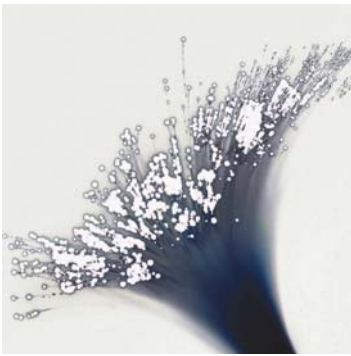


Corning Specialty Fiber

Product Information Sheets



CORNING

Table of Contents

High Bend / Bend Insensitive Fibers

Corning® HI 780 & 780 C Specialty Optical Fibers	1
Corning® HI 980 & RC HI 980 Specialty Optical Fibers	3
Corning® HI 1060 & RC HI 1060 Specialty Optical Fibers	5
Corning® HI 1060FLEX & RC HI 1060 FLEX Specialty Optical Fibers	7
Corning® RC 1300 and RC 1550 Specialty Optical Fibers	9

Erbium-Doped Fibers

Corning® ER Specialty Optical Fibers	11
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High Temperature / Harsh Environment Fibers

Corning® Hermetic Single-mode and Multimode Specialty Optical Fibers	15
Corning® High Temperature Single-mode and Multimode Specialty Optical Fibers	17

PANDA / Polarization Control Fibers

Corning® PANDA PM Specialty Optical Fibers	19
Corning® PANDA Flame Retardant Specialty Optical Fibers	23
Corning® PANDA High NA Specialty Optical Fibers	25
Corning® PANDA Bend Insensitive Specialty Optical Fibers	27

Special Single-Mode Fibers

Corning® RC SMF Specialty Optical Fibers	29
Corning® RGB 400 Specialty Optical Fibers	31
Corning® SMF-28e+® Photonic Optical Fibers	33
Corning® ClearCurve® XB Optical Fibers	37

NEW Specialty Fibers

Corning® HICER 98 Specialty Optical Fibers	41
Corning® Mid-Temperature Specialty Optical Fibers	43
Corning® RGB PM Photonic Optical Fibers	45

Corning® HI 780 & HI 780C Specialty Optical Fibers

High Index / Bend Insensitive



For low loss fused couplers, high performance components and small footprint assemblies

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® HI 780 Specialty Fiber offers world-class durability and reliability. When used as component pigtailed, this fiber allows for efficient fiber coupling within photonic products. It also offers reduced bend attenuation due to its high core index of refraction. Corning® HI 780 Specialty Fiber is capable of operating with short wavelength laser and LED sources. Corning now offers a re-engineered version, HI 780C, which delivers non-adiabatic taper loss during component manufacturing. HI 780C is a coupler-optimized design that allows for steeper tapers and shorter couplers with lower losses.

Applications:

- Low loss fused fiber couplers
- Component fiber for couplers, and other DWDM components
- Short wavelength laser and LED sources
- Sensors and gyroscopes

Features:

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Excellent geometry control
- High core index of refraction
- Efficient coupling
- High numerical aperture

HI 780 and HI 780C*

Key Optical Specifications

Operating Wavelength (nm)	> 780
Cutoff Wavelength (nm)	720 ± 50
Maximum Attenuation (dB/km)	4.3 @ 780 nm 3.0 @ 850 nm
Mode-field Diameter (µm)	4.6 ± 0.5 @ 780 nm 5.0 ± 0.5 @ 850 nm

* HI 780C - Coupler optimized (see graph below)

