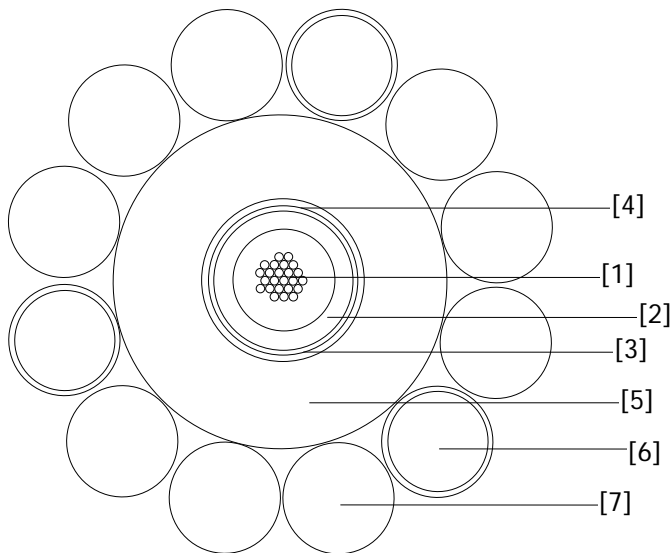


OPGW

Ref: s001

OPTICAL GROUND WIRES with capacity up to 48 optical fibres



Introduction

Features and benefits

This cable has been custom designed to best match with customer requirements from optical, electrical, mechanical, quality and cost point of view, optimising diameter, weight, breaking load and short circuit capacity.

Optical core is made of optical fibres [1] covered by small PBT loose buffer tube [2] that protect fibres against high temperatures and at the same time leaves fibres free from strain even at highest operating loads.

Aramid yarns [3].

A Pirelli patented hydrogen absorbent jelly [4] is used to protect optical fibres from hydrogen attack.

The aluminium tube [5] provides the cable with:

- high short circuit capacity minimizing material
- best solution to avoid cable corrosion
- a perfect sealing for the optical core
- a high crush resistance

The wires of...

- aluminium clad steel [6].
- aluminium alloy [7].

...provides the cable with:

- the required strength.
- best solution to avoid cable corrosion.
- the remaining short circuit capacity.

Fibre characteristics

See our technical document reference 4377 SM Light™, FreeLight™, multimode 50/125 and multimode 62.5/125 optical fibres.

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Routine tests

100% of optical fibres will be measured by OTDR technique before leaving factory.

Installation procedure

Prysmian recommends to install the cable described in this specification following the latest version of our "Installation procedures for OPGW fibre optic cable" reference Q-09-PE-PA-012, "Instruction for the installation of the EWMJ joint box" reference Q-09-PE-PA-014 and "Instruction for the installation of the EWJ joint box" reference Q-09-PE-PA-004.

Cable structure

Optical core

1 tube (blue) filled with water blocking compound with up to 48 fibres:

fibre number	fibre colour without rings	fibre number	fibre colour with 1 ring	fibre number	fibre colour with 2 rings	fibre number	fibre colour with 3 rings
1	blue	13	blue	25	blue	37	blue
2	orange	14	orange	26	orange	38	orange
3	green	15	green	27	green	39	green
4	brown	16	brown	28	brown	40	brown
5	slate	17	slate	29	slate	41	slate
6	white	18	white	30	white	42	white
7	red	19	red	31	red	43	red
8	black	20	natural	32	natural	44	natural
9	yellow	21	yellow	33	yellow	45	yellow
10	violet	22	violet	34	violet	46	violet
11	pink	23	pink	35	pink	47	pink
12	aqua	24	aqua	36	aqua	48	aqua

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OPTICAL GROUND WIRES with capacity up to 48 optical fibres

Cable characteristics

The lay direction of armour will be right (Z). The operational temperatures of OPGW will be from -50°C to +80°C.

