LTC CS

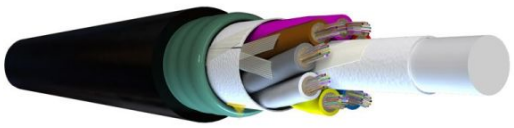
Loose Tube Cable Corrugated Steel

Group: LTC-CS

Date: 29-03-2024

The Loose Tube Cable Corrugated Steel (LTC CS) is a metallic loose tube outdoor cable, armoured with corrugated steel tape (excellent rodent resistance), longitudinal water-protected. Installation: Pulling into conduits, on cable trays or directly buried.

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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
Strip method	2 Rip cords
Strain relief	Yes
Material outer sheath	HDPE
Colour outer sheath	Black

Application

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

Optical specification

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	-45/70 °C
Operational temperature range Ta1 - Tb1	-30/70 °C
Max. attenuation increase during Ta1 - Tb1	0.05 dB
Operational temperature range Ta2 - Tb2	-45/70 °C
Max. attenuation increase during Ta2 - Tb2	0.15 dB
UV resistant	Yes
UV-protection	ISO 4892/2
Rodent resistant	Yes

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)
78131	24x SM G.657.A1 (2x12)	11.9 mm	0.129	180 mm	240 mm	2100 N	1500 N
78132	48x SM G.657.A1 (4x12)	11.9 mm	0.131	180 mm	240 mm	2100 N	1500 N
78135	72x SM G.657.A1 (6x12)	11.9 mm	0.133	180 mm	240 mm	2100 N	1500 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)
78133	96x SM G.657.A1 (8x12)	13.2 mm	0.162	200 mm	265 mm	2700 N	1900 N
78139	144x SM G.657.A1 (12x12)	16.2 mm	0.242	240 mm	320 mm	3700 N	3000 N
78234	192x SM G.657.A1 ((5+11)x12)	16.0 mm	0.219	240 mm	320 mm	2700 N	1900 N
78194	288x SM G.657.A1 ((9+15)x12)	19.1 mm	0.312	285 mm	380 mm	3400 N	2500 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]

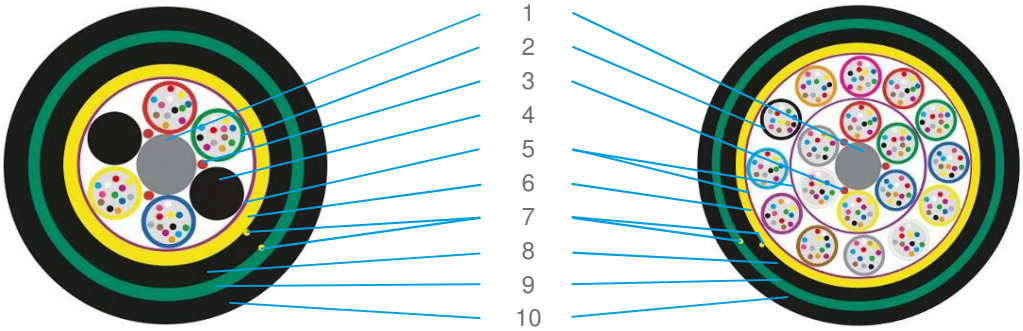
Revision date: 4-12-2019

TECHNICAL PRODUCT INFORMATION

Cable construction and colour code

LTC CS

FO cable with stranded loose tubes - Corrugated steel protection



Description

1	Central element (FRP), optional with oversheath
2	Loose tube with optical fibres
3	Waterblocking yarns or tape
4	Filler
5	Waterblocking tape
6	Glass yarn strength members (optional)
7	Ripcord (optional)
8	Inner sheath (optional)
9	Corrugated steel
10	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