Key Geometric, Mechanical and Environmental Specifications

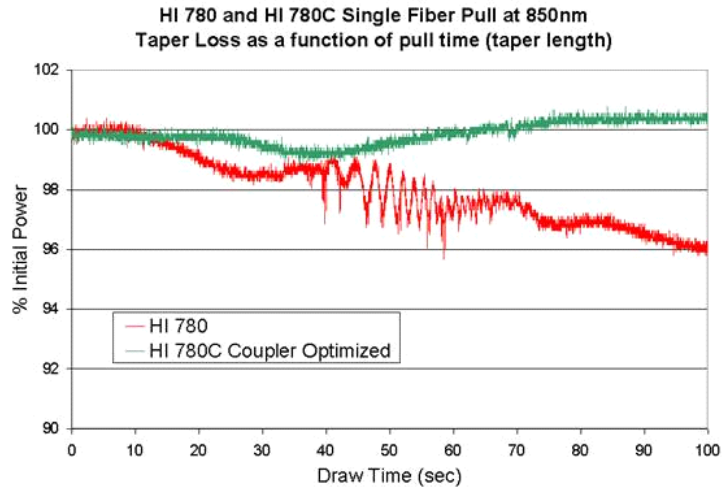
Cladding Outside Diameter (µm)	125 ± 0.5
Coating Outside Diameter (µm)	245 ± 10
Core-to-Cladding Offset (µm)	≤ 0.3
Standard Lengths	500 m, 1 km, 2, km, 5 km
Proof Test (kpsi)	100 or 200
Operating Temperature (°C)	-60 to 85

Performance Characterizations**

Nominal Delta (%)	0.45
Numerical Aperture	0.14
Refractive Index Value - Core	1.463 @ 651 nm
Bendloss (20 mm O.D.; 850 nm) (dB/turn)	< 0.05
Core Diameter (µm)	4.0

	HI 780	HI 780C
Dispersion (ps/nm/km)	-132 @ 780 nm -99 @ 850 nm	-135 @ 780 nm -102 @ 850 nm

** Values in this table are nominal or calculated values



For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

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 Supersedes: January 2008

Corning® HI 980 & RC HI 980 Specialty Optical Fibers

High Index / Bend Insensitive



Industry standard for 980 pump pigtails for high performance components and small footprint assemblies

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® HI 980 Specialty Fiber offers world-class durability and reliability. When used as component pigtails, this fiber allows for efficient fiber coupling within photonic products. It also offers reduced bend attenuation due to its high core index of refraction.

Applications:

HI 980

- Single-mode performance at 980 nm and above
- Component fiber for EDFAs, couplers, and other DWDM components
- Pigtails for pump lasers
- Gratings

RC HI 980

- Component fiber for EDFAs, couplers, and other DWDM components
- Pigtails for pump lasers

Features:

HI 980 and RC HI 980

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Excellent geometry control
- High core index of refraction
- Mode-field diameter matched to erbium-doped fiber, allowing for efficient coupling
- High proof test for increased reliability in tight bend configurations
- High numerical aperture
- RC HI 980 provides 80 μm diameter for miniature packaging

Key Optical Specifications

Operating Wavelength (nm)	> 980
Cutoff Wavelength (nm)	930 ± 50
Maximum Attenuation (dB/km)	≤ 2.5 @ 980 nm
Mode-field Diameter (µm)	4.2 ± 0.3 @ 980 nm

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (µm)	125 ± 0.5	80 ± 1
Coating Outside Diameter (µm)	245 ± 10	165 ± 10
Core-to-Cladding Offset (µm)	≤ 0.3	≤ 0.5
Standard Lengths	500 m, 1 km, 2, km, 5 km, 10 km	
Proof Test (kpsi)	100* or 200	
Operating Temperature (°C)	-60 to 85	

*100 kpsi only available for RC HI980

Performance Characterizations**

Nominal Delta (%)	1.0
Numerical Aperture	0.21
Refractive Index Value – Core	1.471 @ 651 nm
Bendloss (20 mm O.D.; 1550 nm) (dB/turn)	≤ 0.01
Core Diameter (µm)	3.5
Dispersion (ps/nm/km)	-63 @ 980 nm

** Values in this table are nominal or calculated values

Typical Splice Loss

	RC SMF Fiber	HI 980
Wavelength (nm)	1550	980
RC HI 980 (dB)	0.11	0.05

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Corning® HI 1060 & RC HI 1060 Specialty Optical Fibers High Index / Bend Insensitive



Industry standard for 980 pump pigtails for high performance components and small footprint assemblies

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® HI 1060 Specialty Fiber offers world-class durability and reliability. When used as component pigtails, this fiber allows for efficient fiber coupling within photonic products.

