AllWave® *FLEX* Fiber
Zero Water Peak

ofs
Leading Optical Innovations

A New Standard in Bend Performance

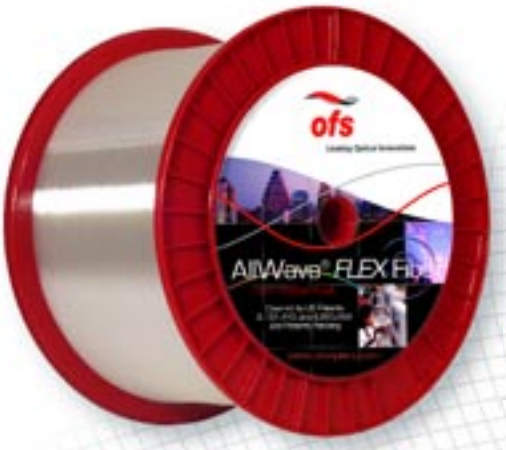
Product Description

AllWave® *FLEX* ZWP Single-Mode Fiber is the first Zero Water Peak G.652D fiber to offer outstanding bend performance for Fiber-to-the-Home (FTTH), enterprise networks, or any application where small bend diameters may be encountered.

AllWave *FLEX* ZWP Fiber maintains very low bending loss across the full usable spectrum of wavelengths from 1260 to 1625 nm. It can be coiled into a 20 mm diameter loop with ≤ 0.5 dB incurred loss at 1625 nm and ≤ 0.2 dB incurred loss at 1550 nm – five times better bending performance than conventional single-mode and leading LWP fibers. AllWave *FLEX* ZWP Fiber also helps improve cable performance in demanding high-stress and low-temperature environments by providing double the microbending performance of conventional single-mode fibers.

AllWave *FLEX* ZWP Fiber retains the performance benefits of OFS' AllWave Zero Water Peak fiber, the first fiber to eliminate the water peak defect found in conventional single-mode fiber. AllWave *FLEX* ZWP Fiber has stable and permanent low loss, due to OFS' patented ZWP fiber manufacturing process, which eliminates hydrogen-aging defects. Fully compliant with ITU-T G.652.D, it exhibits unsurpassed geometry control for the lowest splice and connector loss, as well as ultra-low and stable Polarization Mode Dispersion (PMD) for maximum reach and bandwidth. It is fully compatible with AllWave ZWP Fiber and other conventional single-mode fiber types.

The macrobending and microbending loss improvements of AllWave *FLEX* ZWP Fiber offer a number of advantages for demanding access, enterprise and central office applications. The new fiber can protect the network against excessive loss resulting from inadvertent fiber bends. It is less susceptible to physical disturbances from cable flexing, pulling and crushing, as well as to bending due to routing within enclosures and cabinets. AllWave *FLEX* ZWP Fiber enables more compact cabinet and enclosure designs – an important advantage in FTTH applications. For high bandwidth applications, such as 10 Gb/s and 40 Gb/s wavelength division multiplexing, AllWave *FLEX* ZWP Fiber can dramatically improve reliability related to system outages caused by fiber bend sensitivity that can threaten service in networks operating at longer wavelengths such as 1550 nm or 1625 nm.



US Patent 6,131,415, 6,205,268, 5,298,047, 5,418,881 and world wide counterparts

Features and Benefits:

- **Fully compatible** with all conventional single-mode fiber international standards. The addition of AllWave *FLEX* ZWP Fiber to an existing network will maximize the extended network performance.
- **Superior bend performance**, even for L-Band wavelengths up to 1625 nm – ≤ 0.5 dB loss (1625 nm) and ≤ 0.2 dB loss (1550 nm) at 20 mm diameter – saves space, time and money
- **Dramatically improves reliability related to system outages** caused by fiber bend sensitivity in high-bandwidth applications (such as Wavelength Division Multiplexing) operating at high wavelengths
- Easier to **install**, **handle** and **store** in space-constrained applications such as FTTH
- A **50% increase in usable optical spectrum** enabling 16-channel CWDM and DWDM support
- Tightest geometry control for **lowest splice loss** and improved connectorization performance
- Extremely **low fiber PMD** enables speed and distance upgrades
- Outstanding **reliability**, **environmental** performance, and **strippability** provided by industry leading DLux® Coating
- Protected by OFS U.S. patents and world wide counterparts

Transmission Characteristics:

Attenuation (uncabled fiber):

Wavelength (nm)	Attenuation (dB/km)
1310	≤ 0.35
1383	≤ 0.31
1490	≤ 0.24
1550	≤ 0.21
1625	≤ 0.24

Attenuation vs. Wavelength:

Range (nm)	Reference(nm) λ	α
1285 – 1330	1310	0.03
1360 – 1480	1385	± 0.04
1525 – 1575	1550	0.02
1460 – 1625	1550	0.04

The attenuation in a given wavelength range does not exceed the attentuation of the reference wavelength(λ)by more than the value α .

