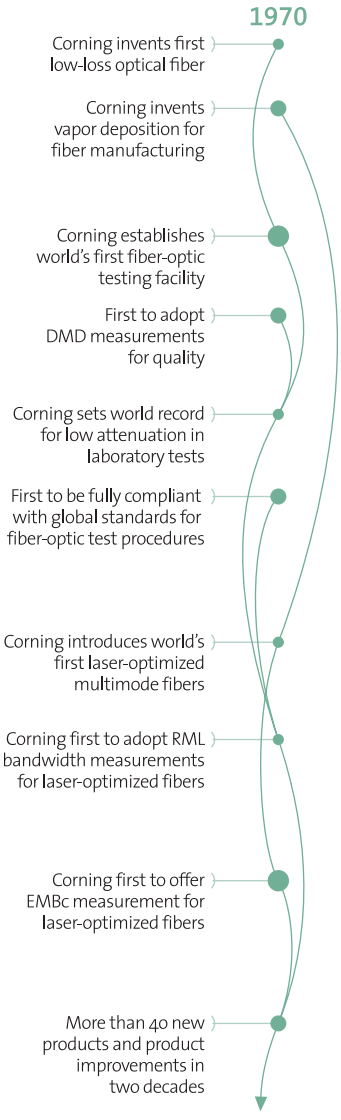
# Corning® InfiniCor® 50 µm Optical Fibers
# Product Information


## *How Do You Measure Trust? Gb/s Works for Us.*

In today's enterprise networks, bandwidth demands are growing – rapidly. That's because end-user productivity is increasingly dependent on instant accessibility and high throughput of information. Narrow bandwidth constricts your capacity to succeed. Corning's 50 µm InfiniCor® fibers, the world's first laser-optimized™ 50 µm multimode fibers, help you to stay ahead of escalating network demands with:

* High performance at data rates up to 10 Gb/s at 850 nm
* Cost-effective, higher capacity transmission compared with other multimode fibers
* Higher data aggregation in the backbone, riser and high-speed parallel interconnects (HSPIs)
* Full compatibility with the broad range of laser-based and legacy protocols and applications
* Superior measurement technology and manufacturing control
* Industry-leading CPC® coatings for superior microbend and environmental performance

| | InfiniCor® eSX+ fiber | InfiniCor® SX+ fiber | InfiniCor® SX*i* fiber | InfiniCor® 600 fiber |
|---|---|---|---|---|
| Optimized Data Rate over Distance | 10 Gb/s over 550 m<br>1 Gb/s over 1100 m | 10 Gb/s over 300 m<br>1 Gb/s over 1000 m | 10 Gb/s over 150 m<br>1 Gb/s over 750 m | 1 Gb/s over 600 m |
| Standards Compliance | | | | |
| ISO/IEC 11801 | type OM3 fiber | type OM3 fiber | type OM2 fiber | type OM2 fiber |
| IEC 60793-2-10 | type A1a.2 fiber | type A1a.2 fiber | type A1a.1 fiber | type A1a.1 fiber |
| TIA/EIA | 492AAAC-A | 492AAAC-A | 492AAAB | 492AAAB |

PI1457 | Issued: January 2008 | Supersedes: October 2007 | ISO 9001 Registered

## Real Value for Your Network

No one can match Corning's superior measurement technology and manufacturing control of the refractive index profile. Consequently, InfiniCor 50 µm optical fibers offer exceptional bandwidth for high performance, while allowing the use of low-cost, high-speed 850 nm vertical cavity surface-emitting lasers (VCSELs).

## Thoroughly Measured for Performance You Can Count On

Corning is a world leader in developing and using the most advanced measurement techniques for laser-optimized multimode fibers. In fact, InfiniCor fibers are more thoroughly measured than any other multimode fiber on the market. Corning uses direct manufacturing process control and final product measurements for all InfiniCor fibers to ensure performance in laser-based systems.

We ensure EMB via calculated effective modal bandwidth (EMBc) for all of our InfiniCor 50 µm optical fibers. EMBc is a differential mode delay (DMD)-based bandwidth value that best predicts multimode system performance in high-bandwidth laser-based 10 Gb/s and 1 Gb/s systems. Corning is the first optical fiber manufacturer to offer EMBc measurements for its laser-optimized multimode fibers.

## Corning® Optical Fiber – The Measure of Trust

### Corning's Service Advantage

Corning Optical Fiber delivers the world's most comprehensive package of innovative products and services, including:

- Worldwide sales support and door-to-door customer service
- Full range of fibers and special order capabilities
- Specialized support from technical experts
- Extensive fiber delivery capabilities with proven success rates
- Real-time, Web-based customer information
- Dedicated account support for our long-term supply customers
- Fiber support services and technical information for end-customers

At Corning Optical Fiber, we strive to provide the best possible customer service and technical support – before, during and after the sale. As a customer, you'll benefit from our established and extensive support infrastructure that's ready to meet your specific needs.

### Corning's Product Advantage

Our state-of-the-art, dual acrylate CPC® coatings provide excellent mechanical protection and handleability. Designed to be mechanically strippable, CPC coatings are optimized for many different cable designs.

Corning is committed to product excellence and meeting the evolving needs of our customers. As updates to fiber characteristics or performance specifications become available, they will be posted on the Corning Optical Fiber website at www.corning.com/opticalfiber.