Applications:

HI 1060

- Photonic products and fused fiber couplers
- Component fiber for EDFAs, couplers, and other DWDM components
- Laser diode pigtails
- Gratings

RC HI 1060

- Component fiber for EDFAs, couplers, and other DWDM components
- Pigtails for pump lasers

Features:

HI 1060 and RC HI 1060

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Excellent geometry control
- High core index of refraction
- Efficient coupling
- High numerical aperture
- RC HI 1060 offers 80 μm diameter for miniature packaging

HI 1060

RC HI 1060

Key Optical Specifications

Operating Wavelength (nm)	> 980	
Maximum Attenuation (dB/km)	2.1 @ 980 nm 1.5 @ 1060 nm	
Cutoff Wavelength (nm)	920 ± 50	
Mode-field Diameter (μm)	5.9 ± 0.3 @ 980 nm 6.2 ± 0.3 @ 1060 nm	

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 0.5	80 ± 1
Coating Outside Diameter (μm)	245 ± 10	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.3	≤ 0.5
Standard Lengths	500 m, 1 km, 2 km, 5 km, 10 km*	
Proof Test (kpsi)	100 or 200	
Operating Temperature (°C)	-60 to 85	

*10 km lengths only available for HI 1060

Performance Characterizations**

Nominal Delta (%)	0.48	
Numerical Aperture	0.14	
Refractive Index Value – Core	1.464 @ 651 nm	
Dispersion (ps/nm/km)	-53 @ 980 nm -38 @ 1060 nm	
Bendloss (@ 20 mm O.D.; 1150 nm) (dB/turn)	≤ 0.01	
Core Diameter (μm)	5.3	

** Values in this table are nominal or calculated values

Typical Splice Loss

	HI 1060	RC PANDA PM 980	SMF-z8e+ Fiber	RC SMF Fiber
Wavelength (nm)	1550	980	1550	1550
RC HI 1060 (dB)	0.04	0.07	0.16	0.08

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

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Corning® HI 1060 FLEX & RC HI 1060 FLEX Specialty Optical Fibers High Index / Bend Insensitive



*High performance
WDM components
and ultra-low
bend loss
applications*

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® HI 1060 FLEX Specialty Fiber sets the world-wide standard for uniformity and reliability. Completely re-engineered for fused biconic taper component manufacturing, this specialty fiber is ideal for use in smaller footprint components and EDFAs. Combining ultra-low bending loss, low insertion loss, and excellent spliceability, Corning® HI 1060 FLEX Specialty Fiber enables higher yields and performance throughout the value chain.

Applications:

- Pigtails for bend-insensitive applications
- Premium grade WDM couplers for EDFAs
- Tap couplers
- Splitters and combiners
- CATV couplers
- Ultra-compact components requiring small bend radii
- Low loss fused devices for C-Band and L-Band

Features:

HI 1060 FLEX and RC HI 1060 FLEX

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Ultra-low bending loss
- Low excess loss
- Low splice loss to SMF-28e+® fiber and Corning ER 1550C3
- Excellent geometry control
- RC HI 1060 FLEX offers 80 µm diameter for sub-miniature packaging

HI 1060 FLEX

RC HI 1060 FLEX

Key Optical Specifications

Operating Wavelength (nm)	> 980	
Maximum Attenuation (dB/km)	≤ 2.5 @ 980 nm ≤ 1.0 @ 1550 nm	
Cutoff Wavelength (nm)	930 ± 40 nm	
Mode-field Diameter (μm)	4.0 ± 0.3 @ 980 nm 6.3 ± 0.3 @ 1550 nm	

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 0.5	80 ± 1
Coating Outside Diameter (μm)	245 ± 10	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.3	≤ 0.5
Standard Lengths	500 m, 1 km, 2 km, 5 km, 10 km	
Proof Test (kpsi)	100 or 200	
Operating Temperature (°C)	-60 to 85	

Performance Characterizations*

Nominal Delta (%)	1.0	
Numerical Aperture	0.22	
Refractive Index Value – Core	1.472 @ 651 nm	
Dispersion (ps/nm/km)	-65 @ 980 nm -50 @ 1060 nm	
Bendloss (@ 20 mm O.D., 1550 nm) (dB/turn)	≤ 0.01	
Core Diameter (μm)	3.4	

* Values in this table are nominal or calculated values

Typical Splice

	HI 1060 FLEX	SMF-28e+ [®]	RC SMF	ER 1550C3	HI 1060	HI 980	PM 980
Wavelength (nm)	1550	1550	1500	1550	980	980	980
HI 1060 FLEX (dB)	0.03	0.07	---	0.03	0.06	0.04	0.09
RC HI 1060 FLEX (dB)	---	0.22	0.12	0.08	---	---	---

