

# OPGW

## OPTICAL PROTECTION GROUND WIRE



The complete compatibility between the electrical power carrying and the optical transmission allows to optimise the use of low and medium tension network structures already existing or of new installation. The aperture of telecommunication market to new telephone operators, data transmission and video signals represent an additional possibility to employ OPGW cable everywhere. Its structure and its performances have been designed in relation with the characteristics of overhead lines where it will be installed. For example it has to be verified very carefully the short circuit current, which is very important for the calculation of the temperature which can develop in this case and the necessary cooling time.

Some notes for the design of OPGW conductors are listed in the following pages.

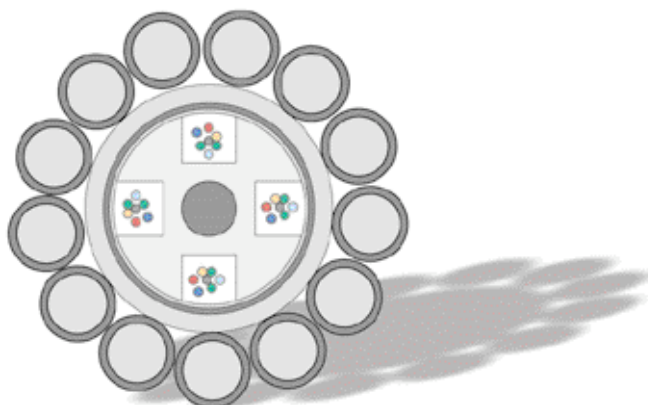
The OPGW conductor is usually composed of a central non metallic member containing the fibres, which is situated inside the steel or electro-welded tube. Over the tube are applied one or more layers of steel or aluminium, aluminium alloy and steel alloy wires. The type, the number and size of each wire is chosen on the basis of the working conditions .

In some cases it is possible to use a non metallic optical fibre cable helically wound on the protection conductor or on the phase conductor.

Some examples are shown in the following pages.

## What to take in consideration for the project

- Operating voltage of the power line
- Maximum short circuit current
- Short circuit time
- Supporting structure type
- OPGW installation system
- Pole span and conductor hang
- Range of temperature for storage, installation and operation
- Ground profile
- General weather condition
- Light frequency
- Maximum wind speed
- Maximum ice load



### FIBRE

Optical fibre cable		nr	24
Max Attenuation	1310 nm	dB/Km	0.43
	1550 nm		0.26
Chromatic Dispersion	1310 nm	ps (nm x Km)	3.5
	1550 nm		20

### CABLE CORE

Strength member diameter	mm	1.7
Slot diameter	mm	5.3
Aluminium tube	mm thickness	0.8
	mm diameter	7.0

### ARMOUR

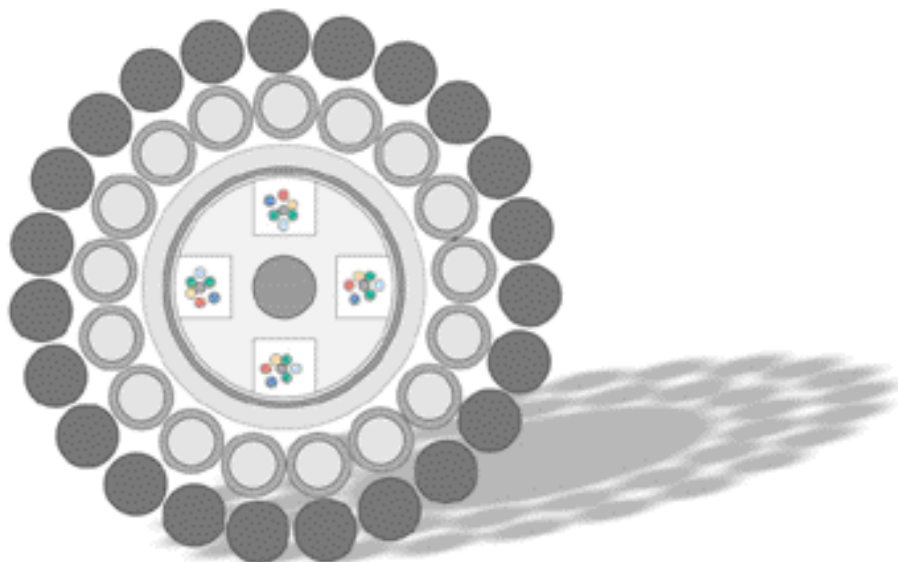
Single layer steel alumoweld wires	n x mm diam	13 x 2.4
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### MECHANICAL VALUES