# Optical Specifications

## Bandwidth

| Corning Optical Fiber | High Performance EMB* (MHz•km) 850 nm Only | Legacy Performance EMB** (MHz•km) 850 nm | 1300 nm |
|---|---|---|---|
| InfiniCor eSX+ fiber | 4700 | 1500 | 500 |
| InfiniCor SX+ fiber | 2000 | 1500 | 500 |
| InfiniCor SX*i* fiber | 850 | 700 | 500 |
| InfiniCor 600 fiber | 510 | 500 | 500 |

*Ensured via minEMBc, per TIA/EIA 455-220A and IEC 60793-1-49, for *high performance laser-based* systems (up to 10 Gb/s).

**OFL BW, per TIA/EIA 455-204 and IEC 60793-1-41, for *legacy* and *LED-based* systems (typically up to 100 Mb/s).

## Attenuation

| Wavelength (nm) | Maximum Value (dB/km) |
|---|---|
| 850 | ≤ 2.3 |
| 1300 | ≤ 0.6 |

No point discontinuity greater than 0.2 dB.

Attenuation at 1380 nm does not exceed the attenuation at 1300 nm by more than 3.0 dB/km.

Induced attenuation from 100 turns around a 75 mm mandrel shall be ≤ 0.5 dB at 850 nm and 1300 nm.

## Numerical Aperture

0.200 ± 0.015

# Dimensional Specifications

## Glass Geometry

| | |
|---|---|
| Core Diameter | 50.0 ± 2.5 µm |
| Cladding Diameter | 125.0 ± 2.0 µm |
| Core-Clad Concentricity | ≤ 1.5 µm |
| Cladding Non-Circularity | ≤ 1.0% |
| Core Non-Circularity | ≤ 5% |

## Coating Geometry

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

# Environmental Specifications

| Environmental Test | Test Condition | Induced Attenuation 850 and 1300 nm (dB/km) |
|---|---|---|
| Temperature Dependence | -60°C to +85°C | ≤ 0.10 |
| Temperature Humidity Cycling | -10°C to +85°C and 4% to 98% RH | ≤ 0.10 |
| Water Immersion | 23°C ± 2°C | ≤ 0.20 |
| Heat Aging | 85°C ± 2°C | ≤ 0.20 |
| Damp Heat | 85°C at 85% RH | ≤ 0.20 |

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

# Mechanical Specifications

## Proof Test

The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.7 $GN/m^2$)*.

*Higher proof test levels available.

## Length

Fiber lengths available up to 17.6 km/spool.

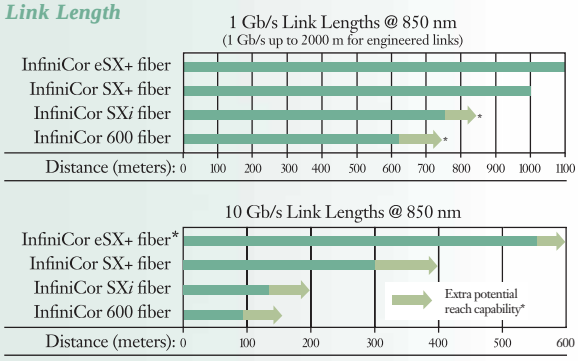
## How to Order

Contact your sales representative, or call the Optical Fiber Customer Service Department:
Ph: 607-248-2000 (U.S. and Canada)
+44-1244-525-325 (Europe)
Email: opticalfibcs@corning.com
Please specify the fiber type, attenuation and quantity when ordering.

# Performance Characterizations

Characterized parameters are typical values.

### *Link Length*




*Fiber reel-specific bandwidth metrics and values as provided by Corning (subject to availability).

Link Lengths as characterized in IEEE 802.3z (Gigabit Ethernet) and IEEE 802.3ae (10 Gigabit Ethernet) for InfiniCor product-specific bandwidth metrics and standards compliant components. 1 Gb/s and 10 Gb/s link lengths shown for InfiniCor eSX+ fiber and 1 Gb/s link lengths shown for InfiniCor SX+ fiber systems require cable attenuation ≤ 3.0 dB/km and total connector loss ≤ 1.0 dB.

***Refractive Index Difference*** 1%

***Effective Group Index of Refraction ($N_{eff}$)***
850 nm: 1.481
1300 nm: 1.476

$N_{eff}$ was empirically derived to the third decimal place using a specific commercially available OTDR.

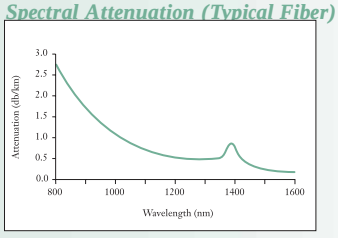
***Fatigue Resistance Parameter ($N_d$)*** 20

***Coating Strip Force***
Dry: 0.6 lbs. (2.7N)
Wet, 14 days in 23°C water soak: 0.6 lbs. (2.7N)

***Rayleigh Backscatter Coefficient (for 1 ns Pulse Width)***
850 nm: -68 dB
1300 nm: -76 dB

***Chromatic Dispersion***
Zero Dispersion Wavelength ($\lambda_0$): 1300 nm ≤ $\lambda_0$ ≤ 1320 nm
Zero Dispersion Slope ($S_0$): ≤ 0.101 ps/(nm$^2$•km)

***Spectral Attenuation (Typical Fiber)***




# Formulas

### *Dispersion*

$$\text{Dispersion} = D(\lambda): \approx \frac{S_0}{4}\left[\lambda - \frac{\lambda_0^4}{\lambda^3}\right] \text{ps/(nm•km)},$$

for 750 nm ≤ λ ≤ 1450 nm

λ = Operating Wavelength

### *Cladding Non-Circularity*

$$\text{Cladding Non-Circularity} = \left[1 - \frac{\text{Min. Cladding Diameter}}{\text{Max. Cladding Diameter}}\right] \times 100$$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