

QFCI / QFOI - Mica

Armoured
SHF1, UV
Fire resistant
Loose tube
DNV

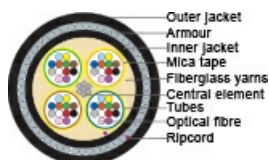
Application

Fiberoptical cable for the oil- and offshore industry, commercial marine vessels and other harsh environments. The cable has excellent communication properties and is tested to be operative in at least 180 min. at 1,000°C which means that it can maintain vital communication in case of a fire situation. The fibers are protected in jelly filled loose tubes stranded around a central strength member to ensure optimum performance and long life. Each fiber and loose tube is color coded for easy identification during splicing and termination.



Construction Fiber

Fibertype	MM or SM
Colorcode fiber	(acc. TIA 598) - (acc. TIA 598) 1 - Blue 5 - Grey 9 - Yellow 2 - Orange 6 - White 10 - Violet 3 - Green 7 - Red 11 - Pink 4 - Brown 8 - Black 12 -Turquoise
Fiber tube	Loose tube
Colorcode fiber tube	(acc. TIA 598) 1 - Blue 2 - Orange 3 - Green 4 - Brown Passive tubes - Black
Strength member	Reinforced fibreglass yarns (WB) (water blocking)
Inner jacket	LSZH compound Ø = 11.0 [mm]
Fire barrier	Mica tape , each tube
Armour	QFCI: Galvanized steel wire braid QFOI: Tinned Cu-wire braid
Jacket	Black LSZH compound SHF1
Diameter	15,0 ± 0,5 [mm]





Specifications fiber

Temperature range	-40 – +70 [°C]
Temperaturerange at inst.	-10 – +70 [°C]
Temperaturrange storage	-40 – +70 [C°]
Tensile strength	500 [N] (operation) 2000 [N] (installation) (IEC 60794-1-21 E1)
Crush resistance	3000 [N/10cm] , (IEC 60749-1-21 E3)
Impact resistance	5 [J] , (IEC 60749-21 E4)
Bending radius	20 [x outer diam] , (IEC 60749-1-21 E11)

Norms

Halogenfree, max content corrosive and toxic gases	IEC 60754-1 & IEC 60754-2
Material properties, insulation and sheath	NEK TS 606 F1 NEK 606 F1
Flame resistance	IEC 60332-3-22
Flame retardant	IEC 60332-1
Fire resistant	IEC 60331-25 (PH 120 @ 830°C)
Smoke emission	IEC 61034-1 & IEC 61034-2
Oil and fuel resistant	Mineral oils: IRM 902 (IEC60811-2-1) 4h @ 70°C Diesel: IRM 903 (IEC60811-2-1) 4h @ 70°C
Certification	DNV



Fiber data

Properties	MM 62.5 OM1	MM 50 OM2	MM 50 OM3	MM 50 OM4
Core Diameter	62.5 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm
Core non-circularity	< 5%	< 5%	< 5%	< 5%
Cladding diameter	125 ± 1.0 µm	125 ± 1.0 µm	125 ± 1.0 µm	125 ± 1.0 µm
Coating diameter	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm
Cladding non-circularity	<0.7%	<0.7%	<0.7%	<0.7%
Core/Cladding concentricity error	<1 µm	<1 µm	<1 µm	<1 µm
Coating/cladding concentricity error	<10 µm	<6 µm	<6 µm	<6 µm
Numerical Aperture	0.275 ± 0.015 µm	0.200 ± 0.015 µm	0.200 ± 0.015 µm	0.200 ± 0.015 µm
Attenuation @ 850 nm	<3.50 dB/km	<2.89 dB/km	<2.89 dB/km	<2.89 dB/km
Attenuation @1300 nm	<1.00 dB/km	<0.80 dB/km	<0.80 dB/km	<0.80 dB/km
Bandwidth @ 850 nm	>200 MHz*km	>500 MHz*km	>1500 MHz*km	>3500 MHz*km
Bandwidth @ 1300 nm	>500 MHz*km	>500 MHz*km	>500 MHz*km	>500 MHz*km
Effective Modal Bandwidth (EMB)@ 850 nm	-	-	>2000 MHz*km	>4700 MHz*km
Fibre capacity 10GBase-SR	33 m	83 m	300 m	550 m
Fibre cap. 40GBase-SR4/100BaseRS10	274 m	600 m	1000 m	1100 m
Fibre cap. 40GBase-SR4/100BaseRS10	-	-	140 m	170 m
Proof test	>100kpsi	>100kpsi	>100kpsi	>100kpsi