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

To obtain additional technical information, an engineering sample or to place an order for this product, please contact us at:

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Corning® RC 1300 and RC 1550 Specialty Optical Fibers High Index / Bend Insensitive



*Reduced
cladding fiber
for small size
coils and
assemblies*

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® RC 1300 and RC 1550 Specialty Fibers offer world-class durability and reliability with a reduced cladding of 80 μm (compared to the industry standard of 125 μm). The reduced cladding allows extremely tight fiber coiling with low bend loss, enabling a range of system designs not possible with standard specialty fibers.

Applications:

- Devices requiring extremely tight bend radius coils
- Dense wavelength division multiplexing (DWDM) components
- Compact optical circuits
- Sensors

Features:

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Reduced cladding (80 μm)
- Excellent geometry control
- High core index of refraction
- Efficient coupling

RC 1300

RC 1550

Key Optical Specifications

Operating Wavelength (nm)	> 1280	> 1480
Maximum Attenuation (dB/km)	0.7 @ 1300 nm	0.5 @ 1550 nm
Cutoff Wavelength (nm)	1220 ± 50	1420 ± 50
Mode-field Diameter (μm)	5.5 ± 0.5 @ 1300 nm	6.5 ± 0.5 @ 1550 nm

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	80 ± 1
Coating Outside Diameter (μm)	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.5
Standard Lengths	500 m, 1 km, 2 km, 5 km, 10 km
Proof Test (kpsi)	100
Operating Temperature (°C)	-60 to 85

Performance Characterizations*

Nominal Delta (%)	1.0	
Numerical Aperture	0.20	
Refractive Index Value - Core	1.458 @ 1550 nm	
Bendloss (@ 10 mm O.D.; 1300 nm) (dB/turn)	≤ 0.01	
Bendloss (@ 20 mm O.D.; 1550 nm) (dB/turn)	<< 0.01	
Dispersion (ps/nm/km)	-9 @ 1300 nm	12 @ 1500 nm
Core Diameter (μm)	4.9	5.7

* Values in this table are nominal or calculated values

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

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Corning® ER Specialty Optical Fibers

Erbium-Doped Fibers



*For use in
Optical
Amplifiers and
Fiber Lasers*

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, Corning® ER Specialty Fibers set the world standard for uniformity and reliability. Corning offers Erbium-doped fibers with or without hermetic coating. The hermetic coating offers significant advantage with respect to mechanical reliability and resistance to hydrogen induced optical attenuation degradation. These Erbium-doped fibers have a proven track record in state-of-the-art optical amplifiers, and exhibit consistently low splice loss when coupled with fibers such as Corning® HI 1060 FLEX, Corning® HI 980 and Corning® SMF-28e+® Optical Fiber. Erbium-doped fibers designs are available for conventional C-band, L-band and Reduced Clad (80 μm) applications.

Applications:

- Single and multi-wavelength optical amplifiers (EDFA)
- Digital and analog systems
- CATV amplifiers

Features:

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- OVD manufacturing consistency provides repeatability for gain spectrum allowing for the reduction of lot qualifications in amplifier deployment
- Hermetic coating for increased environmental stability and reliability
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Short and long cutoff wavelength C-band versions available
- Excellent geometry control
- Mode-field diameter designed to match Corning® High Index Specialty Fiber, allowing for efficient coupling with an EDFA

Key Optical Specifications for C-band Fibers

	ER 1550C3	ER 1550C3 LC	RC ER 1550C3
Peak Absorption Range @ 1530 nm (dB/m)	5.0 to 10.0	5.0 to 10.0	5.0 to 10.0
Peak Absorption Range @ 980 nm (dB/m)	≥ 2.5	≥ 3.0	≥ 2.5
Variation Around Peak Absorption per Batch (%)	≤ ± 1	≤ ± 1	≤ ± 1
Maximum Attenuation @ 1200 nm (dB/km)	≤ 15.0	≤ 15.0	≤ 15.0
Cutoff Wavelength (nm)	≤ 1300	≤ 980	≤ 1300
Mode-field Diameter @ 1000 nm (μm)	3.5 ± 0.2	3.6 ± 0.2	3.5 ± 0.2
Mode-field Diameter @ 1550 nm (μm)	5.4 ± 0.4	5.6 ± 0.4	5.4 ± 0.4
Polarization Mode Dispersion (fs/m)	≤ 4	≤ 4	≤ 4

