

# Corning® InfiniCor® 50 µm Optical Fibers

## Product Information

CORNING

Optical  
Fiber

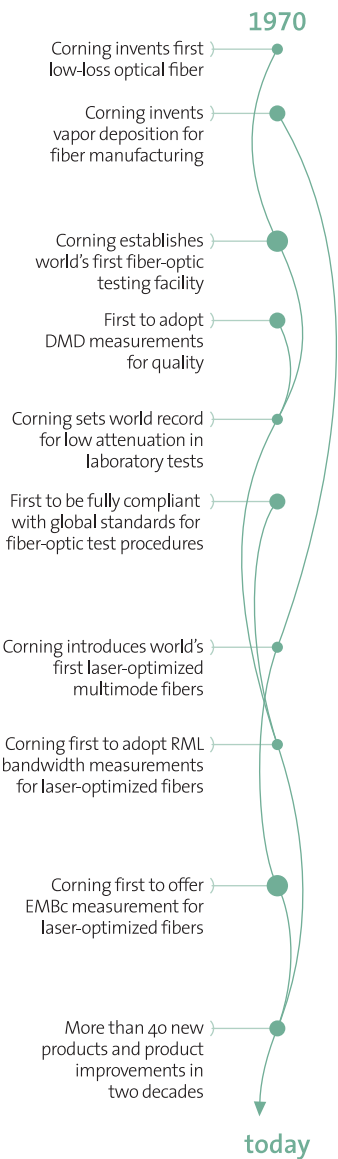
### How Do You Measure Trust? Gb/s Works for Us.

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® SXi fiber
Optimized Data Rate	10 Gb/s over 550 m	10 Gb/s over 300 m	10 Gb/s over 150 m
over Distance	1 Gb/s over 1100 m	1 Gb/s over 1000 m	1 Gb/s over 750 m
Standards Compliance			
ISO/IEC 11801	type OM4 fiber*	type OM3 fiber	type OM2 fiber
IEC 60793-2-10	type A1a.3 fiber*	type A1a.2 fiber	type A1a.1 fiber
TIA/EIA	492AAAD	492AAAC-A	492AAAB

\*Assumes IEC draft standard is harmonized with 492AAAD which was approved by TIA.



PI1457

ISSUED: AUGUST 2009  
SUPERSEDES: JUNE 2009

TL9000/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  $\mu\text{m}$  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  $\mu\text{m}$  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](http://www.corning.com/opticalfiber).

## Optical Specifications

### Bandwidth

Corning Optical Fiber	High Performance EMB*	Legacy Performance EMB**	
	(MHz•km) 850 nm Only	850 nm	1300 nm
InfiniCor eSX+ fiber	4700	3500	500
InfiniCor SX+ fiber	2000	1500	500
InfiniCor SXi fiber	850	700	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	242 ± 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<sup>2</sup>)\*.

\*Higher proof test levels available.

### Length

Fiber lengths available up to 17.6 km/spool.

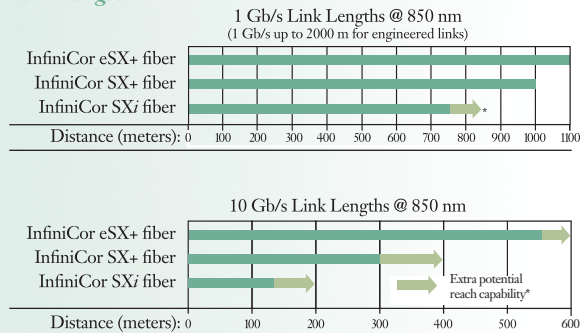
## How to Order

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

## Performance Characterizations

Characterized parameters are typical values.

### Link Length



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  $\leq 3.0$  dB/km and total connector loss  $\leq 1.0$  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.

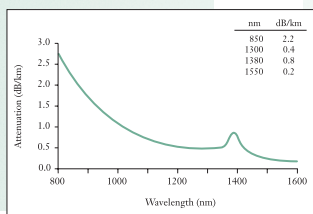
Fatigue Resistance Parameter ( $n_d$ ) 20

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  $\leq \lambda_0 \leq 1320$  nm  
Zero Dispersion Slope ( $S_0$ ):  $\leq 0.101$  ps/(nm<sup>2</sup>•km)

### Spectral Attenuation (Typical Fiber)



## Formulas

### Dispersion

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

$$\text{for } 750 \text{ nm} \leq \lambda \leq 1450 \text{ nm}$$

$\lambda$  = 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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