

Corning® SMF-28® ULL Optical Fiber

Product Information



With millions of kilometers deployed worldwide, Corning® SMF-28® ULL optical fiber has the lowest loss distribution of any terrestrial-grade single-mode fiber. With a typical attenuation of 0.16 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_{cc})

λ_{cc} ≤ 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 (λ₀): 1300 nm ≤ λ₀ ≤ 1324 nm
Zero Dispersion Slope (S₀): ≤ 0.092 ps/(nm²·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 PMD₀). 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