Properties	SMR ITU-T G652D	SMR ITU-T G657A	SMR ITU-T G657B / -B2	SMR NZD ITU-T G655.E
Mode field Diameter @ 1310 nm	9,0±0,4 µm	9,0±0,4 µm	8,90±0,4 µm	-
Mode field Diameter @ 1550 nm	10,1±0,5µm	10,1±0,5µm	9,9±0,5µm	9,2±0,5µm
Cladding diameter	125±0,7µm	125±0,7µm	125±0,7µm	125±1,0µm
Coating diameter	242±7 µm	242±7 µm	242±7 µm	242±7 µm
Cladding non-circularity	≤ 0,7 %	≤ 0,7 %	≤ 0,7 %	≤ 0,7 %
Core/Cladding concentricity error	≤ 0,5 µm	≤ 0,5 µm	≤ 0,5 µm	≤ 0,5 µm
Coating/cladding concentricity error	≤ 12 µm	≤ 12 µm	≤ 12 µm	≤ 12 µm
Cable Cut off wavelength	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1300 nm
Zero dispersion wavelength (λ ₀)	1300-1322 µm	1300-1322 µm	1300-1324 µm	≤ 1440 nm
Dispersion slope (S ₀) @ (λ ₀)	≤ 0,090 ps/(nm ² * km)	≤ 0,090 ps/(nm ² * km)	≤ 0,092 ps/(nm ² * km)	-
Chromatic dispersion @ 1285 – 1330 nm	≤ 3,5 ps/(nm * km)	≤ 3,5 ps/(nm * km)	-	-
Chromatic dispersion @ 1550 nm	≤ 18 ps / (nm * km)	≤ 18 ps / (nm * km)	-	-
Chromatic dispersion @ 1625 nm	≤ 22 ps/(nm * km)	≤ 22 ps/(nm * km)	-	-
Chromatic dispersion @ 1530 – 1565 nm	-	-	-	5,5 ÷ 10 ps/(nm * km)
Chromatic dispersion @ 1565 – 1625 nm	-	-	-	7,5 ÷ 13,8 ps/(nm * km)
PMD @ 1550 nm	≤ 0,1 ps/√ km	≤ 0,1 ps/√ km	≤ 0,1 ps/√ km	≤ 0,2 ps/√ km
Attenuation @ 1310 nm	≤ 0,35 dB/km	≤ 0,35 dB/km	≤ 0,35 dB/km	≤ 0,40 dB/km
Attenuation @ 1383nm	≤ 0,35 dB/km	≤ 0,35 dB/km	≤ 0,35 dB/km	≤ 1,0 dB/km
Attenuation @ 1550 nm	≤ 0,25 dB/km	≤ 0,25 dB/km	≤ 0,25 dB/km	≤ 0,25 dB/km
Attenuation @ 1625 nm	≤ 0,28 dB/km	≤ 0,28 dB/km	≤ 0,28 dB/km	≤ 0,28 dB/km
Attenuation with bending:				
Mandreal Radius 15mm @1550 10 turns	-	≤ 0,25 dB	≤ 0,03 dB	-
Mandreal Radius 15mm @1625 10 turns	-	≤ 1,0 dB	≤ 1,0 dB	-
Mandreal Radius 10mm @1550 1 turn	-	≤ 0,75 dB	≤ 0,1 dB	-
Mandreal Radius 10mm @1625 1 turn	-	≤ 1,5 dB	≤ 0,2 dB	-
Mandreal Radius 7,5mm @1550 1 turn	-	-	≤ 0,5dB	-
Mandreal Radius 7,5mm @1625 1 turn	-	-	≤ 01,0dB	-
Proof test	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi



Number of fibers	Number of fiber per tube	Weight [kg/km]
4 - 9/125	4	290
8 - 9/125	8	291
12 - 9/125	12	291
24 - 9/125	12	305
48 - 9/125	12	331
4 - 62,5/125	4	290
8 - 62,5/125	8	291
12 - 62,5/125	12	291
24 - 62,5/125	12	305
48 - 62,5/125	12	331
4 - 50/125 OM3	4	290
8 - 50/125 OM3	8	291
12 - 50/125 OM3	12	291
24 - 50/125 OM3	12	305
48 - 50/125 OM3	12	331
4 - 50/125 OM2	4	290
8 - 50/125 OM2	8	291
12 - 50/125 OM2	12	291
24 - 50/125 OM2	12	305
4 - 50/125 OM4	4	290
8 - 50/125 OM4	8	291
12 - 50/125 OM4	12	291
24 - 50/125 OM4	12	305

Updated

Date	Rev.	Description
04.12.2019	1	Rev.
17.11.2023	2	Tensil strength