

# Corning® SMF-28® Ultra Optical Fiber

## Product Information



Corning's SMF-28® Ultra optical fiber is an ITU-T G.652.D compliant optical fiber with Corning's enhanced low loss and bend fiber technologies. This full-spectrum fiber has bend performance that exceeds the ITU-T G.657.A1 standard and still splices the same as the installed base of standard single-mode fibers such as SMF-28e+® fiber. SMF-28® Ultra fiber offers industry leading specifications for attenuation, macrobend loss, and polarization mode dispersion values, which provide a solid foundation for new network deployments as well as upgrades to existing networks. Since we brought the first fiber to market more than 40 years ago, our demonstrated leadership in single-mode fiber innovation is unparalleled.

### Optical Specifications

#### Maximum Attenuation

Wavelength (nm)	Maximum Value (dB/km)
1310	≤ 0.32
1383 ± 3*	≤ 0.32
1490	≤ 0.21
1550	≤ 0.18
1625	≤ 0.20

\* Attenuation post-hydrogen aging according to IEC 60793-2-5 Section C.5 for B.1.3 fibers. 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

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)
10	1	1550	≤ 0.50
10	1	1625	≤ 1.5
15	10	1550	≤ 0.05
15	10	1625	≤ 0.30
25	100	1310, 1550, 1625	≤ 0.01

\*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)	MFD (μm)
1310	9.2 ± 0.4
1550	10.4 ± 0.5

#### Dispersion

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

Zero Dispersion Wavelength (λ<sub>0</sub>): 1304 nm ≤ λ<sub>0</sub> ≤ 1324 nm

Zero Dispersion Slope (S<sub>0</sub>): 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 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 PMD<sub>0</sub>). 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, 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° ± 2°C	≤ 0.05
Heat Aging	85° ± 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 63.0 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: 1.4676 1550 nm: 1.4682
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