



The Micro Unitube Cable (MUC) is a non-metallic, waterproof customer drop cable, consisting of low bend radius, no waterpeak G.657.A1 fibres, in a jelly-filled central tube, surrounded by aramid-yarns (as tensile strength elements) and protected by a smooth low-friction outersheath. This outdoor cable is thin, light in weight and flexible and can be installed with narrow bending radii, therefore very suitable for application in the access network. Installation: blowing into microducts.

Commercial information		Specifications	Unit
Article class		Fibre optic cable	
Serie		Fibre optic cable Single mode	
Type		MUC	
Description		12x SM G.657.A1	
Net Weight		5	kg/km
Marking		ACE - TKF MuC 12x SM G.657.A1 74615 {Batch} {Year} {Length}	

Ordercode	EAN code	Specifications	Unit
74615	8713182122546	RL à 1	m
74615H X 6000/300	8713182292997	RL à 6000	m

Construction	Specifications	Unit
Cable type	MUC	
Fibre type	Single mode 9/125	
Optical fibre standard	ITU-T G.657.A1	
Number of fibres	12	
Number of fibres per tube	12	
Number of cores	1	
Type of tube	Loose tube, gel filled	
Cable metal free	Yes	
Strain relief	Yes	
Type of strain relief	Aramid fibre	
Material outer sheath	Polyamide	
Colour outer sheath	Black	
Outer sheath thickness	0.25	mm
Outer diameter approx.	2.45	mm
Max. cord diameter	2.6	mm

Characteristics for use	Specifications	Unit
Application	Outside	
Blowable	Yes	

Technical characteristics	Specifications	Unit
Standardization	EN IEC 60794-5-10	
Test procedures	IEC 60794-1-2	
Longitudinal water blocking	Yes	
Installation temperature	-15 / 50	°C

Technical characteristics	Specifications	Unit
Transportation and storage temperature	-45 / 70	°C
Operational temperature range Ta1 - Tb1	-20 / 60	°C
Operational temperature range Ta2 - Tb2	-40 / 70	°C
Max. attenuation increase during Ta2 - Tb2	0.2	dB
UV-protection	ISO 4892/2	
Oil resistant (acc. EN 60811-404)	Yes	

Mechanical characteristics	Specifications	Unit
Tensile load short term (Tm) during installation	250	N
Max. fiber strain at Tm	0.4	%
Tensile load long term (TI) after installation / in operation	100	N
Min. bending radius after installation	20	mm
Min. bending radius during installation	30	mm
Crush resistance acc. meth.E3A	800	N/dm
Impact strength	2	J
Striking surface radius	300	mm
Torsion resistance	360	°/m
Kink resistance	40	mm

Optical characteristics	Specifications	Unit
Max. attenuation @ 1310 nm	0.36	dB/km
Max. attenuation @ 1550 nm	0.25	dB/km
Max. attenuation @ 1625 nm	0.35	dB/km

Other characteristics/features	Specifications	Unit
Halogen free (acc. EN 60754-1/2)	Yes	
Caloric value	100	MJ/km



**Fibre:**

**Product Characteristics - Optical fibres**

type of fibre	Hydrogen passivated, dispersion unshifted, matched cladding. Bending loss insensitive singlemode fibre 9/125µm. Fully compatible with G.652.D fibre. Optical and geometrical properties exceed ITU- recommendations G.652.D and G.657.A1
Standard	IEC-60793-2-50, B6-a1
Standard	ITU-T G.657.A1

**Characteristics:**

**Properties**

**Unit**

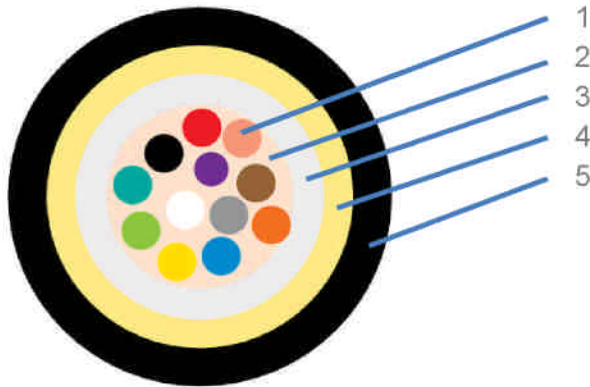
Mode field diameter; 1310nm	9.0 ± 0.3	µm
Mode field diameter; 1550nm	10.2 ± 0.4	µm
Core non-circularity	max. 6	%
Core/Cladding concentricity error	max. 0.4	µm
Cladding diameter	125.0 ± 0.5	µm
Cladding non-circularity	max. 0.6	%
Coating diameter	242 ± 5	µm
Coating/Cladding concentricity error	max. 8	µm
Temperature sensitivity; -60°C to +85°C	max. 0.05	dB/km
Bending sensitivity - 10 turns around Ø30mm - 1550nm	max. 0.1	dB
Bending sensitivity - 10 turns around Ø30mm - 1625nm	max.0.3	dB
Bending sensitivity - 1 turn around Ø20mm - 1550nm	max.0.75	dB
Bending sensitivity - 1 turn around Ø20mm - 1625nm	max.1.5	dB
Proof test level	min. 0.69	Gpa
Fibre curl	min. 4	m
Cable cut-off wavelength	max. 1260	nm
Zero-dispersion wavelength	1300 - 1324	nm
Zero-dispersion slope	max. 0.090	ps/nm <sup>2</sup> .km
Chromatic dispersion; 1285nm - 1330 nm	max.  3.2	ps/nm.km
Chromatic dispersion; 1550nm	max. 17	ps/nm.km
Chromatic dispersion; 1625nm	max. 21	ps/nm.km
Polarisation mode dispersion; maximum individual fibre	max. 0.1	ps/√km
PMDq	max. 0.06	ps/√km
Max. attenuation at 1383nm ( $\alpha_{1383}$ ) [note a]	<max. $\alpha_{1310}$	
Effective Group Core Refractive Index; 1310 nm	1.4671	-
Effective Group Core Refractive Index; 1550 nm	1.4675	-
Effective Group Core Refractive Index; 1625 nm	1.4680	-

note a: after hydrogen ageing

**Product Information**
**Cable construction and colour code**

MUC

Version: PM-M10J15

**Micro Unitube Cable**

**Description:**

- |   |                                |
|---|--------------------------------|
| 1 | Optical fibres                 |
| 2 | Jelly-filling                  |
| 3 | Central tube                   |
| 4 | Reinforcement of aramide yarns |
| 5 | Outer sheath                   |

**Standard Colours:**
**Fibres**

Group 1		Group 2	
1	Red	13	Red +t
2	Green	14	Green +t
3	Blue	15	Blue +t
4	Yellow	16	Yellow +t
5	White	17	White +t
6	Grey	18	Grey +t
7	Brown	19	Brown +t
8	Violet	20	Violet +t
9	Orange	21	Orange +t
10	Black	22	Natural
11	Pink	23	Pink +t
12	Turquoise	24	Turquoise +t

note +t: indicates a black tracer