Change in Attenuation at Water Peak:

The uncabled fiber attenuation coefficient at the OH^- absorption peak (1383 ± 3 nm) after exposure to hydrogen is ≤ 0.31 dB/km and ≤ 0.28 dB/km typically. This test simulates long-term hydrogen aging in installed cables.

Macrobending Attenuation:

The maximum attenuation with bending does not exceed the specified values under the following deployment conditions:

Deployment Condition	Wavelength	Induced Attenuation
1 turn, 20 mm (0.8 inch) diameter	1550 nm 1625 nm	≤ 0.2 dB ≤ 0.5 dB
1 turn, 32 mm (1.2 inch) diameter	1550 nm 1625 nm	≤ 0.02 dB ≤ 0.05 dB
100 turns, 50 mm (2 inch) diameter	1550 nm 1625 nm	≤ 0.01 dB ≤ 0.05 dB

Point Discontinuities:

No attenuation discontinuities greater than 0.05 dB at 1310 nm or 1550 nm.

Chromatic Dispersion:

Zero dispersion wavelength (λ_0):	1302 – 1322 nm
Typical zero dispersion wavelength:	1310 nm
The maximum dispersion slope (S_0) at λ_0:	0.092 ps/nm^2 -km
Typical dispersion slope:	0.088 ps/nm^2 -km

Mode Field Diameter:

at 1310 nm	8.5 – 9.3 µm
at 1550 nm	9.5 – 10.5 µm (typical)

Cutoff Wavelength:

Cable Cutoff Wavelength (λ_{cc}):	≤ 1260 nm

Additional Characteristics:

Geometrical Characteristics:

Glass Geometry:

Cladding Diameter	125.0 ± 0.7 µm
Core/Clad Concentricity Error	≤ 0.5 µm, < 0.2 µm typically
Cladding Non-circularity	≤ 1.0%
Typical Splice Loss (AllWave *FLEX* Fiber to AllWave *FLEX* Fiber)	< 0.02 dB

DLux Coating Geometry:

Coating Diameter (uncolored)	235 – 245 µm
Coating/Cladding Concentricity Error	≤ 12 µm

Environmental Characteristics (at 1310, 1550 & 1625 nm):

Temperature Cycling (-60º + 85º C)	≤ 0.05 dB/km
High Temperature Aging (85 ± 2º C):	≤ 0.05 dB/km
Temperature & Humidity Cycling (at -10º C to +85º C and 95% RH):	≤ 0.05 dB/km
Water Immersion (23 ± 2º C):	≤ 0.05 dB/km

Mechanical Characteristics:

Proof Test Level:	0.7 GPa (100 kpsi)

Higher proof test levels are available upon request.

Dynamic Tensile Strength:

The median tensile strength of unaged samples with a 0.5 meter gauge length is:	≥ 3.8 GPa (550 kpsi)
Dynamic Fatigue Parameter (N_d):	> 20

Coating Strip Force:

The force to mechanically strip the dual coating is:	≥ 1.3 N (0.3 lbf.) and < 8.9 N (2.0 lbf.)

Polarization Mode Dispersion (PMD)[1]:

Fiber PMD Link Design Value (LDV)[2]	≤ 0.06 ps/$\sqrt{km}$
Maximum Individual Fiber	≤ 0.1 ps/$\sqrt{km}$
Typical Fiber LMC PMD	≤ 0.02 ps/$\sqrt{km}$

[1] As measured with low mode coupling(LMC) technique in fiber form, value may change when cabled. Check with your cable manufacturer for specific PMD limits in cable form.

[2] The PMD Link Design Value complies with IEC 60794-3 , September 2001 (N=24, Q=0.1%). Details are described in IEC 61282-3 TR Ed1.0, October 27, 2000.

Standard Cut Lengths[3]: 12.6, 25.2, 37.8 and 50.4 km

[3] Lengths can be cut to specific customer specifications

For additional information please contact your sales representative. You can also visit our website at http://www.ofsoptics.com or call 1-888-fiberhelp.

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