Corning® LEAF® Optical Fiber
Product Information

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ISO 9001 Registered

The World's Most Advanced Networks Have:
Backbone by LEAF Fiber.

With the ever-accelerating race for bandwidth, network designers are challenged to build a network for the present that will also maximize future technologies. Deploy the fiber that revolutionized network technology and gives you room to move. Break the bandwidth barrier with a fiber so technologically advanced it gives you the performance you need for today's and tomorrow's networks – Corning® LEAF® optical fiber.

Find out what the world's most powerful networks have in common: Backbone by LEAF fiber.

The Large Effective Area and Moderate Dispersion Advantage

LEAF fiber's large effective area (A_{eff}) and moderate dispersion offer system designers higher power-handling capability, improved optical signal-to-noise ratio, longer amplifier spacing, and maximum dense wavelength division multiplexing (DWDM) channel plan flexibility as compared with other non-zero dispersion-shifted fibers (NZ-DSFs). Fiber with a large A_{eff} also provides a critical performance advantage – the ability to uniformly reduce all non-linear effects (Figure 1). Non-linear effects represent the greatest performance limitations in today's multi-channel DWDM systems.

The Next Generation

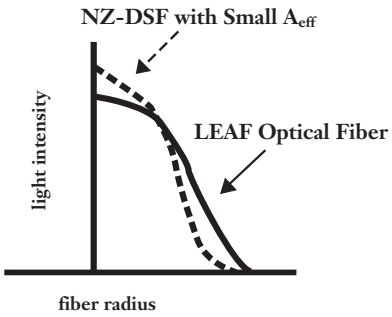
In addition to outperforming other NZ-DSFs in the conventional band (C-Band: 1530-1565 nm), LEAF fiber facilitates the next technological development in fiber-optic networks -- the migration to the long band (L-Band: 1565-1625 nm). In both C-Band and L-Band operation, LEAF

fiber has demonstrated greater ability to handle many channels by reducing non-linear effects such as four-wave mixing, self-phase modulation and cross-phase modulation in multi-channel DWDM transmission.

Reduce Network Costs

With its increased optical reach advantage, LEAF fiber requires fewer amplifiers and regenerators, and therefore provides immediate and long-term cost savings. LEAF fiber is also compatible with installed base fibers and photonic components. In fact, LEAF fiber's slightly larger mode-field diameter improves its splicing performance, especially when connecting to standard single-mode fiber such as Corning® SMF-28® fiber. And, as with all Corning optical fiber, LEAF fiber's suite of geometry specifications is the best in the industry. With LEAF fiber, it is easy and economical to increase the information-carrying capacity of your network.

Figure 1



LEAF fiber's larger A_{eff} increases the area where the light can propagate, thereby reducing non-linear effects.

Fiber For Today & Tomorrow

While LEAF fiber is exceptionally suited to operate with already-installed 2.5 Gb/s systems, it is techno-economically optimized for today's high-channel-count 10 Gb/s systems, and provides the ability to upgrade in the future to tomorrow's high bit-rate systems. Additionally, LEAF fiber's unparalleled specifications on polarization mode dispersion (PMD) allow fiber installed today to operate at data rates higher than 10 Gb/s. The combination of LEAF fiber's large A_{eff} and its demonstrated Raman performance allows system designers to build networks advantaged over other fiber plants. As the world's most advanced NZ-DSF, the award-winning LEAF fiber is ready for future technology when your network is.

Coating

Corning fiber is protected for long-term performance and reliability by the CPC® coating system. Corning's enhanced, dual acrylate CPC coatings provide excellent fiber protection and are easy to work with. CPC coatings are designed to be mechanically stripped and have an outside diameter of 245 µm. CPC coatings are optimized for use in many single- and multi-fiber cable designs, including loose tube, ribbon, slotted core and tight buffer cables.

Optical Specifications

Attenuation

≤ 0.22 dB/km at 1550 nm

≤ 0.24 dB/km at 1625 nm

No point discontinuity greater than 0.10 dB at 1550 nm

Attenuation at 1383 ± 3 nm shall not exceed 1.0 dB/km

Attenuation vs Wavelength

Range (nm)	Ref. λ (nm)	Max Increase α (dB/km)
1525-1575	1550	0.05
1625	1550	0.05

The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength (λ) by more than the value α. In all cases, a maximum attenuation of ≤0.25 dB/km applies at 1550 nm and 1625 nm.

Attenuation With Bending

Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation (dB)
32	1	1550 & 1625	≤ 0.50
60	100	1550 & 1625	≤ 0.05

The induced attenuation is due to wrapping the fiber around a mandrel of a specified diameter.

Mode-Field Diameter

9.2 to 10.0 µm at 1550 nm

Dispersion

Total Dispersion: 2.0 to 6.0 psec/(nm•km) over the range 1530 to 1565 nm

4.5 to 11.2 psec/(nm•km) over the range of 1565 to 1625 nm

Fiber Polarization Mode Dispersion (PMD)	
	Value (ps/$\sqrt{km}$)
PMD Link Design Value	≤0.04*
Maximum Individual Fiber	≤0.1

**Complies with IEC SC 86A/WG1, Method 1, September 1997 (m=24, Q=0.1%)*

The PMD link design value is a term used to describe the PMD of concatenated lengths of fiber (also known as PMD_Q). This value represents a statistical upper limit for total link PMD.

