



QFNB (QFNI + MUD)

7 – 72 fibers

Armoured SHF2, UV

Fire resistant

Loose tube

DNV

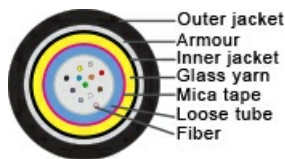
Application

Fiber optic cable for use in vital communication and emergency systems that must be operational during a fire situation (90 min. 950 – 1000°C). The fibers are protected in jelly filled loose tubes stranded around a central strength member to ensure high performance and long endurance. Individual colors for each fiber. 62.5, 50 and 9 µm fibers, MUD resistant jacket. The cable can be used outdoor and indoor, excellent rodent resistance.



Construction Fiber

| | |
|------------------------|--|
| Fibertype | MM or SM 62.5, 50 or 9µm |
| Colorcode fiber | TIA 598 1 - Blue 5 - Grey 9 - Yellow 2 - Orange 6 - White 10 - Violet 3 - Green 7 - Red 11 - Pink 4 - Brown 8 - Black 12 - Turquoise |
| Colorcode fiber tube | 1 - Blue 2 - Orange 3 - Green 4 - Brown passive tubes black |
| Strength member | Reinforced fibreglass yarns (WB) (Waterblocking) |
| Inner jacket | Black LSZH compound |
| Fire resistant barrier | Mica tape over each active tube |
| Armour | Corrugated steel |
| Jacket | Black LSZH compound MUD-resistant |
| Diameter | 15.5 [mm] |





Specifications fiber

| | |
|---------------------------|---|
| Temperature range | -40 – +90 [°C] According to IEC 60794-1-22 F1 |
| Temperaturerange at inst. | -10 – +50 [°C] According to IEC 60794-1-22 F1 |
| Tensile strength | Installed: 1000 [N] @ installation: 1800 [N] (according to IEC 60794-1-21 E1) |
| Crush resistance | 3000 [N/10cm] (according to IEC 60794-1-21 E3) |
| Water penetration | According to IEC 60794-1-22 F5B (3m, 1m. 24h) |
| Impact resistance | 5 [J] (according to IEC 60794-1-21 E4) |
| Bending radius flexible | 20 [x outer diam.] |
| Bending radius installed | 15 [x outer diam.] |

Norms

| | |
|--|--|
| Halogenfree, max content corrosive and toxic gases | IEC 60754-1 & IEC 60754-2 |
| Material properties, insulation and sheath | IEC 60092-360 NEK TS 606 F1 |
| Flame retardant | IEC 60332-1 and IEC 60332-3 |
| Fire resistant | IEC 60331-25 (90min @ 950 – 1000°C) |
| Smoke emission | IEC 61034-2 |
| Oil and fuel resistant | Mineral oils: IRM 902 (IEC60811-2-1) 4h @ 70°C Diesel: IRM 903 (IEC60811-2-1) 4h @ 70°C |
| UV-resistant | ASTM G 154 |
| Certification | DNV |

Dimension

| No. of fibres | Fibre per tube | Total / Active tubes | Outer diam. [mm] | Weight |
|---------------|----------------|----------------------|------------------|--------|
| 12 | 12 | 6 / 1 | 15.5 | 247 |
| 16 | 8 | 6 / 2 | 15.5 | 248 |
| 24 | 12 | 6 / 2 | 15.5 | 248 |
| 32 | 8 | 6 / 4 | 15.5 | 249 |
| 36 | 12 | 6 / 3 | 15.5 | 249 |
| 48 | 12 | 6 / 4 | 15.5 | 250 |

Fiber data-3

| Optical fiber | MM62/OM1 | MM50/OM2 – MM50/OM3 | MM50/OM4 | SM10/G652.D |
|-----------------------------------|---------------|------------------------|--------------|--------------|
| Core diameter | 62.5 ± 2.5 µm | 50 ± 2.5 µm | 50 ± 2.5 µm | - |
| Core non-circularity | ≤ 6% | ≤ 5% | ≤ 5% | - |
| Core/Cladding concentricity error | ≤ 1 µm | ≤ 1 µm | ≤ 1 µm | ≤ 0.5 µm |
| Cladding diameter | 125 ± 2.0 µm | 125 ± 1.0 µm | 125 ± 1.0 µm | 125 ± 0.7 µm |



| Optical fiber | MM62/OM1 | MM50/OM2 – MM50/OM3 | MM50/OM4 | SM 10/G652.D |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Cladding non-circularity | ≤ 1 % | ≤ 0.7 % | ≤ 0.7 % | ≤ 0.7 % |
| Primary coating diameter | 242 ± 10 µm | 242 ± 5 µm | 242 ± 5 µm | 242 ± 7 µm |
| Core non-circularity | ≤ 6 % | ≤ 5 % | ≤ 5 % | ≤ 5 % |
| Coating concentricity error | ≤ 10 % | ≤ 6 % | ≤ 6 % | ≤ 6 % |
| Proof test | ≥ 8.8 N / ≥ 1 % / 100 Kpsi | ≥ 8.8 N / ≥ 1 % / 100 Kpsi | ≥ 8.8 N / ≥ 1 % / 100 Kpsi | ≥ 8.8 N / ≥ 1 % / 100 Kpsi |
| Mode field Diameter @ 1310 nm | - | - | - | 9.0 ± 0.4 |
| Mode field Diameter @ 1550 nm | - | - | - | 10.1 ± 0.5 |
| Att. coefficient (dB/km) 850 nm | ≤ 2.7 | ≤ 2.5 – 250 | ≤ 2.89 | - |
| Att. coefficient (dB/km) 1300 nm | ≤ 0.7 | ≤ 0.7 – 0.7 | ≤ 0.80 | - |
| Att. coefficient (dB/km) 1310 nm | - | - | - | ≤ 0.35 |
| Att. coefficient (dB/km) | - | - | - | ≤ 0.35 |
| Att.n coefficient (dB/km) | - | - | - | ≤ 0.25 |
| Att. coefficient (dB/km) | - | - | - | ≤ 0.21 |
| Att. coefficient (dB/km) | - | - | - | < 0.23 |
| Bandwidth (Mhz/km) 850nm | ≥ 200 | ≥ 700 – ≥ 1500 | ≥ 3500 | - |
| Bandwidth (Mhz/km) 1300nm | ≥ 500 | ≥ 500 – ≥ 500 | ≥ 500 | - |
| Effective Modal Bandwidth (EMB) @ 850 nm | - | - – >2000 Mhz*km | - | - |
| Numerical aperture | 0.275 ± 0.015 | 0.200 ± 0.015 – - | 0.200 ± 0.015 | - |
| Group index of refraction 850 nm | - | - | - | - |
| Group index of refraction 1300 nm | - | - | - | - |
| Group index of refraction 1310 nm | - | - | - | 1.467 |
| Group index of refraction 1550 nm | - | - | - | 1.468 |
| Chromatic Dispersion Coefficient (ps/nm.km) | | | | |
| CDC (ps/nm.km) 1285 – 1330 nm | - | - | - | ≤ 3 |
| CDC (ps/nm.km) 1550 nm | - | - | - | ≤ 18 |
| CDC (ps/nm.km) 1625 nm | - | - | - | ≤ 22 |
| Zero Dispersion Wavelength (nm) | - | - | - | 1300 – 1322 |
| Zero Dispersion Slope (ps/nm ² km) | - | - | - | ≤ 0.090 |
| Cable Cut-off Wavelength (nm) | - | - | - | ≤ 1260 |
| PMD (ps/√ km) 1550 nm | - | - | - | < 0.1 |

