QFCI

4, 8 , 12, 24 or 48 fibers Armoured
Loose tube, jelly filled
Fire resistant, SHF1, UV
NEK TS 606 F101(F1)
DNV-GL, ABS

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Application

Fiberoptical cable for the oil- and offshore industry 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

Fibers	Loose tube jelly filled MM 62.5 and 50, SM 9
Loose tube diam.	2.2 [mm]
Inner jacket	SHF1 10.1 [mm]
Tensile strength support	Centre steel wire
Armour alt.1	Galvanised steel wire braid
Armour alt.2	Tinned Cu-braid
Armour alt.3	Bronze wire braid
Jacket	Black SHF1
O.D.	13.5 [mm]
Weight	260 [kg/km]
Jacket marking	NEK Kabel QFCI FIBER OPTIC CABLE IEC 60331-25 SHF1

Specifications

Operating temperature	-40 – +70 [°C]
Temperature @ installation	-10 to +60 [°C]
Tensile strength installed	500 [N]
Crush test	3000 [N/10cm]
Impact	30 [J]
Torsion	±1 [turn/m]
Min. bending radius	15 [x outer diam]
Min. bending radius flexible	20 [x outer diam]

Norms

Halogenfree, max content corrosive and toxic gases	IEC 60754-1, -2
Sheathing material	IEC 60092-360 (359) NEK TS 606 F101 (F1)
Fire retardant	IEC 60332-3-22 Cat.A
Fire resistant	IEC 60331-25 180 min. 1,000°C
Weather resistant	IEC 60794-1-22-F1
Ozone resistant	IEC 60811-2-1
Oil and fuel, hydrocarbons resistant	IEC 60811-404 IRM 903
Smoke emission	IEC 61034-1, -2 EN 50268-2
UV-resistant	ASTM G 154
Certification	DNV-GL, ABS

Tips Also available with SHF2 jacket or SHF2 MUD.
Alternatively with copper or bronze armour.

RoHS

Table Fiber

Number of fibers	Number of fibers per tube	Number of fibers and tubes	Weight [kg/km]	Part no.
4 - 9/125	2	2 + 4	260	1042410
8 - 9/125	4	2 + 4	260	1042411
12 - 9/125	4	3 + 3	260	1042412
24 - 9/125	6	4 + 2	260	1042413
48 - 9/125	12	4 + 2	260	1042414
4 - 62.5/125	2	2 + 4	260	1042415
8 - 62.5/125	4	2 + 4	260	1042416
12 - 62.5/125	4	3 + 3	260	1042417
24 - 62.5/125	6	4 + 2	260	1042418
48 - 62.5/125	12	4 + 2	260	1042419
4 - 50/125 OM3	2	2 + 4	260	1042420
8 - 50/125 OM3	4	2 + 4	260	1042421
12 - 50/125 OM3	4	3 + 3	260	1042422
24 - 50/125 OM3	6	4 + 2	260	1042423
48 - 50/125 OM3	12	4 + 2	260	1042424
4 - 50/125 OM2	2	2 + 4	260	1091195
8 - 50/125 OM2	4	2 + 4	260	1091196
12 - 50/125 OM2	4	3 + 3	260	1091197
24 - 50/125 OM2	6	4 + 2	260	1091198
12 - 9/125	6	3 + 3	260	1091091
24 - 9/125	6	4 + 2	260	1091092
48 - 9/125	12	4 + 2	260	1091093

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-SR4/100Base-RS10	274 m	600 m	1000 m	1100 m
Fibre cap. 40GBase-SR4/100Base-RS10			140 m	170 m
Proof test	>100kpsi	>100kpsi	>100kpsi	>100kpsi

Properties	SMR ITU-T G652D	SMR ITU-T G657A	SMR ITU-T G657B	SMR NZD ITU-T G655.E
Mode field Diameter @ 1310 nm	9,0±0,4 µm	9,2±0,4µm	8,9±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 (λ0)	1300-1322 µm	1300-1322 µm	1300-1324 µm-	≤ 1440 nm
Dispersion slope (S0) @ (λ0)	≤ 0,090 ps/(nm² * km)	≤ 0,090 ps/(nm² * km)	≤ 0,092 ps/(nm² * 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	≤ 1,00 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

Updated

Date	Rev.	Description
16.03.2015	1	Armour
14.12.2015	2	Norms and Part no.
23.01.2017	3	Fiber data
11.01.2018	4	Updated Norms