

# QFAI UNI

## Funksjonssikker

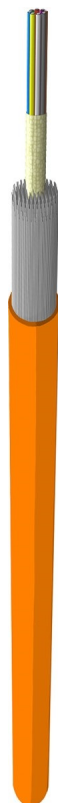
4 – 24 fibre, løs kledning

SHF1

DNV

## Bruksområde

Robust fiber kabel beregnet for krevende miljøer innen skip- og offshore, men også for installasjoner i land. For LAN og WAN installasjoner og innen telekommunikasjon og dataoverføring. Kabelen er UV bestandig, inneholder ikke metall, og er sikker mot gnagere. Funksjonssikker i 90 min. i en eventuell brannsituasjon. Kan forlegges sammen med kraftkabel da den ikke påvirkes av elektromagnetiske felt.



## Konstruksjon Fiber

|                 |                                        |                              |
|-----------------|----------------------------------------|------------------------------|
| Rør for fibre   | Løs kledning fettfylt PBTP rør, 3,5 mm |                              |
| Fargekode fiber | 1- Natural                             | 13- Turkis                   |
|                 | 2- Rød                                 | 14- Rød (m/sorte ringer)     |
|                 | 3- Grønn                               | 15- Grønn (m/sorte ringer)   |
|                 | 4- Gul                                 | 16- Gul (m/sorte ringer)     |
|                 | 5- Brun                                | 17- Brun (m/sorte ringer)    |
|                 | 6- Blå                                 | 18- Blå (m/sorte ringer)     |
|                 | 7- Fiolett                             | 19- Fiolett (m/sorte ringer) |
|                 | 8- Oransje                             | 20- Oransje (m/sorte ringer) |
|                 | 9- Grå                                 | 21- Grå (m/sorte ringer)     |
|                 | 10- Hvit                               | 22- Hvit (m/sorte ringer)    |
|                 | 11- Sort                               | 23- Rosa (m/sorte ringer)    |
|                 | 12- Rosa                               | 24- Turkis (m/hvite ringer)  |
| Brannbarriere   | Mica tape                              |                              |
| Armering        | E-glass                                |                              |
| Kappe           | Oransje eller rød, SHF1 UV-bestndig    |                              |
| Diameter        | 9,5 [mm]                               |                              |
| Vekt            | 95 [kg/km]                             |                              |

## Tekniske data fiber

|                          |                                     |
|--------------------------|-------------------------------------|
| Temperaturområde         | -40 – +70 [°C]                      |
| Temperaturområde v/inst. | -5 – +50 [°C]                       |
| Strekkestyrke            | 3200 [N] IEC 60794-1-2 E1           |
| Bruddlast                | 3200 [N/10cm] IEC 60794-1-2 E3      |
| Slagfast                 | 10 [J]                              |
| Bøyeradius fleksibel     | 15 [x ytre diam.]                   |
| Bøyeradius               | 10 [x ytre diam] IEC 60794-1-2 E11A |

## Normer

|                                             |                                                                                                                                                                                                                         |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Halogenfri, max korrosive og giftige gasser | <0,3% målt i henhold til IEC 60754-1,2                                                                                                                                                                                  |
| Flammehemmet buntet kabel                   | IEC 60332-3-22                                                                                                                                                                                                          |
| Flammehemmet enkeltkabel                    | IEC 60332-1-2                                                                                                                                                                                                           |
| Brannsikker                                 | IEC 60331-25                                                                                                                                                                                                            |
| Røykutvikling                               | IEC 61034-1 & IEC 61034-2                                                                                                                                                                                               |
| Tester og materiale                         | Integritetstest IEC 60331-11 /<br>IEC 60331-25 (1000 ° C, 90 min.)<br>maks endring demping 2,0 dB<br><br>Integritetstest EN 50200 (842 ° C, 90 min.)<br>maks endring demping 2,0 dB<br><br>Brannbelastning: 1,03 MJ / m |
| UV-bestandig                                | ASTM G 154 IEC 60068-2-5                                                                                                                                                                                                |
| Sertifisering                               | DNV                                                                                                                                                                                                                     |



## Fiber data

| Egenskaper                              | 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 | 0.275 ± 0.015 µm  | 0.275 ± 0.015 µm  | 0.275 ± 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<br><0 | <0.80 dB/km<br><0 | <0.80 dB/km<br><0 |
| 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-SR4/100BaseRS10      | -                | -                 | 140 m             | 170 m             |
| Proof test                              | >100kpsi         | >100kpsi          | >100kpsi          | >100kpsi          |

| Egenskaper                           | 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 )      | 1300-1322 µm          | 1300-1322 µm          | 1300-1322 µm           | 1440 µm               |
| Dispersion slope (S ) @ (λ )         | ≤ 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  | -                     | -                     | -                      | 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            |

## Tabell

| Antall fiber                     | Vekt [kg/km] | Artikkel nr. |
|----------------------------------|--------------|--------------|
| G4 50/125 SHF1 - OM4 - orange    | 60           | 1028778      |
| G6 50/125 SHF1 - OM4 - orange    | 60           | 1028779      |
| G8 50/125 SHF1 - OM4 - orange    | 60           | 1028780      |
| G12 50/125 SHF1 - OM4 - orange   | 60           | 1028781      |
| G24 50/125 SHF1 - OM4 - orange   | 70           | 1028782      |
| G4 9/125 SHF1 - OS2 - red        | 60           | 1028783      |
| G4 9/125 SHF1 - OS2 - orange     | 60           | 1091123      |
| G6 9/125 SHF1 - OS2 - orange     | 60           | 1028784      |
| G8 9/125 SHF1 - OS2 - red        | 60           | 1028785      |
| G8 9/125 SHF1 - OS2 - orange     | 60           | 1091127      |
| G12 9/125 SHF1 - OS2 - red       | 60           | 1028786      |
| G24 9/125 SHF1 - OS2 - orange    | 70           | 1028787      |
| G4 50/125 SHF1 - OM2 - orange    | 60           | 1028788      |
| G6 50/125 SHF1 - OM2 - orange    | 60           | 1028789      |
| G8 50/125 SHF1 - OM2 - orange    | 60           | 1028790      |
| G12 50/125 SHF1 - OM2 - orange   | 60           | 1028791      |
| G24 50/125 SHF1 - OM2 - orange   | 70           | 1028792      |
| G4 62,5/125 SHF1 - OM1 - red     | 60           | 1028793      |
| G6 62,5/125 SHF1 - OM1 - orange  | 60           | 1028794      |
| G8 62,5/125 SHF1 - OM1 - orange  | 60           | 1028795      |
| G12 62,5/125 SHF1 - OM1 - orange | 60           | 1028796      |
| G24 62,5/125 SHF1 - OM1 - orange | 70           | 1028797      |
| G4 50/125 SHF1 - OM3 - red       | 60           | 1091149      |
| G6 50/125 SHF1 - OM3 - orange    | 60           | 1091148      |
| G8 50/125 SHF1 - OM3 - orange    | 60           | 1091151      |
| G12 50/125 SHF1 - OM3 - red      | 60           | 1028776      |
| G12 50/125 SHF1 - OM3 - orange   | 60           | 1028771      |
| G24 50/125 SHF1 - OM3 - red      | 70           | 1028777      |
| G24 50/125 SHF1 - OM3 - orange   | 70           | 1028772      |