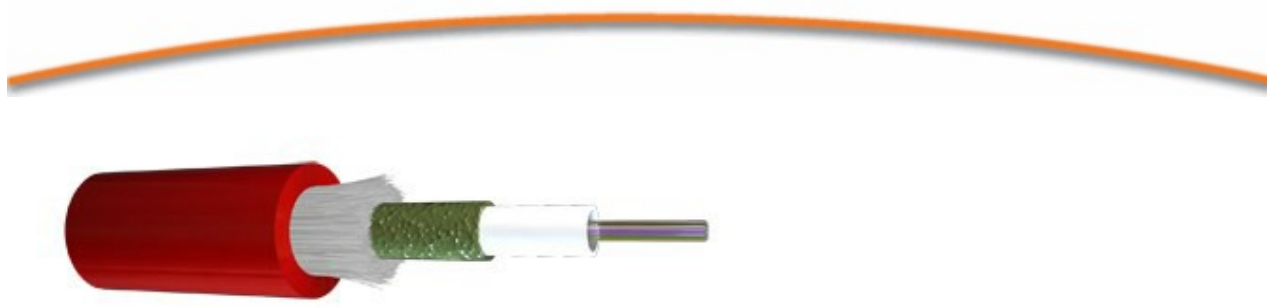




CTC FR – Fire Resistant

Fire safety cable with insulation and circuit integrity. High performance robust, non-metallic, central tube universal (indoor/outdoor) cable, with fire protective coating, rodent-protection, longitudinal water-protection and a Halogen Free Flame Retardant outer sheath. This cable meets the requirements for fire safety, ensures data-transmission during and after fire (secured connectivity) and reduces the risk to which people, equipment and buildings are exposed in the event of fire. Therefore, CTC FR-cable is perfectly suitable for signal and control circuits in critical infrastructure like tunnels, subway, ship, rail (trains, stations), public buildings, etc.

Installation: by blowing or pulling, into conduits or on cable trays.

Commercial information	Specifications	Unit
Article class	Fibre optic cable	
Serie	Fibre optic cable Single mode	
Type	CTC FR	
Description	12x SM G.657.A1	
Nett Weight	128	kg/Km
Marking	ACE TKF CTC FR 12x SM G.657.A1 U-DQ(ZN)BH 75470 {Batch} {Year} {Length}	

Ordercode	EAN code	Specifications	Unit
75470	8713182242541	RL à 1	m

Construction	Specifications	Unit
Cable type	CTC	
Fibre type	Single mode	
Optical fibre standard	ITU-T G.657.A1	
Number of fibres	12	
Number of fibres per optical element	12	
Number of cores	1	
Optical element	Loose tube, gel filled	
Stripability optical element	> 1000mm, down to primary coating	
Cable metal free	Yes	
Strain relief	Yes	
Type of strain relief	E-glass	
Material outer sheath	HFFR	
Colour outer sheath	Red	
Outer sheath thickness	1.8	mm
Outer diameter approx.	10.4	mm

Characteristics for use	Specifications	Unit
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Application	Inside/outside
Blow in	Yes

Technical characteristics	Specifications	Unit
Test procedures	IEC 60794-1-2	
Longitudinal water blocking	Yes	
Longitudinal watertight construction	Super Absorbing Polymer	
Installation temperature	-15 / 60	°C
Operation temperature range	-40 / 70	°C
Transportation and storage temperature	-40 / 70	°C
UV-protection	ISO 4892/2	
With rodent protection	Yes	

Mechanical characteristics	Specifications	Unit
Tensile load short term (Tm)	7000	N
Tensile load Long Term (TI)	2000	N
Bending radius after installation	150	mm
Bending radius during installation	200	mm
Crush resistance E3A short (1min)	6000	N/dm
Crush resistance E3A long	4000	N/dm
Crush load E3A long application time	10	min
Impact strength	20	J
Striking surface radius	300	mm
Torsion resistance	360	°/m
Kink resistance	50	mm

Optical characteristics	Specifications	Unit
Category according to EN 50173	OS2 (IEC 60793-2: B1.3)	
Attenuation @ 1310 nm	0.35	dB/km
Attenuation @ 1550 nm	0.22	dB/km
Attenuation @ 1625 nm	0.25	dB/km

Other characteristics/features	Specifications	Unit
Halogen free (acc. EN 50267-2-2)	Yes	
Halogen free	IEC 60754-1/2	
Low smoke (acc. EN 61034-2)	Yes	
Smoke Density	IEC 61034-1&2 / EN 50268-1&2 / LUL 1-085 / EN 13501-1	
Smoke Toxicity	LUL 1-085 Toxicity	
Vertical Flame Propagation (for Single Cable)	IEC 60332-1-2 / EN 50265-2-1	
Vertical Flame Spread (for Bunched Cables)	IEC 60332-3-22 / EN 50266-2-2 (Cat.A)	
Classified acc. to London Underground LUL 1-085	Yes	
Circuit integrity, acc. to IEC 60331-11, -25	90 min	
Circuit integrity, max. attenuation change	< 1,5 dB/fibre	
Insulation integrity, acc. to EN 50200 / EN 50582	PH90	
Insulation integrity, max. attenuation change	1,5 dB/fibre	
EN 50200 option with Shock	Yes	
Caloric value	1500	MJ/km

Product Characteristics - Optical fibres

Fibre:		
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, uncoloured	242 ± 5	µm
Coating diameter, coloured	248 ± 6	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 ² .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
PMD _Q	max 0.08	ps/√km
Max attenuation at 1383nm (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	-

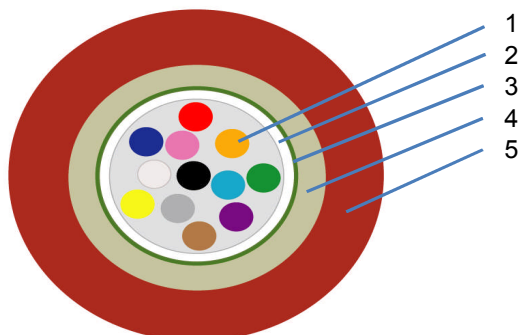
note a: after hydrogen ageing

Product information

Cable construction and colour code

CTC FR

FO fire resistant cable with central tube



Description:

- | | |
|---|--|
| 1 | Optical fibres |
| 2 | Central tube with optical fibres |
| 3 | Fire protective coating |
| 4 | Reinforcement of waterblocking glass yarns |
| 5 | Outer sheath |

Standard Colours:

Fibrenr. Group 1

- | | |
|----|-----------|
| 1 | Red |
| 2 | Green |
| 3 | Blue |
| 4 | Yellow |
| 5 | White |
| 6 | Grey |
| 7 | Brown |
| 8 | Violet |
| 9 | Turquoise |
| 10 | Black |
| 11 | Orange |
| 12 | Pink |

Fibrenr. Group 2

- | | |
|----|--------------|
| 13 | Red +t |
| 14 | Green +t |
| 15 | Blue +t |
| 16 | Yellow +t |
| 17 | White +t |
| 18 | Grey +t |
| 19 | Brown +t |
| 20 | Violet +t |
| 21 | Turquoise +t |
| 22 | Natural |
| 23 | Orange +t |
| 24 | Pink +t |

note +t: indicates a black tracer