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Corning® MetroCor® Optical Fiber
Product Information



Optical Fiber

PI1302
Issued: August 2002
Supersedes: May 2002
ISO 9001 Registered

Accelerate Your Metropolitan Network

The Negative Dispersion Fiber Optimized for Metropolitan Network Applications

Corning® MetroCor® optical fiber addresses the need for high-capacity low-cost transmission in metropolitan and medium distance networks. A non-zero dispersion shifted fiber optimized for use in high-data-rate wavelength division multiplexed (WDM) systems, MetroCor fiber operates in the erbium-doped fiber amplifier (EDFA) window. Its low negative dispersion substantially decreases operating costs of optical networks.

Metropolitan Network Demands

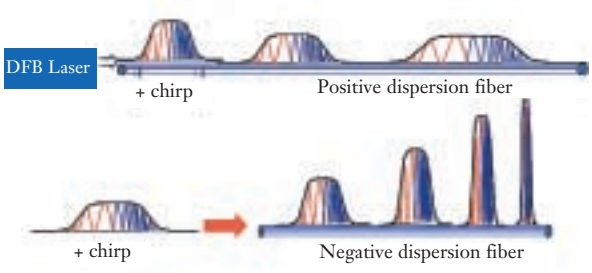
Metropolitan networks are typically deployed in ring architectures to increase network reliability and reduce deployment costs. Compared with standard single-mode fiber, MetroCor fiber's low negative dispersion extends ring distances by allowing optical signals to travel farther without dispersion compensation. This extended reach provides further cost savings in today's metropolitan ring architectures. MetroCor fiber supports both 2.5 Gbps and 10 Gbps transmission, and its low dispersion in the C-band and L-band enables dense WDM deployment. As transparent WDM networks are deployed to increase capacity and flexibility in metropolitan and access networks, MetroCor fiber also provides an ideal solution for future metropolitan network needs.

MetroCor Fiber Enables Today's Transmission Systems

With leading-edge research and development in optical fiber and photonic components, Corning has designed MetroCor fiber to operate with low-cost components. MetroCor fiber enables the use of low-cost directly modulated distributed feedback (DM-DFB) lasers, which tend to have a high positive chirp. MetroCor fiber increases the useable distance of DM-DFB lasers by providing

compression of the pulse. Corning has determined that signal transmission is enhanced for low-cost DM-DFB lasers due to MetroCor fiber's negative dispersion in the 1550 nm EDFA operating window, resulting in greatly extended performance of the inexpensive lasers. With low negative dispersion, greater distances can be attained without the application of expensive dispersion compensation modules (DCMs).

Low Negative Dispersion of MetroCor Fiber Compresses the Optical Pulse



MetroCor Fiber Prepares You for the Transparent Networking of Tomorrow's Metropolitan Systems

Transparent reconfigurability, using wavelength selective cross connects (WSXC) and wavelength add/drop multiplexers (WADM), will potentially lower costs by eliminating unnecessary optical-electrical-optical (O-E-O) conversions. Future metropolitan networks will achieve optical path lengths beyond the dispersion limitations of standard single-mode fiber. As a dispersion-optimized fiber, MetroCor fiber greatly extends transmission distances without the added complexity of DCMs or the cost of expensive lasers.

Technology Achievement Award

MetroCor fiber was awarded Photonic Spectra's 2000 Photonics Circle of Excellence Award. This prestigious award honors the best in new technology based on innovation and merit and gives Corning the distinct recognition of bringing to market one of the most technically innovative products of the year.

Optical Specifications

Attenuation

≤ 0.50 dB/km at 1310 nm
≤ 0.25 dB/km at 1550 nm
≤ 0.25 dB/km at 1605 nm

Point Discontinuity

No point discontinuity greater than 0.10 dB at either 1310 nm or 1550 nm

Attenuation at the Water Peak

Attenuation at 1383 ± 3 nm shall not exceed 0.40 dB/km

Attenuation vs. Wavelength

Range (nm)	Ref. λ (nm)	Max. Increase α (dB/km)
1285 - 1330	1310	0.05
1525 - 1605	1550	0.05

The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength (λ) by more than the value α. In all cases, a maximum attenuation of ≤ 0.25 dB/km applies at 1550 nm and 1605 nm.

Attenuation with Bending

Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation* (dB)
32	1	1550 & 1605	≤0.50
75	100	1310	≤0.05
75	100	1550 & 1605	≤0.10

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

Cable Cutoff Wavelength (λ_{ccf})

$\lambda_{ccf} \leq 1260$ nm

Mode-Field Diameter

7.60 µm ≤ MFD ≤ 8.60 µm at 1550 nm

Dispersion

Total Dispersion: -10.0 ≤ D ≤ -1.0 psec/(nm•km) over the range 1530 to 1605 nm

Fiber Polarization Mode Dispersion (PMD)

	Value (ps/$\sqrt{km}$)
PMD Link Value	≤ 0.1*
Maximum Individual Fiber	≤ 0.2

* Complies with IEC SC 86A/WG1, Method 1, September 1997.

The PMD link value is a term used to describe the PMD of concatenated lengths of fiber (also known as the link quadrature average). This value is used to determine a statistical upper limit for system PMD performance.

PMD values may change when fiber is cabled. Corning's fiber specification supports emerging network design requirements for high-data-rate systems operating at 10 Gbps (TDM) rates and higher.

Environmental Specifications

Environmental Test Condition	Induced Attenuation (dB/km), 1550 nm
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	≤0.05
Heat Aging, 85°C	≤0.05

**Reference temperature = +23 °C*

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

Dimensional Specifications

Standard Length (km/reel): 2.2 - 25.2*

*Longer spliced lengths available at a premium.

Glass Geometry

Fiber Curl: ≥ 4.0 m radius of curvature
Cladding Diameter: 125.0 ± 1.0 µm
Core-Clad Concentricity: ≤ 0.5 µm
Cladding Non-Circularity: ≤ 1.0%

$$\text{Defined as: } \left[1 - \frac{\text{Min. Cladding Diameter}}{\text{Max. Cladding Diameter}}\right] \text{x100}$$

Coating Geometry

Coating Diameter: 245 ± 5 µm
Coating-Cladding Concentricity: < 12 µm

Mechanical Specifications

Proof Test

The entire fiber length is subjected to a tensile proof stress ≥ 100 kpsi (0.7 GN/m²)*

* Higher proof test levels available at a premium.

Performance Characterizations

Characterized parameters are typical values.

Effective Group Index of Refraction **(N_{eff})**:
1.469 at 1550 nm

Fatigue Resistance Parameter **(n_d)**: 20

Coating Strip Force:
Dry: 23ºC: 0.6 lb (2.7 N)
Wet, 14-day, 23ºC: 0.6 lb (2.7 N)

Dispersion Calculation

$$\text{Dispersion} = D(\lambda) = \left(\frac{D(1605\text{ nm}) - D(1530\text{ nm})}{75} * (\lambda - 1605)\right) + D(1605\text{ nm})$$

λ = Operating wavelength 1530 nm to 1605 nm

Ordering Information

To order Corning® MetroCor® fiber, contact your sales representative, or call the Optical Fiber Customer Service Department at **607-248-2000** or **+44-1244-287-437** in Europe. Please specify the following parameters when ordering.

Fiber Type: Corning® MetroCor® Fiber

Fiber Attenuation Cell: dB/km

Fiber Quantity: km

Other: (Requested ship date, etc.)

Corning Incorporated
www.corning.com/opticalfiber

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Fax: 800-539-3632 (U.S. and Canada)
607-786-8344 (International)

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+1 607 786 8125 (All other countries)

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