MicroTube™ NUD1b

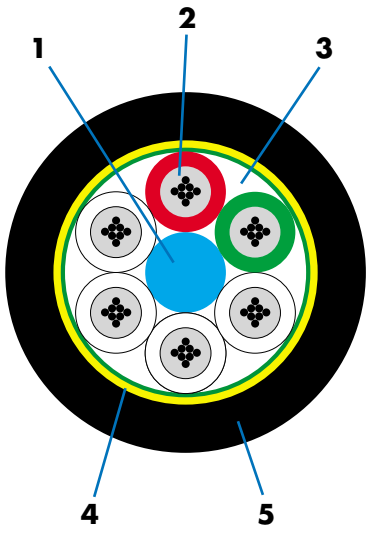
Optical cable

Stranded loose tube design for blowing installation in ducts

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. Water blocking by swellables
4. **Strain bearing elements**
   aramid yarns
5. **Sheath**
   PE, black, nominal radial thickness: 1.2 mm;
   two ripcords beneath the sheath

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	7.0	40	800/300	140/105	1.5	1.4
6 x 8	48	9.0	60	1200/400	180/135	2.1	2.0
5 x 12	60	9.5	65	1300/450	190/145	1.8	2.3
6 x 12	72	10.0	75	1500/500	200/150	2.4	2.3
8 x 12	96	11.5	100	2000/700	230/175	3.0/3.9	2.3
10 x 12	120	13.0	125	2500/850	260/195	3.0/5.4	2.3
12 x 12	144	14.5	155	3100/1050	290/220	3.0/7.0	2.3
18 x 12 (2 layers)	216	15.0	155	3100/1050	300/225	2.4	2.3
24 x 12 (2 layers)	288	17.0	210	4200/1400	340/255	3.0/4.8	2.3

All sizes and values without tolerances are reference values

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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	1.5 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. , 1000x	no damage
Torsion	EN 187000, 508	1 m, ±360°, 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

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