Key Geometric, Mechanical and Environmental Specifications

	ER 1550C3	ER 1550C3 LC	RC ER 1550C3
Cladding Outside Diameter (μm)	125 ± 1	125 ± 1	80 ± 1
Coating Outside Diameter (μm)	245 ± 10	245 ± 10	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.4	≤ 0.4	≤ 0.4
Proof Test (kpsi)		100	
Standard Lengths		100 m, 500 m, 1 km, 2 km, 5 km	
Operating Temperature (°C)	-60 to 85	-60 to 85	-60 to 85

Performance Characterizations*

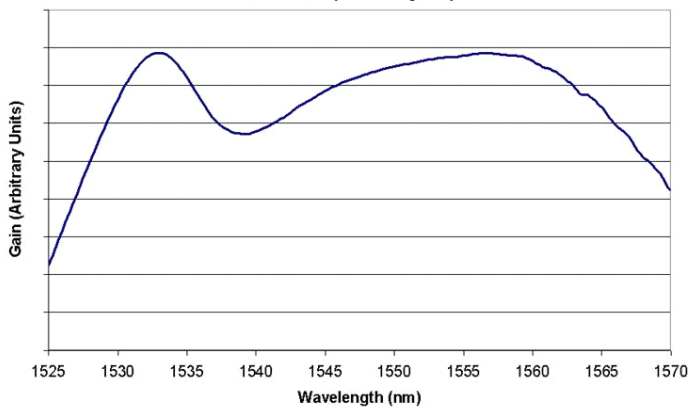
	ER 1550C3	ER 1550C3 LC	RC ER 1550C3
Numerical Aperture	0.23	0.22	0.23
Backscatter (% per meter)	≤ 0.0001	≤ 0.0001	≤ 0.0001

* Values in this table are nominal or calculated values

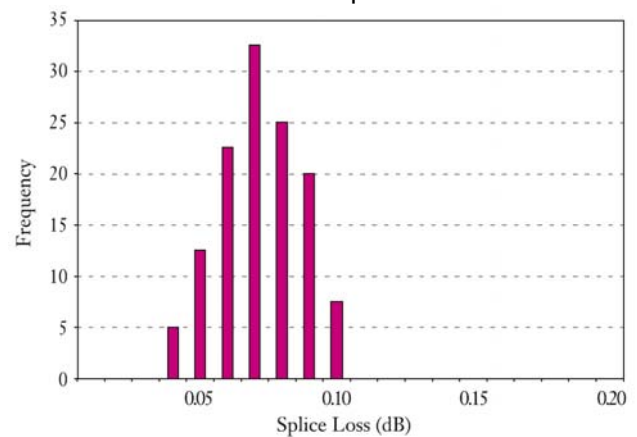
Typical Splicing Loss

	ER 1550C3	ER 1550C3 LC	RC ER 1550C3
To SMF-28e+® Optical Fiber (dB)	0.10	0.10	0.13
To Corning® HI 1060 FLEX Specialty Fiber (dB)	0.05	0.05	0.10
To Corning® HI 980 Specialty Fiber (dB)	0.10	0.10	0.10
To Corning® HI 1060 Specialty Fiber (dB)	0.10	0.10	0.10

Typical Gain Shape for Corning® ER 1550C3 and ER 1550C3 LC Specialty Optical Fibers



Splice Loss of Corning® ER 1550C3 Specialty Fiber to SMF-28e+® Optical Fiber



Key Optical Specifications for L-band Fibers

Peak Absorption Range @ 1530 nm (dB/m)	18.0 to 29.0	
Variation Around Peak Absorption per Batch (%)	$\leq \pm 1$	
Maximum Attenuation @ 1200 nm (dB/km)	≤ 15.0	
Cutoff Wavelength (nm)	≤ 1400	
Mode-field Diameter @ 1550 nm (μm)	5.5 ± 0.3	
Polarization Mode Dispersion (fs/m)	≤ 5	

