



## CTC

### 4x SM G.657.A1 (1x4)

Article number: 75530

Date: 11-09-2024

The Central Tube Cable (CTC) is a light-weight, non-metallic, central tube outdoor duct cable with small diameter, rodent protected, longitudinal water-protected. Installation: by blowing or pulling, into conduits or on cable trays.

CTC  
4x SM G.657.A1 (1x4)



#### Product characteristics

Cable type	CTC
Fibre type	Single mode 9/125
Optical fibre standard	ITU-T G.657.A1
Number of fibers	4
Number of fibers per optical element	4
Optical element	Loose tube, gel filled
Cable metal free	Yes
Stripability optical element	> 1000 mm, down to primary coating
Strain relief	Yes
Type of strain relief	E-glass
Material outer sheath	PE
Colour outer sheath	Black
Outer sheath thickness	1,0 mm
Outer diameter approx.	6,0 mm



	75530 {Batch} {Year} {Length}
Marking	ACE - TKF CTC 4x SM G.657.A1 (1x4) A-DQ(ZN)B2Y

## Application

Test procedures	EN IEC 60794-1-2
Standardization	EN IEC 60794-3-10
Application	Outside
Blow in	Yes
Euro fire class according to EN 13501-6	Fca

## Mechanical specification

Tensile load short term (Tm)	1600 N
Max. cable strain at Tm	0,6 %
Max. fiber strain at Tm	0,6 %
Tensile load Long Term (TI)	500 N
Max. fiber strain at TI	0,2 %
Min. bending radius during installation	135 mm
Min. bending radius after installation	100 mm
Crush resistance E3A short (1min)	3500 N/dm
Crush resistance E3A long	2000 N/dm
Crush load E3A long application time	10 min
Crush resistance E3B short term (1min)	2000 N
Crush resistance E3B long term	600 N
Crush load E3B long application time	10 min
Impact strength	10 J
Striking surface radius	300 mm
Mandrel diameter by Crush meth. E3B	300 mm
Torsion resistance	1800 °/m
Kink resistance	100 mm

## Optical specification

Category according to EN 50173	OS2
Max. attenuation @ 1310 nm	0,38 dB/km
Max. attenuation @ 1550 nm	0,22 dB/km
Max. attenuation @ 1625 nm	0,25 dB/km



## Environmental specification

Longitudinal water blocking	Yes
Longitudinal watertight construction	Super Absorbing Polymer
Radial water blocking	No
Installation temperature	-15/50 °C
Transportation and storage temperature	-40/70 °C
Operational temperature range Ta1 - Tb1	-40/70 °C
Max. attenuation increase during Ta1 - Tb1	0,05 dB
TC sample length for TC acc. F1 or F12	1000 m
UV resistant	Yes
UV-protection	ISO 4892-2, 4000h
Color fastness	Blue wool scale 8
With rodent protection	Yes

## Other specification

Halogen free (acc. EN 60754-1/2)	Yes
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## Logistical specifications

Unit	meter
Netto Weight (kg/m)	0.035
Default packaging	H X 4000/200



# 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 °C	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 <sup>2</sup> ·km
Chromatic dispersion: 1285 - 1330 nm	max.	3.2	ps/nm·km
Chromatic dispersion: 1550 nm	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 <sub>Q</sub>	max.	0.04	ps/√km
Max. attenuation at 1383 nm (α <sub>1383</sub> ) [note a]	< max.	α <sub>1310</sub>	-
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	-

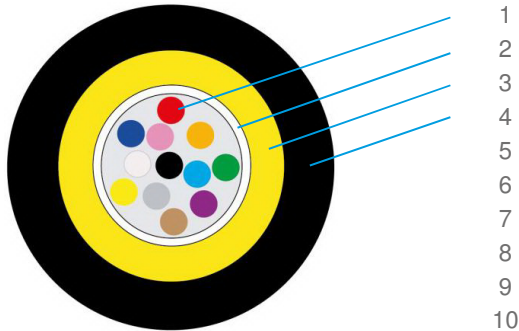
[note a: after hydrogen ageing]

# TECHNICAL PRODUCT INFORMATION

## Cable construction and colour code

### CTC

FO cable with central tube



### Description

- 1 Optical fibres
- 2 Central tube with fibres
- 3 Reinforcement of glass yarns
- 4 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 Turquoise	21 Turquoise +t
10 Black	22 Natural +t
11 Orange	23 Orange +t
12 Pink	24 Pink +t

note +t: indicates a black tracer



# 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 20<sup>th</sup> 2023

Signature