Breaking load	da N	> 7450
Modulus elasticity	da N mm <sup>2</sup>	10000
Short circuit current	kA/1 sec	7
	kA/0.5 sec	10
Coeff. linear expansion	1/°C	16 x 10 exp-6

### DIMENSIONS

Outer diameter	mm	12.5
Nominal weight	Kg/m	0.60



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	1550 nm		20

### CABLE CORE

Strength member diameter	mm	1.7
Slot diameter	mm	5.3
Aluminium tube	mm thickness	0.8
	mm diameter	7.0

### ARMOUR

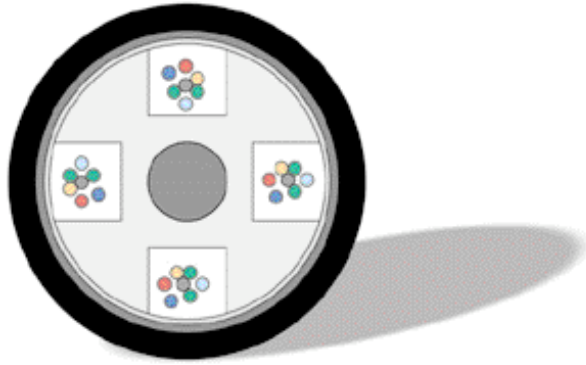
1° layer steel alumoweld wires	n x mm diam	18 x 2.02
2° layer aluminium wires	n x mm diam	23 x 2.02

### MECHANICAL VALUES

Breaking load	da N	>10600
Modulus elasticity	da N mm <sup>2</sup>	8800
Short circuit current	kA/1 sec	14
	kA/0.5 sec	20
Coeff. linear expansion	1/°C	17 x 10 exp-6

### DIMENSIONS

Outer diameter	mm	17.9
Nominal weight	Kg/m	0.82



### FIBRE

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	1550 nm		0.26
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	1550 nm		20

### CABLE CORE

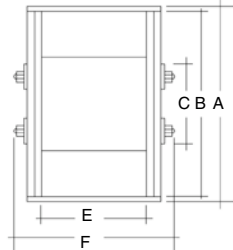
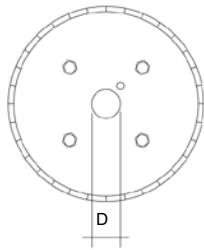
Strength member diameter		mm	1.7
Slot diameter		mm	5.3

### MECHANICAL VALUES

Max applicable load		N	600
Max applicable load during installation		N	100
Minimun bending radius		mm	50

### DIMENSIONS

Sheaths	inner	mm thickness	0.45
		diameter	6.6
	outer	mm thickness	0.45
Outer diameter		mm	7.5
Nominal weight		Kg/m	0.55

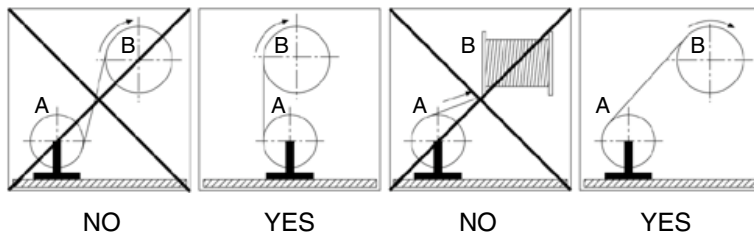


- A - Flange diameter including circumference batten
- B - Flange diameter without circumference batten
- C - Inner barrel diameter
- D - Axis hole
- E - Inner width
- F - External width

### DIMENSIONS

Drum type	A mm	B mm	C mm	D mm	E mm	F mm	Weight Kg	Volume m <sup>3</sup>
BL 60	690	630	315	80	315	435	30	0.19
BL 70	770	710	355	80	400	515	35	0.28
BL 80	960	800	400	80	450	575	40	0.39
BL 90	960	900	450	80	450	575	50	0.45
BL 100	1.060	1.000	500	80	560	685	60	0.77
BL 120	1.310	1.250	630	80	630	760	100	1.27
BL 140	1.460	1.400	710	80	750	920	140	1.76
BL 160	1.660	1.600	900	80	900	1.070	250	2.80
BL 180	1.860	1.800	1.120	80	1.120	1.320	300	4.20
BL 200	2.060	2.000	1.250	125	1.120	1.320	400	5.20
BL 220	2.300	2.240	1.400	125	1.120	1.320	450	6.30
BL 250	2.510	2.450	1.500	125	1.120	1.320	500	8.20

