

# Corning® SMF-28® ULL Optical Fiber

## Product Information



With millions of kilometers deployed worldwide, Corning® SMF-28® ULL optical fiber has the lowest loss of any terrestrial grade single-mode fiber. With attenuation available down to 0.15 dB/km at 1550 nm, it provides both ultra-low loss and low latency to some of the most challenging cable environments. Enabled by the silica core design, SMF-28 ULL fiber extends network span lengths and enables upgrades to faster data rates. As a result, long-haul and regional networks can scale to even higher capacity to meet the ever-increasing global demand for bandwidth. SMF-28 ULL fiber is compliant and fully compatible with Recommendation ITU-T G.652.B and G.654.C fibers. As a market-leading solution to emerging space constraints in long-haul networks, SMF-28 ULL fiber is now available in a smaller 200 µm nominal coating diameter.

## Optical Specifications

### Maximum Attenuation

Wavelength (nm)	Maximum Value* (dB/km)
1310	≤ 0.31
1550	≤ 0.17
1625	≤ 0.20

\*Alternate attenuation offerings available upon request.

### Attenuation vs. Wavelength

Range (nm)	Ref. λ (nm)	Max. α Difference (dB/km)
1285 – 1330	1310	0.03
1525 – 1575	1550	0.02
1550 – 1625	1550	0.03

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

### Macrobend Loss

Mandrel Radius (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation* (dB)
16	1	1550	≤ 0.1
25	100	1310	≤ 0.05
25	100	1550	≤ 0.05
30	100	1625	≤ 0.05

\*The induced attenuation due to fiber wrapped around a mandrel of a specified radius.

### Point Discontinuity

Wavelength (nm)	Point Discontinuity (dB)
1310	≤ 0.05
1550	≤ 0.05

### Cable Cutoff Wavelength (λ<sub>cc</sub>)

λ<sub>cc</sub> ≤ 1260 nm

### Mode Field Diameter

Wavelength (nm)	Mode Field Diameter (µm)
1310	9.2 ± 0.5
1550	10.5 ± 0.5

### Dispersion

Wavelength (nm)	Dispersion Value [ps/(nm·km)]
1550	≤ 18
1625	≤ 22

Zero Dispersion Wavelength (λ<sub>0</sub>): 1300 nm ≤ λ<sub>0</sub> ≤ 1324 nm  
Zero Dispersion Slope (S<sub>0</sub>): ≤ 0.092 ps/(nm<sup>2</sup>·km)

### Polarization Mode Dispersion (PMD)

	Value (ps/√km)
PMD Link Design Value	≤ 0.04*
Maximum Individual Fiber PMD	≤ 0.1

\*Complies with ITU-T G.650-2 Appendix IV, (m = 20, Q = 0.01%), August 2015.

The PMD link design value is a term used to describe the PMD of concatenated lengths of fiber (also known as PMD<sub>0</sub>). This value represents a statistical upper limit for total link PMD. Individual PMD values may change when fiber is cabled.

### ColorPro™ Identification Technology

SMF-28 ULL fiber is also available in colored variants, enabled by ColorPro™ identification technology. Corning fibers with ColorPro™ identification technology deliver better efficiency in cable manufacturing, simplify inventory management, and leverage an enhanced fiber product offering.

### How to Order

Contact your sales representative, or call the Optical Fiber Customer Service Department:  
Ph: 1-607-248-2000 (U.S./Can.)  
+44-1244-525-320 (Europe)  
Email: cofic@corning.com  
Please specify the fiber type, attenuation, and quantity when ordering.



## Dimensional Specifications

### 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	≤ 0.7%

Coating Geometry	Standard Offering	Smaller Coating Diameter Option
Coating Diameter	242 ± 5 μm	200 ± 5 μm
Coating-Cladding Concentricity	< 12 μm	≤ 10 μm

## Environmental Specifications

Environmental Test	Test Condition	Induced Attenuation 1310 nm, 1550 nm, and 1625 nm (dB/km)
Temperature Dependence	-60°C to +85°C*	≤ 0.05
Temperature Humidity Cycling	-10°C to +85°C up to 98% RH	≤ 0.05
Water Immersion	23°C ± 2°C	≤ 0.05
Heat Aging	85°C ± 2°C	≤ 0.05
Damp Heat	85°C at 85% RH	≤ 0.05

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

\*Reference temperature = +23°C

## Mechanical Specifications

### Proof Test

The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.69 GPa). Higher proof test levels are available.

### Length

Fiber lengths available up to 50.4 km/spool.

## Performance Characterizations

Characterized parameters are typical values.

Core Diameter	8.2 μm
Numerical Aperture	0.14 NA is measured at the one percent power level of a one-dimensional far-field scan at 1310 nm.
Effective Group Index of Refraction ( $n_{eff}$ )	1310 nm: 1.4606 1550 nm: 1.4620
Fatigue Resistance Parameter ( $n_d$ )	20
Coating Strip Force	Dry: 0.6 lbs. (3 N) Wet, 14-day room temperature: 0.6 lbs. (3 N)
Rayleigh Backscatter Coefficient (for 1 ns Pulse Width)	1310 nm: -77 dB 1550 nm: -82 dB