

Highway **MicroTube™** NUD1

Optical highway cable

Stranded loose tube design for direct installation into a groove in the road surface

Cable design

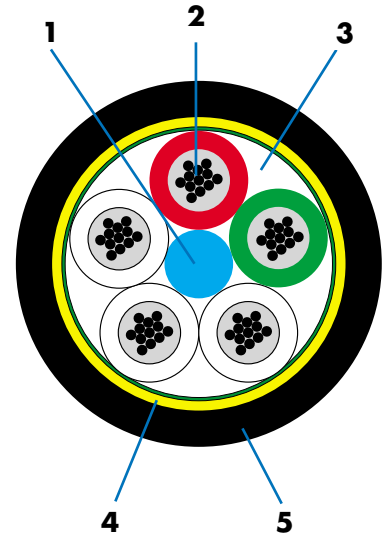
- 1. Central strength member (CSM)**
fibre reinforced plastic rod (FRP)

- 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**
aramide yarns

- 5. Sheath**
modified PE, black



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)	Bending radius (min)	CSM O.D.	Loose tubes O.D.
		[mm]	[kg/km]	[N]	[mm]	[mm]	[mm]
5 x 12	60	8.2	60	700	100	1.7	2.3

Standard delivery length

2 km, 4 km, and 6 km

Temperature performance

Operation: -30°C up to +70°C
(max. 80°C on short term)

Transport and storage: -30°C up to +70°C

Installation: -5°C up to +40°C
(max 180°C during groove sealing)

■ Main mechanical and environmental characteristics

Test	Test standard	Specified value	Acceptance criteria
Tensile performance	EN 187000, 501	T_{max} (installation)	$\Delta\alpha$ reversible
Crush	EN 187000, 504	2 kN/100 mm, 15 min	$Da \leq 0.05$ dB
Impact	EN 187000, 505	5 Nm, $r = 300$ mm, 3 impacts	$\Delta\alpha$ reversible
Repeated bending	EN 187000, 507	$r = 20 \times$ cable O.D. , 1000 x	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	$r = 100$ mm , 5 turns	$\Delta\alpha \leq 0.05$ dB
Temperature cycling	EN 187000, 601	-30°C ... +70°C -40°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, 72h	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