

Armoured optical cable

Stranded loose tube design

Cable design

1. Central strength member (CSM)

FRP resp. FRP covered with thermoplastic material

2. Loose tubes

tubes of thermoplastic material filled with thixotropic compound, containing up to 12 fibres

3. Cable core

required number of loose tubes and if necessary PE filler elements are SZ stranded around the central element. The interstices of the cable core are filled with high grade cable filling compound.

4. Core wrapping

plastic tape

5. Strain bearing elements

aramid yarns

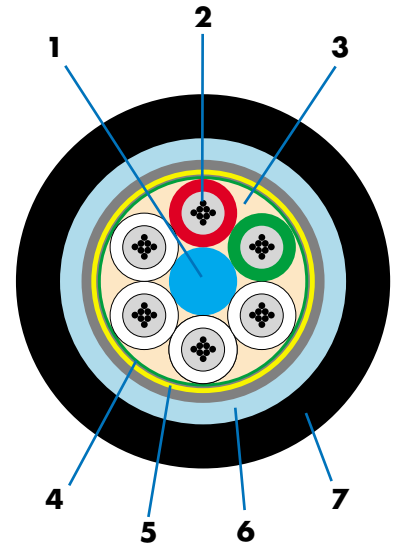
6. Armouring

corrugated steel tape;
two ripcords beneath the tape

7. Sheath

PE, black, nominal radial thickness: 1.5 mm

Figure shows:
cable with 48 fibres



Cable dimensions and main mechanical characteristics

Max. no. of loose tubes x max. fibre count per tube	Max. fibre count	Cable O.D.	Cable weight	Tensile performance installation/operation	Bending radius installation/operation	CSM O.D.	Loose tubes O.D.
		[mm]	[kg/km]	[N]	[mm]	[mm]	[mm]
6 x 4	24	9.0	85	850/300	180/135	1.5	1.4
6 x 8	48	11.0	120	1200/400	220/165	2.1	2.0
5 x 12	60	11.0	130	1300/450	220/165	1.8	2.3
6 x 12	72	12.0	145	1450/500	240/180	2.4	2.3
8 x 12	96	13.0	180	1800/600	260/195	3.0/3.9	2.3
10 x 12	120	15.0	215	2150/750	300/225	3.0/5.4	2.3
12 x 12	144	17.0	270	2700/900	340/255	3.0/7.0	2.3
18 x 12 (2 layers)	216	17.0	275	2750/950	340/255	2.4	2.3

All sizes and values without tolerances are reference values

Standard delivery length

2 km, 4 km or 6 km

Temperature performance

Operation: -15°C up to +60°C

Transport and storage: -40°C up to +70°C

Installation: -5°C up to +50°C

Main mechanical and environmental characteristics

Test	Test standard	Specified value	Acceptance criteria
Tensile performance	EN 187000, 501	kilometric weight * 1 [N] = T_{max} kilometric weight * 1 [N] / 3 = T_0	$\Delta\alpha$ reversible $\Delta\alpha \leq 0.05$ dB/100 m
Crush	EN 187000, 504	2.5 kN/100 mm, 15 min	$\Delta\alpha \leq 0.05$ dB
Impact	EN 187000, 505	25 Nm, r = 300 mm, 3 impacts	$\Delta\alpha$ reversible
Repeated bending	EN 187000, 507	r = 20 x cable O.D. , 100x	no damage
Torsion	EN 187000, 508	1 m, $\pm 360^\circ$, 100 N	$\Delta\alpha \leq 0.1$ dB/fibre
Cable bend	EN 187000, 513	r = 15 x cable O.D. , 5 turns	$\Delta\alpha \leq 0.05$ dB
Temperature cycling	EN 187000, 601	-15°C ... +60°C -25°C ... +70°C	$\Delta\alpha \leq 0.05$ dB/km $\Delta\alpha \leq 0.1$ dB/km
Water penetration	EN 187000, 605	3 m cable, 1 m water, 72 h	no water leakage

Identification

Outer sheath marking

The outer cable sheath is marked in white or yellow with:

- length marking
- manufacturers name ("ALCATEL")
- year of manufacture
- number and type of fibres

in regular intervals of 1 m.

Remark: other markings upon request.

Identification of loose tubes and fillers within cable core

1. tube: red (marker)
 2. tube: green (direction)
 all other tubes: white
 PE filler elements: nature

Remark: other colour codes upon request.

Identification of fibres within loose tube

Fibre no.	Colour of fibre	Fibre no.	Colour of fibre	Fibre no.	Colour of fibre
1	blue	5	grey	9	yellow
2	orange	6	white	10	violet
3	green	7	red	11	pink
4	brown	8	black	12	turquoise

All sizes and values without tolerances are reference values