

QFAI 2 UNI

Fire resistant, armoured

4 – 24 fibers

Loose tube

Nonmetallic,

SHF1

DNV

Application

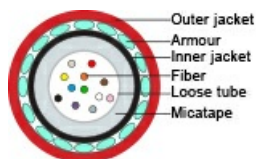
A robust fibre cable suited for harsh ship- and offshore environment. It has no metal content, which leaves it immune to electric and electromagnetic shockwaves.

For LAN and WAN installations as well as telecommunication and data transmission on board. Inner jacket SHF1, outer jacket UV resistant and rodent protected SHF1. Fire resistant; operational for 90 min. if exposed to fire.



Construction

Fibers	2,8 mm up to 12 fibres Loose tube , jelly filled PBTP tube 3,5 mm above 12 fibres																								
Colour code	<table border="0"> <tr> <td>1- Natural</td> <td>13- Turquoise</td> </tr> <tr> <td>2- Red</td> <td>14- Red (with black rings)</td> </tr> <tr> <td>3- Green</td> <td>15- Green (with black rings)</td> </tr> <tr> <td>4- Yellow</td> <td>16- Yellow (with black rings)</td> </tr> <tr> <td>5- Brown</td> <td>17- Brown (with black rings)</td> </tr> <tr> <td>6- Blue</td> <td>18- Blue (with black rings)</td> </tr> <tr> <td>7- Violet</td> <td>19- Violet (with black rings)</td> </tr> <tr> <td>8- Orange</td> <td>20- Orange (with black rings)</td> </tr> <tr> <td>9- Grey</td> <td>21- Grey (with black rings)</td> </tr> <tr> <td>10- White</td> <td>22- White (with black rings)</td> </tr> <tr> <td>11- Black</td> <td>23- Pink (with black rings)</td> </tr> <tr> <td>12- Pink</td> <td>24- Turquoise (with black rings)</td> </tr> </table>	1- Natural	13- Turquoise	2- Red	14- Red (with black rings)	3- Green	15- Green (with black rings)	4- Yellow	16- Yellow (with black rings)	5- Brown	17- Brown (with black rings)	6- Blue	18- Blue (with black rings)	7- Violet	19- Violet (with black rings)	8- Orange	20- Orange (with black rings)	9- Grey	21- Grey (with black rings)	10- White	22- White (with black rings)	11- Black	23- Pink (with black rings)	12- Pink	24- Turquoise (with black rings)
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Fire resistant barrier	Mica tape																								
Inner jacket	≤ 12 fibres, 7,0 ± 0,3 [mm] SHF1 > 12 fibres, 8,0 ± 0,3 [mm]																								
Armour	Glass yarn																								
Jacket	SHF1																								
O.D.	≤ 12 fibres, 11 ± 0,3 [mm] > 12 fibres, 12 ± 0,3 [mm]																								
Weight	≤ 12 fibres, 130 [kg/km] > 12 fibres, 150 [kg/km]																								
Jacket marking	NEK KABEL - FIBER OPTIC CABLE – Gxx-type of fibre – QFAI-2-UNI-I/O/RM-JM SHF1 – DNV – Lot.xxxx – ****m																								





Specifications fiber

Temperature range	-40 - +70 [°C]
Temperaturerange at inst.	-5 - +50 [°C]
Tensile strength	2,500 [N] acc. to IEC 60794-1-2
Crush resistance	3,000 [N/10cm] acc. to IEC 60794-1-2 (E3)
Impact resistance	10 [J] acc. to IEC 60794-1-2 (E4)
Bending radius flexible	15 [x outer diam.]
Bending radius installed	10 [x outer diam.] IEC 60794-1-2 E11A

Norms

Halogenfree, max content corrosive and toxic gases	<0.3% when measured according to IEC 60754-1 and IEC 60754-2
Material properties, insulation and sheath	IEC 60092-360 (359) 3582
Flame retardant	IEC 60332-1-2 3315
Fire resistant	IEC 60331-25
Smoke emission	IEC 61034-1 and IEC 61034-2
Test and material	Circuit integrity test IEC 60331-11 / IEC 60331-25 (1000°C, 90 min.) max change of attenuation 2,0 dB Circuit integrity test EN 50200 (842°C, 90 min.) max change of attenuation 2,0 dB Fire load: 1,03 MJ/m
UV-resistant	ASTM G 154 IEC 60068-2-5
Certification	DNV



Specifications and properties for available fibre types can be found at nek-sealine.com under Multimode or Singlemode optical fibres.

Number of fibre	Nom.thickness [mm]	Nom.diameter [mm]	Weight [kg/km]	Prod.no.
G 4 50/125 OM3 Red		7,5	60	1028766
G 12 50/125 OM3 Red		7,5	60	1028767
G 24 50/125 OM3 Red		8,5	70	1028768
G 4 50/125 OM3 Orange		7,5	60	1028770
G 12 50/125 OM3 Orange		7,5	60	1028771
G 24 50/125 OM3 Orange		8,5	70	1028772



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 capacity 1GBase-SR	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 / - B2	SMR NZD ITU-T G655.E
Mode field Diameter @ 1310 nm	9,0±0,4 µm	9,0±0,4 µm	9,0±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 µm
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	-	-	-	5,5 - 10 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	≤ 0,40 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	-	-	≤ 0,5 dB	-
Mandreal Radius 7,5mm @1625 1 turn	-	-	≤ 1,0 dB	-
Proof test	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi	≥ 100 kpsi



Updated

Date	Rev.	Description
23.04.2018	1	Prod. numbers
06.11.2018	2	Colour of jacket
26.07.2019	3	weight+dimensions