

Corning® SMF-28e+® Optical Fiber

Product Information



Corning® SMF-28e+® optical fiber is the industry leader in comprehensive single-mode fiber performance for metro and access networks. It is ITU-T Recommendation G.652.D-compliant and fully backward compatible with legacy standard single-mode fibers. SMF-28e+ fiber is built on Corning’s solid foundation of quality and proven performance. Since Corning brought the first fiber to market more than 40 years ago, Corning’s leadership in single-mode fiber innovation has been unparalleled.

Optical Specifications

Maximum Attenuation

| Wavelength (nm) | Maximum Value* (dB/km) |
|-----------------|------------------------|
| 1310 | ≤ 0.35 |
| 1383** | ≤ 0.35 |
| 1490 | ≤ 0.24 |
| 1550 | ≤ 0.20 |
| 1625 | ≤ 0.23 |

* Alternate attenuation offerings available upon request.

** Attenuation values at this wavelength represent post-hydrogen aging performance.

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.

Macro Bend Loss

| Mandrel Diameter (mm) | Number of Turns | Wavelength (nm) | Induced Attenuation* (dB) |
|-----------------------|-----------------|-----------------|---------------------------|
| 32 | 1 | 1550 | ≤ 0.03 |
| 50 | 100 | 1310 | ≤ 0.03 |
| 50 | 100 | 1550 | ≤ 0.03 |
| 60 | 100 | 1625 | ≤ 0.03 |

*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 ± 0.4 |
| 1550 | 10.4 ± 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 | ≤ 0.06* |
| 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

| | |
|--------------------------|-----------------------------|
| 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

| | |
|--------------------------------|------------|
| Coating Diameter | 242 ± 5 μm |
| Coating-Cladding Concentricity | < 12 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 |

*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: 1.4674 1550 nm: 1.4679 |
| 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 |