



## QFAI UNI

Fire resistant

4 – 24 optical fibres, loose tube

Nonmetallic, SHF1

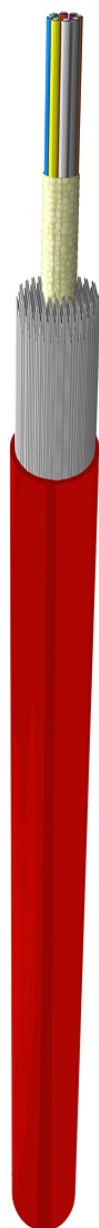
DNV-GL, ABS



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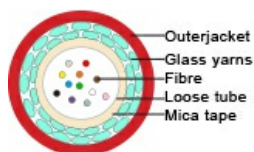
### Application

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. UV resistant and rodent protected, SHF1 outer jacket. Fire resistant; operational for 90 min. if exposed to fire.



### Construction

Fibers	Loose tube Jelly filled PBTP tube 2,8 mm up to 12 fibres 3,5 mm above 12 fibres	
Colour code	1- Natural 2- Red 3- Green 4- Yellow 5- Brown 6- Blue 7- Violet 8- Orange 9- Grey 10- White 11- Black 12- Pink	13- Turquoise 14- Red (with black rings) 15- Green (with black rings) 16- Yellow (with black rings) 17- Brown (with black rings) 18- Blue (with black rings) 19- Violet (with black rings) 20- Orange (with black rings) 21- Grey (with black rings) 22- White (with black rings) 23- Pink (with black rings) 24-Turquoise (with black rings)
Fire resistant barrier	Mica tape	
Armour	Glass yarns	
Jacket	Red SHF1	
Outer diam	≤ 12 fibres, 7,5 [mm] > 12 fibres, 8,5 [mm]	
Weight	≤ 12 fibres, 60 [kg/km] > 12 fibres, 70 [kg/km]	



### Specifications

Operating temperature	-40 – 70 [°C]
Temperature @ installation	-5 – +50 [°C]
Tensile strength	2,500 [N] IEC 60794-1-2 E1
Crush test	3,000 [N/10cm] IEC 60794-1-2 E3
Impact	10 [J]
Min. bending radius	10 [x outer diam] IEC 60794-1-2 E11A
Min. bending radius flexible	15 [x outer diam]

## Norms

Halogenfree, max content corrosive and toxic gases	<0.3% when measured according to IEC 60754-1, -2
Sheathing material	IEC 60092-360 (359)
Flame retardant	IEC 60332-1-2
Fire retardant	IEC 60332-3-22
Fire resistant	IEC 60331-25
Smoke emission	IEC 61034-1, -2
Test and material	Circuit integrity test IEC 60331-11 / IEC 60331-25 (750°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-GL, ABS



Specifications and properties for available fibre types can be found at [nek-sealine.com](http://nek-sealine.com) under Multimode or Singlemode optical fibres.

## 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	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



## Table

Number of fibers	Weight [kg/km]	Part.no.
G4 50/125 SHF1 - OM4	60	1028778
G6 50/125 SHF1 - OM4	60	1028779
G8 50/125 SHF1 - OM4	60	1028780
G12 50/125 SHF1 - OM4	60	1028781
G24 50/12 SHF15 - OM4	70	1028782
G4 9/125 SHF1 - OS2	60	1028783
G6 9/125 SHF1 - OS2	60	1028784
G8 9/125 SHF -1 OS2	60	1028785
G12 9/125 SHF -1 OS2	60	1028786
G24 9/125 SHF1 - OS2	70	1028787
G4 50/125 SHF1 - OM2	60	1028788
G6 50/125 SHF1 - OM2	60	1028789
G8 50/125 SHF1 - OM2	60	1028790
G12 50/125 SHF1 - OM2	60	1028791
G24 50/125 SHF1 - OM2	70	1028792
G4 62,5/125 SHF1 - OM1	60	1028793
G6 62,5/125 SHF1 - OM1	60	1028794
G8 62,5/125 SHF1 - OM1	60	1028795
G12 62,5/125 SHF1 - OM1	60	1028796
G24 62,5/125 SHF1 - OM1	70	1028797
G4 50/125 SHF1 - OM3	60	1091149
G6 50/125 SHF1 - OM3	60	1091148
G8 50/125 SHF1 - OM3	60	1091151
G12 50/125 SHF1 - OM3	60	1028776
G24 50/12 SHF15 - OM3	70	1028777



## Updated

Date	Rev.	Description
6.12.2016	1	Construction
10.12.2016	2	Minor dimension change
28.11.2017	3	Jacket/drawing
06.02.2018	4	Colour code fibers