Cables up to 24 fibres

Cables of 12 and 13 mm ϕ

Reference:	5983	5984	5985	5986	5987	5988	5989
Name:	20A49z	20B40z	20B32z	30C56z	30D48z	30D42z	30E36z
Aluminium tube diameter (mm):	6	6	6	7	7	7	7
n°ACS ⁽¹⁾ + n°AA ⁽²⁾ wires:	9+0	6+3	3+6	10+0	7+3	5+5	3+7
Wires diameter (mm):	3.02	3.02	3.02	3.02	3.02	3.02	3.02
Approximate cable diameter (mm):	12	12	12	13	13	13	13
Approximate cable weight (kg/km):	485	400	315	561	476	419	363
Rated tensile strength ⁽³⁾ (kN):	78.9	59.3	39.6	88.3	68.7	55.6	42.5
Rated tensile strength ⁽³⁾ (N/mm ²):	1000	752	502	917	713	577	441
Ultimate tensile strength (kN):	87	65	44	98	76	61	47
Ultimate tensile strength (N/mm ²):	1103	824	558	1018	789	633	488
Maximum recommended load (kN):	31.6	24	16.4	35.3	27.8	22.7	17.7
Maximum recommended load (N/mm ²):	401	304	208	367	289	236	184
Maximum admissible load in punctual extreme climatic conditions (kN):	31.6	29.7	19.8	44.2	34.4	27.8	21.3
Maximum admissible load in punctual extreme climatic conditions (N/mm ²):	400	376	251	458	357	289	221
Elasticity Modulus ⁽⁴⁾ (kN/mm ²):	131.7	107.6	83.4	124.7	104.9	91.8	78.6
Section ⁽⁴⁾ (mm ²):	78.9	78.9	78.9	96.3	96.3	96.3	96.3
Linear expansion thermal coefficient (x10 ⁻⁶ °C ⁻¹):	13.4	15.1	17.9	13.8	15.3	16.7	18.6
Minimum bending radius:							
- On pulley blocks (mm):	300	300	300	300	300	300	300
- On tensioner devices (mm):	500	500	500	500	500	500	500
- After clamping ⁽⁵⁾ (mm):	300	300	300	300	300	300	300
Electrical resistance (20°C):	0.792	0.604	0.488	0.585	0.475	0.422	0.38
Short circuit rating from 40°C (kA2s):	38	45.2	50.2	61.1	69.2	73.5	76.8
Short circuit current for 0.3 s (kA):	11.3	12.3	12.9	14.3	15.2	15.7	16

⁽¹⁾ Aluminium clad steel wires according to IEC 1232 class 20SA type A.

⁽²⁾ Aluminium alloy wires according to IEC 104 type A.

⁽³⁾ According to IEEE 1138.

⁽⁴⁾ For stress-strain calculus.

⁽⁵⁾ Slack cable.

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OPTICAL GROUND WIRES with capacity up to 48 optical fibres

Cables up to 24 fibres

Cables of 14 and 15 mm ϕ

Reference:	5990	5991	5992	5993	5994	5995	5996	5997
Name:	40F64z	40G53z	40H47z	40H41z	50J73z	50J61z	50K53z	50K47z
Aluminium tube diameter (mm):	8	8	8	8	9	9	9	9
n°ACS ⁽¹⁾ + n°AA ⁽²⁾ wires:	11+0	7+4	5+6	3+8	12+0	8+4	5+7	3+9
Wires diameter (mm):	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
Approximate cable diameter (mm):	14	14	14	14	15	15	15	15
Approximate cable weight (kg/km):	641	527	471	414	726	613	528	471
Rated tensile strength ⁽³⁾ (kN):	97.9	71.7	58.7	45.6	107.6	81.4	61.8	48.7
Rated tensile strength ⁽³⁾ (N/mm ²):	850	622	510	396	793	600	455	359
Ultimate tensile strength (kN):	108	79	65	50	119	90	68	54
Ultimate tensile strength (N/mm ²):	938	686	564	434	877	663	501	398
Maximum recommended load (kN):	39.2	29.1	24.1	19	43	33	25.5	20.4
Maximum recommended load (N/mm ²):	340	253	209	165	317	243	188	150
Maximum admissible load in punctual extreme climatic conditions (kN):	49.0	35.9	29.4	24.2	53.8	40.7	31.5	27.3
Maximum admissible load in punctual extreme climatic conditions (N/mm ²):	425	311	255	210	396	300	232	201
Elasticity Modulus ⁽⁴⁾ (kN/mm ²):	119.1	97	86	75	114.3	95.6	81.5	72.2
Section ⁽⁴⁾ (mm ²):	115.2	115.2	115.2	115.2	135.7	135.7	135.7	135.7
Linear expansion thermal coefficient (x10 ⁻⁶ °C ⁻¹):	14.1	16	17.4	19.1	14.4	16.2	18	19.6
Minimum bending radius:								
- On pulley blocks (mm):	300	300	300	300	300	300	300	300
- On tensioner devices (mm):	550	550	550	550	600	600	600	600
- After clamping ⁽⁵⁾ (mm):	300	300	300	300	300	300	300	300
Electrical resistance (20°C):	0.452	0.365	0.333	0.307	0.361	0.304	0.272	0.254
Short circuit rating from 40°C (kA2s):	92.4	104.1	108.6	112.2	133.8	146.8	154.2	158
Short circuit current for 0.3 s (kA):	17.5	18.6	19	19.3	21.1	22.1	22.7	22.9

⁽¹⁾ Aluminium clad steel wires according to IEC 1232 class 20SA type A.

⁽²⁾ Aluminium alloy wires according to IEC 104 type A.

⁽³⁾ According to IEEE 1138.

⁽⁴⁾ For stress-strain calculus.

⁽⁵⁾ Slack cable.

