



# QFAI 2 UNI

**Fire resistant, armoured**

**4 – 24 fibers**

**Loose tube**

**Nonmetallic,**

**SHF1, UV**

**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 Fiber

Fibertype	MM or SM
Loose tube	Jelly filled PBTP tube 2,8 mm up to 12 fibres 3,5 mm above 12 fibres
Colorcode fiber	TIA 598 1 - Blue                    13 - Blue + black stripes 2 - Orange                14 - Orange + black stripes 3 - Green                  15 - Green + black stripes 4 - Brow                    16 - Brow + black stripes 5 - Grey                    17 - Grey + black stripes 6 - White                  18 - White + black stripes 7 - Red                     19 - Red + black stripes 8 - Black                  20 - Black + black stripes 9 - Yellow                 21 - Yellow + black stripes 10 - Violet                22 - Violet + black stripes 11 - Pink                  23 - Pink + black stripes 12 - Turquoise          24 - Turquoise + black stripes
Fire resistant barrier	Mica tape
Strength member	Aramid yarn
Inner jacket	SHF1 ≤ 12 fibres, 7,0 ± 0,3 [mm] > 12 fibres, 8,0 ± 0,3 [mm]
Armour	Glass yarns
Outer Jacket	SHF1 ≤ 12 fibres, 11 ± 0,3 [mm] > 12 fibres, 12 ± 0,3 [mm]
Diameter	≤ 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 no – *****



## 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 & 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 & 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	ISO 4892-2-A: 720hours
Certification	DNV



Specifications and properties for available fibre types can be found at [nek-sealine.com](http://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 <sub>0</sub> )	1300-1322 μm	1300-1322 μm	1300-1324 μm	1440 μm
Dispersion slope (S <sub>0</sub> ) @ (λ <sub>0</sub> )	≤ 0,090 ps/(nm <sup>2</sup> * km)	≤ 0,090 ps/(nm <sup>2</sup> * km)	≤ 0,092 ps/(nm <sup>2</sup> * 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
13.12.2024	4	Additional info