

Corning® SMF-28® ULL Optical Fiber

Product Information



Corning® SMF-28® ULL optical fiber has the lowest loss of any terrestrial-grade, single-mode fiber with a maximum attenuation of 0.17 dB/km at 1550 nm. SMF-28 ULL fiber has been deployed around the world in some of the most challenging network applications, where ultra-low attenuation can be leveraged to extend network span lengths, skip amplification sites, upgrade to faster bit rates, add network components for improved flexibility, or lengthen the distances between regenerators. As a result, long-haul and regional networks are scalable for the higher capacities required to meet the ever-increasing global demand for bandwidth without the need to sacrifice backwards compatibility with an existing ITU-T Recommendation G.652 installed base of fibers. SMF-28 ULL fiber complies with ITU-T Recommendation G.652.B and G.654.C.

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.

Macro Bend Loss

Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation* (dB)
32	1	1550	≤ 0.1
50	100	1310	≤ 0.05
50	100	1550	≤ 0.05
60	100	1625	≤ 0.05

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

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)	MFD (μm)
1310	9.2 ± 0.5
1550	10.5 ± 0.5

Dispersion

Wavelength (nm)	Dispersion Value [ps/(nm·km)]
1550	≤ 18.0
1625	≤ 22.0

Zero Dispersion Wavelength (λ₀): 1304 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 IEC 60794-3: 2001, Section 5.5, Method 1, (m = 20, Q = 0.01%), September 2001.

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.

How to Order

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



Dimensional Specifications

Glass Geometry		Coating Geometry	
Fiber Curl	≥ 4.0 m radius of curvature	Coating Diameter	242 ± 5 μm
Cladding Diameter	125.0 ± 0.7 μm	Coating-Cladding Concentricity	< 12 μm
Core-Clad Concentricity	≤ 0.5 μm		
Cladding Non-Circularity	≤ 0.7%		

Environmental Specifications

Environmental Test	Test Condition	Induced Attenuation
		1310 nm, 1550 nm & 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

*Reference temperature = +23°C

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

Mechanical Specifications

Proof Test

The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.69 GPa).*

*Higher proof test levels available.

Length

Fiber lengths available up to 25.2 km/spool.

Performance Characterization Specification

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. (3N) Wet, 14-day room temperature: 0.6 lbs. (3N)
Rayleigh Backscatter Coefficient (for 1 ns Pulse Width)	1310 nm: -77 dB 1550 nm: -82 dB