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OPTICAL GROUND WIRES with capacity up to 48 optical fibres

Cables up to 48 fibres

Cables of 13 and 14 mm ϕ

Reference:	5998	5999	6000	6001	6002	6003	6004	6005
Name:	30C55z	30C47z	30D41z	30D36z	40E63z	40F52z	40G47z	40G41z
Aluminium tube diameter (mm):	7	7	7	7	8	8	8	8
n $^{\circ}$ ACS ⁽¹⁾ + n $^{\circ}$ AA ⁽²⁾ wires:	10+0	7+3	5+5	3+7	11+0	7+4	5+6	3+8
Wires diameter (mm):	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
Approximate cable diameter (mm):	13	13	13	13	14	14	14	14
Approximate cable weight (kg/km):	554	469	413	356	634	521	465	408
Rated tensile strength ⁽³⁾ (kN):	88	68.4	55.3	42.2	97.6	71.4	58.3	45.2
Rated tensile strength ⁽³⁾ (N/mm 2):	957	743	601	459	879	643	525	407
Ultimate tensile strength (kN):	97	75	61	46	108	79	64	50
Ultimate tensile strength (N/mm 2):	1054	815	663	500	973	712	577	450
Maximum recommended load (kN):	35.2	27.6	22.6	17.6	39	28.9	23.9	18.9
Maximum recommended load (N/mm 2):	383	300	246	191	351	260	215	170
Maximum admissible load in punctual extreme climatic conditions (kN):	35.2	34.2	27.7	21.1	48.8	35.7	29.2	23.5
Maximum admissible load in punctual extreme climatic conditions (N/mm 2):	383	372	301	229	440	322	263	212
Elasticity Modulus ⁽⁴⁾ (kN/mm 2):	128	107.4	93.6	79.8	121.5	98.6	87.2	75.8
Section ⁽⁴⁾ (mm 2):	92	92	92	92	111	111	111	111
Linear expansion thermal coefficient (x10 $^{-6}$ $^{\circ}$ C $^{-1}$):	13.6	15.1	16.6	18.5	13.9	15.9	17.3	19
Minimum bending radius:								
- On pulley blocks (mm):	300	300	300	300	300	300	300	300
- On tensioner devices (mm):	500	500	500	500	550	550	550	550
- After clamping ⁽⁵⁾ (mm):	300	300	300	300	300	300	300	300
Electrical resistance (20 $^{\circ}$ C):	0.642	0.512	0.451	0.403	0.485	0.387	0.351	0.321
Short circuit rating from 40 $^{\circ}$ C (kA2s):	53.9	62	66.3	69.6	83.8	95.4	99.9	103.4
Short circuit current for 0.3 s (kA):	13.4	14.4	14.9	15.2	16.7	17.8	18.2	18.6

⁽¹⁾ Aluminium clad steel wires according to IEC 1232 class 20SA type A.

⁽²⁾ Aluminium alloy wires according to IEC 104 type A.

⁽³⁾ According to IEEE 1138.

⁽⁴⁾ For stress-strain calculus.

⁽⁵⁾ Slack cable.

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OPTICAL GROUND WIRES with capacity up to 48 optical fibres

Cables up to 48 fibres

Cables of 15 mm ϕ

Reference:	6006	6007	6008	6009
Name:	50H72z	50J61z	50J52z	50J47z
Aluminium tube diameter (mm):	9	9	9	9
n°ACS ⁽¹⁾ + n°AA ⁽²⁾ wires:	12+0	8+4	5+7	3+9
Wires diameter (mm):	3.02	3.02	3.02	3.02
Approximate cable diameter (mm):	15	15	15	15
Approximate cable weight (kg/km):	720	607	521	465
Rated tensile strength ⁽³⁾ (kN):	107.3	81.1	61.5	48.4
Rated tensile strength ⁽³⁾ (N/mm ²):	816	617	468	368
Ultimate tensile strength (kN):	119	90	68	53
Ultimate tensile strength (N/mm ²):	905	684	517	403
Maximum recommended load (kN):	42.9	32.8	25.3	20.3
Maximum recommended load (N/mm ²):	326	249	192	154
Maximum admissible load in punctual extreme climatic conditions (kN):	53.7	40.6	30.8	26.6
Maximum admissible load in punctual extreme climatic conditions (N/mm ²):	408	308	234	202
Elasticity Modulus ⁽⁴⁾ (kN/mm ²):	116.2	96.9	82.4	72.7
Section ⁽⁴⁾ (mm ²):	131.5	131.5	131.5	131.5
Linear expansion thermal coefficient (x10 ⁻⁶ °C ⁻¹):	14.3	16	17.9	19.5
Minimum bending radius:				
- On pulley blocks (mm):	300	300	300	300
- On tensioner devices (mm):	600	600	600	600
- After clamping ⁽⁵⁾ (mm):	300	300	300	300
Electrical resistance (20°C):	0.382	0.319	0.283	0.264
Short circuit rating from 40°C (kA2s):	123.6	136.5	143.9	147.6
Short circuit current for 0.3 s (kA):	20.3	21.3	21.9	22.2

⁽¹⁾ Aluminium clad steel wires according to IEC 1232 class 20SA type A.

⁽²⁾ Aluminium alloy wires according to IEC 104 type A.

⁽³⁾ According to IEEE 1138.

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