### HANDLING



CABLE DIAMETER	DRUM TYPE								
	60	80	100	120	160	180	200	220	250
METRES									
6	1400	3590							
7	1000	2600							
8	800	2000							
9	600	1590							
10	500	1290							
11	400	1000	2000						
12	350	850	1800						
13	300	750	1500						
14	250	650	1350						
15	237	550	1150	1900					
16	208	500	1000	1800					
17	184	450	900	1400					
18	164	400	800	1350					
19	147	350	700	1200					
20	133	320	650	1100					
21	120	293	600	1000	2100				
22	110	267	550	900	2000				
23	100	244	500	850	1750				
24	97	224	450	750	1600				
25		206	410	700	1500				
26		191	379	650	1400				
27		177	352	600	1350				
28		165	327	550	1200				
29		153	305	510	1100				
30		143	285	475	1000		1850		
32		126	250	450	900	1420	1650		
34		121	222	400	800	1250	1450		
36		99	198	350	700	1200	1290		
38		89	177	300	650	990	1160	1575	
40			160	260	575	890	1050	1420	
42			145	240	500	800	950	1290	
44			132	220	475	725	865	1175	1535
46			121	200	435	660	790	1075	1405
48			111	185	400	605	725	985	1290
50			102	170	370	555	670	910	1190
52			94	157	340	510	620	840	1100
54				146	320	470	575	780	1020
56				136	295	440	535	725	950
58				126	275	410	500	675	885
60				118	255	380	465	630	825
62				111	240	355	435	590	775
64				104	225	330	410	555	725
66				97	212	310	385	520	685
68				95	200	295	360	490	640
70					188	275	340	465	605
72					178	260	320	440	575
74					168	245	305	415	540
76					160	230	290	390	515
78					152	220	275	370	490
80					144	210	260	355	465
82					137	200	250	340	440
84					131	190	235	320	420
86					125	181	225	305	400
88					119	173	215	290	385
90					114	165	205	280	365
92					109	158	195	265	350
94					104	151	189	255	335
96					100	144	181	245	320
98					96	138	175	235	310
100						133	167	225	295

## PRODUCTION RANGE

### TELECOMMUNICATION CABLES

- Optical fibre cables slot type up to 100 fibres
- Optical fibre cables loose buffer tubes up to 96 fibres
- Optical fibre cables slot ribbon types up to 400 fibres
- Jelly filled telephone cables up to 1200 pairs
- Underground telephone cables without jelly filling up to 2400 pairs
- Flame retardant cables and low emission of fumes, toxic and corrosive gasses.
- Public telephone cable - home telephone cables.
- OPGW cables (Optical Protection Ground Wire)
- Signalling cables with or without screen
- Instrument cables in pairs and/or triples
- Thermocouples
- Coaxial cables
- Special cables to customer's specifications
- Flame retardant cables and low emission of fumes, toxic and corrosive gasses.
- Fire resistant cables

### LOW AND MEDIUM TENSION POWER CABLES UP TO U<sub>0</sub>/U 26/45 KV

- Distribution, industrial and domestic cables
- Cables with copper or aluminium conductor
- Insulated in XLPE - RUBBER - PVC
- Screened and/or armoured cables
- Cables with concentric conductor
- Flame retardant cables and low emission of fumes, toxic and corrosive gasses.
- Fire resistant cables

## QUALITY SYSTEM

Our Quality System management includes two certificates: Basec (UK) and Aenor (E), in accordance to ISO 9001/2000 covering the production, purchasing of raw materials design and final test including various documents typologies. Tratos Quality System management is under constant control by inspectors working for the certifying bodies.



Tratos Cavi S.p.A. reserves the right to modify at any time technical dimensional and weight characteristics shown in this catalogue to improve the features of its products. However these will still be in accordance to the mentioned standards.

There is no responsibility of the manufacturer for damages to persons and property in case of improper use and/or neglecting the recommendations for using cables and norms contained in this catalogue.

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**FIBRE OPTIC  
CABLES**