
4	5.09	2.39	5.39	5.79	64	23	42	0.504
6	3.39	2.93	5.93	6.33	84	25	52	0.756
10	1.95	3.86	7.26	7.66	133	31	76	1.26
16	1.24	5.39	8.79	9.19	195	37	95	2.02
25	0.795	6.73	10.53	11.13	290	45	124	3.15
35	0.565	8.08	11.88	12.48	390	50	159	4.41
50	0.393	9.69	13.49	14.09	530	56	185	6.3
70	0.277	11.54	15.34	15.94	715	64	239	8.82
95	0.21	13.25	17.05	17.85	920	71	290	11.97
120	0.164	15	18.8	19.6	1150	78	335	15.12
150	0.132	16.77	21.37	22.37	1460	89	385	18.9
185	0.108	18.54	23.54	24.54	1770	98	440	23.31
240	0.0817	21.33	26.33	27.33	2300	110	520	30.24

TESTS & RATINGS OF SOLAR CABLES

Severe Weather Resistance



Maximum Conductor Temperature
120° C IEC 60216



Resistance to Extreme Temperatures
Minimum: -40° C IEC 60811-1-4



Resistance to Ultraviolet
Rays (UV) UL 1581



Resistance to Ozone
IEC 60511-2-1



Resistance to Water Absorption
IEC 60811-1-3

Life Expectancy



Design Life Time 30 Years
IEC 60216

Mechanical Resistance



Impact Resistance
IEC 60811-1-4



Abrasion Resistance
EN 50305



Tear Resistance
IEC 61034-2

Severe Weather Resistance



Environment-Friendly



Halogen Free
IEC 60754-1



Low Corrosive Gas Emission
IEC 60754-2



Low Smoke Opacity
IEC EN 61034-2



Non Fire Propagation
IEC 60332-3



3. Connection between photovoltaic modules and panels 1.8 kV DC-0.6/1 kV AC
Standard Cross-section from 1x2.5 to 1x35mm² - Up to 240 mm² upon customer request - TÜV certificate

1. 2LV DC installation between panels and connection boxes 1.8 kV DC-0.6/1 kV AC
Standard cross-section from 1x2.5 to 1x35mm² - Upto 240 mm² upon customer request - TÜV certificate

2. 3LV DC installation between the connection boxes and the inverter (AS) 1.8 kV DC-0.6/1 kV AC In accordance with the AENOR EA0038 standard - Cross Sections from 1x16 to 1x300mm² - Armoured Cable



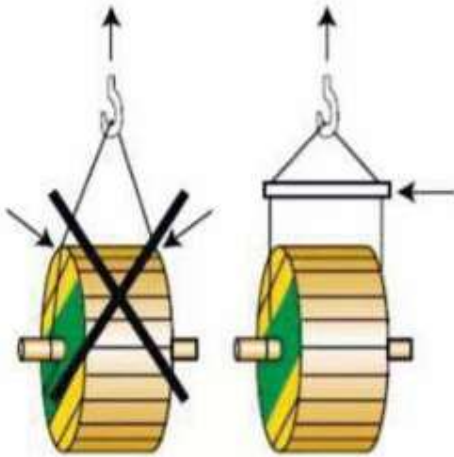
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DRUM HANDLING INSTRUCTIONS

(Packing, Transportation, Storage, Unwinding)

Following Instructions should be followed for handling conductor drums:

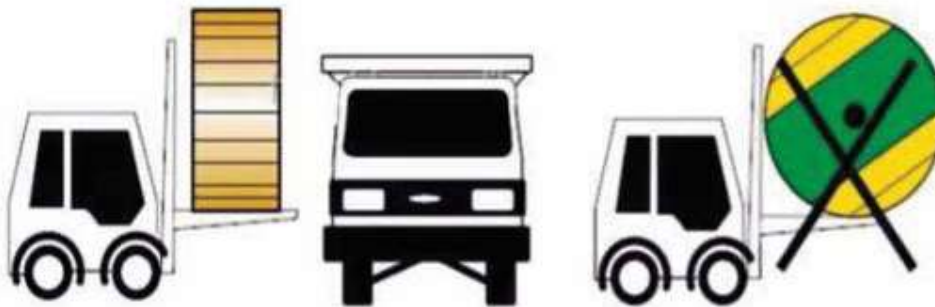
1. Generally conductor ends should be available for inspection and testing.
2. During unloading operation drums must not be thrown or dropped from a height from trailers, trucks or ships. A ramp, forklift or crane may be used for unloading operation. If neither is available a temporary ramp may be arranged.
3. The drums should be rolled in the direction indicated by the arrow mark on the drum. Rolling in the opposite direction will result in the conductor unwinding and becoming loose.
4. The drums should be stored on a firm surface (preferably a concrete surface). Storage of drums on a soft surface may result in drums sinking, making it extremely difficult to move the drums later on.
5. The drums should never be stored flat i.e. the flanges being kept horizontal to the ground. The conductor should also never be unwound from this position, as this may result in the conductor getting twisted which is not rectifiable.
6. If for some reason it is necessary to rewind the conductor on a different drum, the barrel of the new drum should not be less than the existing drum.



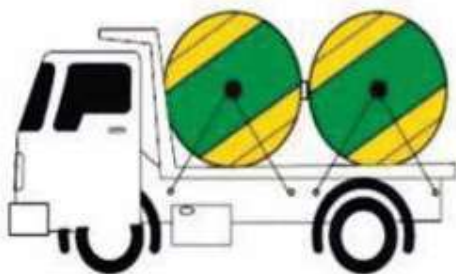
Lifting Cable Drums Using Crane



Do Not Lay Drums Flat On Their Sides, Use Proper Wedges To Prevent Drums Rolling



Lift drums on fork trucks correctly



Secure drums adequately before transportation



Roll in the direction shown by the arrow



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