LTC TP

Loose Tube Cable with Turning Points

Group: LTC-TP

Date: 28-03-2024

The Loose Tube Cable with Turning Points (LTC TP) is a metallic, longitudinally water-protected, stranded loose tube outdoor duct cable. Due to detectable turning points (TP), this cable is particularly suitable for the flexible use of branch-off closures in FTTX networks. For splicing, extra cable overlength is not necessary. Installation: by blowing or pulling, into conduits or on cable trays.

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Product characteristics

Cable type	LTC
Fibre type	Single mode 9/125
Optical fibre standard	ITU-T G.657.A1
Optical element	Loose tube, gel filled
Cable metal free	No
Number of layers	2 Layers
Strip method	2 Rip cords
Strain relief	Yes
Type of strain relief	FRP
Material outer sheath	PE
Colour outer sheath	Black

Application

Test procedures	EN IEC 60794-1-2
Application	Outside
Blow in	Yes

Optical specification

Category according to EN 50173	OS2
Max. attenuation @ 1310 nm	0,35 dB/km
Max. attenuation @ 1550 nm	0,22 dB/km
Max. attenuation @ 1625 nm	0,25 dB/km

Environmental specification

Longitudinal watertight construction	Super Absorbing Polymer
Installation temperature	-15/55 °C
Transportation and storage temperature	-40/70 °C
Operational temperature range Ta1 - Tb1	-30/70 °C
Max. attenuation increase during Ta1 - Tb1	0,05 dB
Operational temperature range Ta2 - Tb2	-40/70 °C
Max. attenuation increase during Ta2 - Tb2	0,15 dB
UV resistant	Yes
UV-protection	ISO 4892/2

Products

Article number	Description	Outer diameter approx.	Netto weight (kg/m)	Min. bending radius after installation	Min. bending radius during installation	Tensile load short term (tm)	Tensile load long term (tl)
76401	24x SM G.657.A1 (2x12)	10.5 mm	0.078	165 mm	220 mm	2400 N	1200 N
76402	48x SM G.657.A1 (4x12)	10.4 mm	0.08	160 mm	208 mm	1700 N	700 N
76393	72x SM G.657.A1 (6x12)	10.5 mm	0.082	165 mm	220 mm	2400 N	1200 N

Article number	Description	Outer diameter approx.	Netto weight (kg/m)	Min. bending radius after installation	Min. bending radius during installation	Tensile load short term (tm)	Tensile load long term (tl)
76392	96x SM G.657.A1 (8x12)	11.8 mm	0.105	190 mm	250 mm	2400 N	1100 N
76391	144x SM G.657.A1 (6x24)	12.2 mm	0.114	185 mm	245 mm	2700 N	1000 N
76413	144x SM G.657.A1 (12x12)	15.0 mm	0.169	240 mm	320 mm	3500 N	2000 N
76390	192x SM G.657.A1 (8x24)	13.8 mm	0.147	225 mm	300 mm	3350 N	1350 N
76414	192x SM G.657.A1 ((5+11)x12)	14.9 mm	0.154	230 mm	305 mm	1900 N	1500 N
76394	288x SM G.657.A1 (12x24)	17.8 mm	0.235	290 mm	390 mm	4700 N	3700 N
76403	384x SM G.657.A1 ((5+11)x24)	17.4 mm	0.212	280 mm	370 mm	2400 N	1200 N
76389	432x SM G.657.A1 ((6+12)x24)	18.1 mm	0.238	290 mm	390 mm	5000 N	2000 N
76425	576x SM G.657.A1 ((9+15)x24)	21.1 mm	0.32	340 mm	455 mm	3500 N	2000 N
76404	864x SM G.657.A1 ((6+12+18)x24)	26.5 mm	0.492	390 mm	520 mm	3700 N	1900 N

TECHNICAL PRODUCT INFORMATION

Product characteristics - optical fibres **21-06-2023**

Fibre specification G.657.A1

Fibre	
Type of fibre	Hydrogen passivated, dispersion unshifted, matched cladding, bending loss insensitive single mode fibre 9/125 µm Full 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, B-657.A1
Standard	ITU-T G.657.A1

