# FullBand® Low Water Peak Single-mode Fibre

## Description

YOFC FullBand® low water peak dispersion unshifted Single-mode fibre is designed specially for optical transmission systems operating over the entire wavelength window from 1260 nm to 1625 nm. By suppressing the water peak that occurs near 1385 nm in conventional single mode fibre due to hydroxyl (OH) ions absorption, FullBand® fibre is able to open E-band (1360-1460 nm) for operation, and consequently provides 100 nm more usable wavelengths. FullBand® fibre is comprehensively optimized for attenuation and dispersion performance across the entire wavelength window from 1260 nm up to 1625 nm and upgraded for macro-bending performance in L-band (1565-1625 nm). The fibre is fully satisfying the demand for transmitting multi-channel high-speed services over one single fibre.

## Application

Thanks to its broad usable optical spectrum and outstanding optical performance, FullBand® fibre is the optimum choice that supports various applications such as Ethernet, Internet Protocol (IP), Asychronous Transfer Mode (ATM), Synchronous Optical Network (SONET) and Wavelength Division Multiplexing (WDM). FullBand® fibre provides more bandwidth for backbone, metropolitan area and access networks. FullBand® fibre enables bandwidth demanding of multi-service like voice, digital and image transmission. FullBand® fibre is applicable in all cable types including ribbon cable, loose tube stranded cable, slotted core cable, unitube cable and tight-buffer cable.

## Norms

YOFC FullBand® fibre complies with or exceeds the ITU-T Recommendation G.652.D and the IEC 60793-2-50 type B1.3 Optical Fibre Specification.
YOFC tightens many parameters of fibre products so as to offer more conveniences to customers.

## Process

YOFC fibres are manufactured using the advanced Plasma Activated Chemical Vapor Deposition (PCVD) process. Because of the inherent advantages of the process, YOFC fibres show extremely refined refractive index (RI) profile control, excellent geometrical performance, low attenuation, etc.
The optical fibre is coated with a double layer UV curable acrylate, which gives the fibre a good protection. Designed for more stringent tight-buffer cable application, the fibre also performs perfectly in loose buffer constructions and demonstrates a high resistance to micro-bending. The coating offers an excellent stable coating strip force over a wide range of environmental conditions and the coating stripping leaves no residues on the bare glass fibre. YOFC's fibres show high and stable values for dynamic stress corrosion susceptibility parameter ($n_d$), which offers a greatly improved applicability to the fibre when used in harsh environments.

## Characteristics

Due to the process innovation and technical breakthrough made on the basis of the conventional Single-mode fibre,YOFC FullBand® low water peak Single-mode fibre has the following characteristics:

- Designed for operation over the full optical spectrum from 1260-1625 nm, which provides 50% more usable wavelengths and hence the transmission capacity is increased
- Outstanding optical performance supporting high-speed transmission technologies such as DWDM and CWDM
- Being compatible with existing 1310 nm equipment
- Good protection and excellent strip force stability
- Accurate geometrical parameters that insure low splicing loss and high splicing efficiency

| Characteristics | Conditions | Specified Values | Units |
|---|---|---|---|
| **Optical Characteristics** | | | |
| Attenuation | 1310 nm | ≤0.34 | [dB/km] |
| | 1383 nm | ≤0.34 | [dB/km] |
| | 1550 nm | ≤0.20 | [dB/km] |
| | 1625 nm | ≤0.23 | [dB/km] |
| Attenuation vs. Wavelength | 1285–1330 nm | ≤0.03 | [dB/km] |
| Max. α difference | 1525–1575 nm | ≤0.02 | [dB/km] |
| Dispersion coefficient | 1285 - 1340 nm | ≥–3.4 ≤3.4 | [ps/(nm · km)] |
| | 1550 nm | ≤18 | [ps/(nm · km)] |
| | 1625 nm | ≤22 | [ps/(nm · km)] |
| Zero dispersion wavelength | | 1312 ± 12 | [nm] |
| Zero dispersion slope | | ≤0.091 | [ps/(nm² · km)] |
| Typical value | | 0.086 | [ps/(nm² · km)] |
| PMD | | | |
| Maximum Individual Fibre | | ≤0.1 | [ps $\sqrt{km}$] |
| Link Design Value (M=20,Q=0.01%) | | ≤0.06 | [ps $\sqrt{km}$] |
| Typical value | | 0.04 | [ps $\sqrt{km}$] |
| Cable cutoff wavelength $\lambda_{cc}$ | | ≤1260 | [nm] |
| Mode field diameter (MFD) | 1310 nm | 8.7 ~ 9.5 | [μm] |
| | 1550 nm | 9.9 ~ 10.9 | [μm] |
| Effective group index of refraction ($N_{eff}$) | 1310 nm | 1.466 | |
| | 1550 nm | 1.467 | |
| Point discontinuities | 1310 nm | ≤0.05 | [dB] |
| | 1550 nm | ≤0.05 | [dB] |
| **Geometrical Characteristics** | | | |
| Cladding diameter | | 125.0 ± 1.0 | [μm] |
| Cladding non–circularity | | ≤1.0 | [%] |
| Coating diameter | | 245 ± 7 | [μm] |
| Coating–cladding concentricity error | | ≤12.0 | [μm] |
| Coating non–circularity | | ≤6.0 | [%] |
| Core–cladding concentricity error | | ≤0.6 | [μm] |
| Curl (radius) | | ≥4 | [m] |
| Delivery length | | 2.1 to 50.4 | [km/reel] |
| **Environmental Characteristics** | (1310 nm, 1550 nm & 1625 nm) | | |
| Temperature dependence | | | |
| Induced attenuation at | –60℃ to +85℃ | ≤0.05 | [dB/km] |
| Temperature–humidity cycling | | | |
| Induced attenuation at | –10℃ to +85℃, 98% RH | ≤0.05 | [dB/km] |
| Watersoak dependence | | | |
| Induced attenuation at | 23℃, for 30 days | ≤0.05 | [dB/km] |
| Damp heat dependence | | | |
| Induced attenuation at | 85℃ and 85% RH, for 30 days | ≤0.05 | [dB/km] |
| Dry heat aging at | 85℃ | ≤0.05 | [dB/km] |
| **Mechanical Specification** | | | |
| Proof test | off line | ≥9.0 | [N] |
| | | ≥1.0 | [%] |
| | | ≥100 | [kpsi] |
| Macro–bend induced attenuation | | | |
| 1 turn around a mandrel of 32 mm diameter | 1550 nm | ≤0.05 | [dB] |
| 100 turns around a mandrel of 50 mm diameter | 1310 nm & 1550 nm | ≤0.05 | [dB] |
| 100 turns around a mandrel of 60 mm diameter | 1625 nm | ≤0.05 | [dB] |
| Coating strip force | typical average force | 1.7 | [N] |
| | peak force | ≥1.3 ≤8.9 | [N] |
| Dynamic stress corrosion susceptibility parameter $n_d$ | | ≥20 | |