

# AllWave® FLEX Fiber

Zero Water Peak



A Furukawa Company

**A New Standard in Optimized Bend Performance and Reliable Low Loss Transmission.**

## Overview

AllWave® FLEX ZWP Single-Mode Fiber is the first Zero Water Peak (ZWP) G.652D fiber to offer optimized bend performance for Fiber-to-the-Home (FTTX), enterprise networks, or any application where small bend diameters may be encountered. Fully compliant to the new ITU-T G.657 Class A specification, AllWave FLEX Fiber is completely compatible with all conventional single-mode fibers.

## Product Description

AllWave FLEX ZWP Fiber maintains very low bending loss across the full spectrum of wavelengths from 1260 to 1625 nm, while ensuring long-term fiber strength and reliability. It can be coiled into a 10 mm radius loop with < 0.5 dB incurred loss at 1625 nm and < 0.2 dB incurred loss at 1550 nm – five times better bend performance than conventional single-mode and leading Low Water Peak (LWP) fibers.

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 fiber enables more compact cabinet and enclosure designs and protects 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 the intricate routing conditions within enclosures and cabinets. The optimized bend characteristics of AllWave FLEX ZWP Fiber also help improve cable performance in demanding high-stress and low-temperature environments by providing double the microbend protection of conventional single-mode fibers.

OFS maximizes the reliability of AllWave FLEX ZWP Fiber through the use of synthetic glass and our highly protective D-Lux® acrylate coating. This enables us to achieve significantly smaller bend diameters with five times lower loss and no detriment to fiber strength and long-term reliability.

AllWave FLEX ZWP Fiber retains all the performance benefits of OFS' AllWave ZWP 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. What's more, its ultra-low fiber Polarization Mode Dispersion (PMD) enables speed and distance upgrades.

## Features/Benefits:

- Saves space, time, and money through improved bend performance, even for L-Band wavelengths up to 1625 nm: added loss < 0.5 dB (1625 nm) and < 0.2 dB (1550 nm) at 10 mm radius
- Easier to install, handle, and store in space-constrained applications such as FTTX and premises networks
- Bend optimized design for tight, low loss bends without risking fiber strength and long-term reliability
- Tight geometry for very low splice loss and improved connectorization performance with G.652D embedded base
- Fully compatible with all conventional single-mode fiber international standards including G.657 Class A and G.652D
- Zero Water Peak fiber provides a 50% increase in usable optical spectrum enabling 16-channel CWDM and DWDM support

## Outstanding Macrobend Performance

- **100 turns on a 25 mm radius mandrel**  
≤ 0.01 dB @ 1550 nm  
≤ 0.05 dB @ 1625 nm
- **10 turns on a 15 mm radius mandrel**  
≤ 0.2 dB @ 1550 nm  
≤ 0.5 dB @ 1625 nm
- **1 turn on a 10 mm radius mandrel**  
≤ 0.2 dB @ 1550 nm  
≤ 0.5 dB @ 1625 nm

## Product Specifications

### Applications:

AllWave FLEX ZWP Fiber provides outstanding bend performance and design freedom for fiber management systems in:

- FTTX
- The central office
- High power applications
- Analog video
- Microcables
- Drop cables
- Closures
- Field management/storage apparatus located throughout the network
- At the customer premises
- Any application with transmission speeds of 40 Gb/s and beyond

For additional information please contact your sales representative.

You can also visit our website at:

[www.ofsoptics.com/ofsfiber](http://www.ofsoptics.com/ofsfiber) or call 1-888-fiberhelp (from inside the USA).

For regional assistance, contact the global location closest to you.



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### Physical Characteristics

Clad Diameter	125.0 ± 0.7 μm
Clad Non-Circularity	≤ 1 %
Core/Clad Concentricity Error (Offset)	≤ 0.5 μm, < 0.2 μm typically
Coating Diameter (Uncolored)	235 - 245 μm
Coating-Clad Concentricity Error (Offset)	≤ 12 μm
Tensile Proof Test ( <i>Other proof test levels available on request</i> )	100 kpsi (0.69 GPa)
Coating Strip Force	Range: ≥ 1.3 N < 8.9 N (≥ 0.3 lbf < 2.0 lbf)
Standard Reel Lengths	25.2, 37.8 and 50.4 km

### Optical Characteristics

Attenuation	Maximum	Typical
at 1310 nm	≤ 0.35 dB/km	≤ 0.34 dB/km
at 1385 nm	≤ 0.31 dB/km	≤ 0.28 dB/km
at 1490 nm	≤ 0.24 dB/km	≤ 0.21 dB/km
at 1550 nm	≤ 0.21 dB/km	≤ 0.19 dB/km
at 1625 nm	≤ 0.24 dB/km	≤ 0.20 dB/km

### 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 attenuation of the reference wavelength (λ) by more than the value α .

Attenuation Uniformity / Point Discontinuities at 1310 nm and 1550 nm	≤ 0.05 dB
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### Chromatic Dispersion

Zero Dispersion Wavelength (λ <sub>0</sub> )	1302 – 1322 nm
Zero Dispersion Slope (S <sub>0</sub> )	≤ 0.092 ps/nm <sup>2</sup> -km
Typical Dispersion Slope	0.088 ps/nm <sup>2</sup> -km

### Group Refractive Index

at 1310 nm	1.467
at 1550 nm	1.468

### Mode Field Diameter

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

Cut-off Wavelength (λ <sub>cc</sub> )	≤ 1260 nm
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### Polarization Mode Dispersion (PMD)<sup>1</sup>

Fiber PMD Link Design Value (LDV) <sup>2</sup>	< 0.06 ps/√km
Maximum Individual Fiber	< 0.1 ps/√km
Typical Fiber LMC PMD	< 0.02 ps/√km

<sup>1</sup> 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.

<sup>2</sup> The PMD Link Design Value complies with IEC 60794-3, September 2001 (N = 20, Q = 0.01%). Details are described in IEC 61282-3 TR Ed 2, October 2006.

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

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

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