Characteristics

Parameter		Properties	Unit
Mode field diameter: 1310 nm		9.0 ± 0.3	µm
Mode field diameter: 1550 nm		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.	0.7	%
Coating diameter		242 ± 5	µm
Coating/cladding concentricity error	max.	8	µm
Temperature sensitivity: -60 to +85 ºC	max.	0.05	dB/km
Bending sensitivity - 100 turns around Ø50 mm - 1550 nm	max.	0.05	dB
Bending sensitivity - 100 turns around Ø60 mm - 1625 nm	max.	0.05	dB
Bending sensitivity - 10 turns around Ø30 mm - 1550 nm	max.	0.1	dB
Bending sensitivity - 10 turns around Ø30 mm - 1625 nm	max.	0.3	dB
Bending sensitivity - 1 turn around Ø20 mm - 1550 nm	max.	0.75	dB
Bending sensitivity - 1 turn around Ø20 mm - 1625 nm	max.	1.5	dB
Proof test level	min.	0.70	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^2·km
Chromatic dispersion: 1285 - 1330 nm	max.	|3.2|	ps/nm·km
Chromatic dispersion: 1550 n	max.	17	ps/nm·km
Chromatic dispersion: 1625 nm	max.	21	ps/nm·km
Polarisation mode dispersion: max. individual fibre	max.	0.1	ps/√km
PMD_Q	max.	0.04	ps/√km
Max. attenuation at 1383 nm (α_{1383}) [note a]	< max.	α_{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]

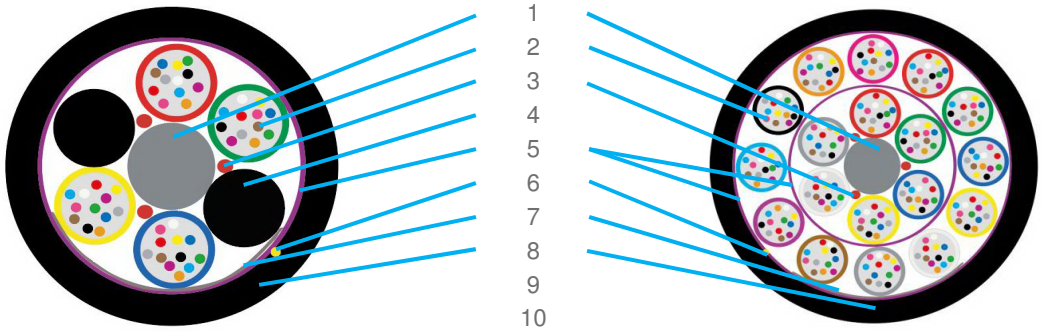
Revision date: 3-12-2019

TECHNICAL PRODUCT INFORMATION

Cable construction and colour code

LTC TP

FO cable with turning point markers.



Description

1	Centre element, FRP optional with over sheath
2	Loose tube with optical fibres
3	Water blocking yarns or tape
4	Filler
5	Water blocking tape
6	Ripcord
7	Turning Point markers
8	Outer sheath

Standard colours

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

DECLARATION OF PERFORMANCE (DOP) CE

Nr. DoP0084

1. Unique identification code for the product type:
This declaration concerns all optical fibre cables which are not tested for CPR rating.

2. Intended use of the construction product:
Supply of optical fibre cables in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke.

3. Manufacturer:
TKF (B.V. Twentsche Kabelfabriek)
Spinnerstraat 15
7481 KJ Haaksbergen
Netherlands
Tel.: +31(0)53 573 22 55
E-mail: info@tkf.nl

4. System of assessment and verification of constancy of performance of the construction product asset out in CPR, Annex V: **System 4**

5. Notified body: N.A.

6. Declared performance:

Essential characteristics	Performance	Harmonized technical specification
Reaction to fire	Fca	EN50575:2014/A1:2016
Dangerous substances	NPD	(EC) No 1907/2006, (REACH)

7. The performance of the product identified is in conformity with the declared performance.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in this document.

Signed for and on behalf of the manufacturer by:

H. Woldhuis
R&D Manager Optical Fibre Cables

Haaksbergen, September 20th 2023

Signature