PMD values may change when fiber is cabled. Corning's fiber specification supports emerging network design requirements for high-data-rate systems operating at 10 Gb/s rates and higher.

Environmental Specifications

Environmental Test Condition	Induced Attenuation (dB/km) 1550 nm /1625 nm
Temperature Dependence -60°C to +85°C*	≤ 0.05
Temperature – Humidity Cycling -10°C to +85°C* and up to 98% RH	≤ 0.05
Water Immersion, +23°C	≤ 0.05
Heat Aging, +85°C*	≤ 0.05

**Reference Temperature = +23°C*

Operating Temperature Range: -60°C to +85°

Dimensional Specifications

*Standard Length (km/reel): fiber lengths available up to 25.2**

**Longer lengths available.*

Glass Geometry

Fiber Curl: ≥ 4.0 m radius of curvature
Cladding Diameter: 125.0 ± 0.7 µm
Core/Clad Concentricity: ≤ 0.5 µm
Cladding Non-Circularity: ≤ 1.0%

Defined as:

$$\left[1 - \frac{\text{Min. Cladding Diameter}}{\text{Max. Cladding Diameter}}\right] \times 100$$

Coating Geometry

Coating Diameter: 245 ± 5 µm
Coating/Cladding Concentricity: < 12 µm

Mechanical Specifications

Proof Test

The entire length of fiber is subjected to a tensile proof stress ≥ 100 kpsi (0.7 GN/m²)*

**Higher proof test available.*

Performance Characterizations

Characterized parameters are typical values.

Numerical Aperture: 0.14

NA is measured at the one percent power level of a one-dimensional far-field scan at 1550 nm.

Effective Area (A_{eff}):

1550 nm 72 µm²

Effective Group Index of Refraction (N_{eff}):

1550 nm 1.468
1625 nm 1.469

Fatigue Resistance Parameter (n_d): 20

Coating Strip Force

Dry: 0.6 lb (3N)
Wet: 14 days room temperature: 0.6 lb (3N)

Rayleigh Backscattering Coefficient (for 1ns pulse width):

1550 nm -81 dB
1625 nm -82 dB

Chromatic Dispersion

1550 nm 4 ps/(nm•km)
1625 nm 10 ps/(nm•km)

Consistency with Global Standards

The values in this product information sheet demonstrate Corning® LEAF® fiber's conformity with ITU-T Recommendation G.655, IEC 60793-2 for B4 class fibers and Bellcore/Telcordia GR-20-CORE.

Dispersion Calculation

$$\text{Dispersion} = D(\lambda) = \left(\frac{D(1565\text{ nm}) - D(1530\text{ nm})}{35} * (\lambda - 1565)\right) + D(1565\text{ nm})$$

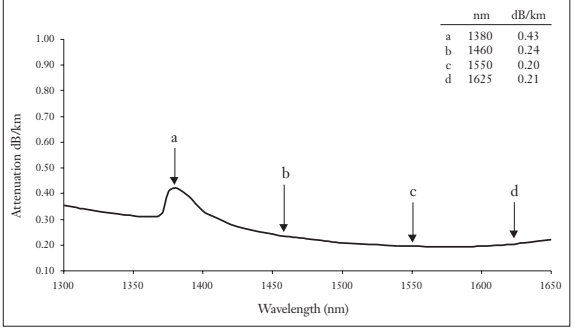
λ = Operating wavelength up to 1565

$$\text{Dispersion} = D(\lambda) = \left(\frac{D(1625\text{ nm}) - D(1565\text{ nm})}{60} * (\lambda - 1625)\right) + D(1625\text{ nm})$$

λ = Operating wavelength from 1565–1625

Special selections of LEAF fiber attributes are available upon request.

Spectral Attenuation (typical fiber)



Ordering Information

To order Corning® LEAF® optical fiber, contact your sales representative, or call the Optical Fiber Customer Service Department at **607-248-2000** or **+44-1244-287-437** in Europe. Please specify the following parameters when ordering.

Fiber Type: Corning® LEAF® non-zero dispersion shifted single-mode fiber

Fiber Attenuation Cell: dB/km

Fiber Quantity: kms

Other: (Requested ship date, etc.)

Corning Incorporated
www.corning.com/opticalfiber

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U.S.A.

Phone: 800-525-2524 (U.S. and Canada)
607-786-8125 (International)

Fax: 800-539-3632 (U.S. and Canada)
607-786-8344 (International)

Email: cofic@corning.com

Europe

Phone: 00 800 6620 6632 (U.K., Ireland, Italy, France, Germany, The Netherlands, Spain and Sweden)

+607 786 8125 (All other countries)

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Asia Pacific

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