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 1	80 ± 1
Coating Outside Diameter (μm)	245 ± 10	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.4	
Proof Test (kpsi)	100	
Standard Lengths	100 m, 500 m, 1 km, 2 km, 5 km	
Operating Temperature ($^{\circ}\text{C}$)	-60 to 85	

Performance Characterizations*

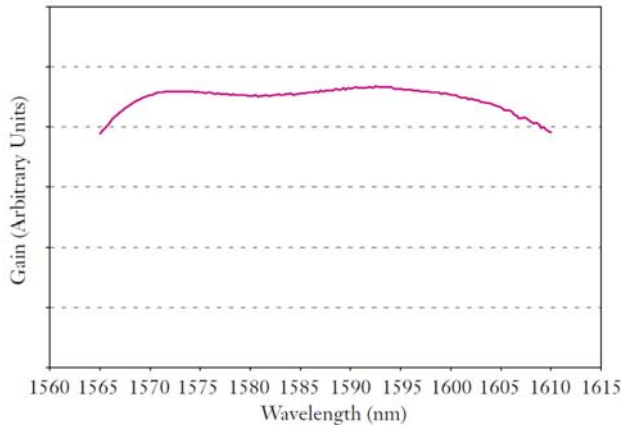
Numerical Aperture	0.23	
Backscatter (% per meter)	≤ 0.0002	
Non-linear Index of Refraction (n_2) (m^2/W)	$\leq 3.5 \times 10^{-20}$	
Effective Area (A_{eff}) (μm^2)	22.5 ± 2.5	

* Values in this table are nominal or calculated values

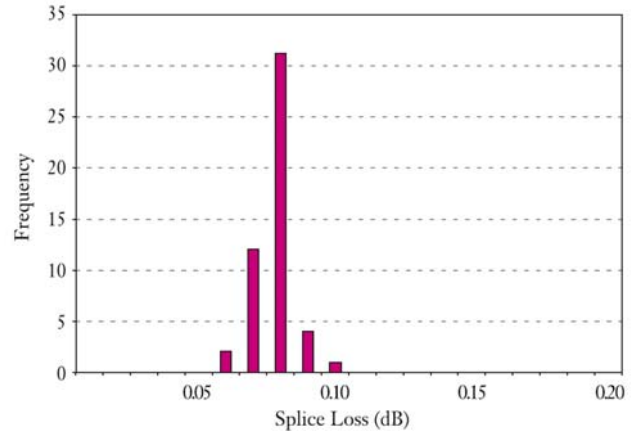
Typical Splicing Loss

To SMF-28e+® Optical Fiber (dB)	0.10	0.10
To Corning® HI 980 Specialty Fiber (dB)	0.10	0.10
To Corning® HI 1060 Specialty Fiber (dB)	0.10	0.10

Typical Gain Shape for Corning® ER 1600L3 Specialty Fiber



Splice Loss of Corning® ER 1600L3 Specialty Fiber to SMF-28e+® Optical Fiber



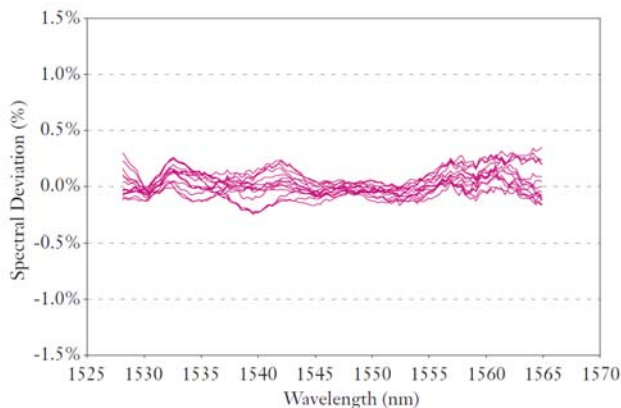
Corning's Outside Vapor Deposition Process

Corning's patented Outside Vapor Deposition (OVD) manufacturing process creates the most consistent fiber in the world. Producing 100 percent synthetic glass, the OVD process greatly reduces, if not eliminates, impurities that can affect fiber performance. It also provides greater degree of control and flexibility in fiber design. Corning is now using seventh generation outside vapor deposition technology, the most advanced in the world today.

Importance of Erbium-doped Fiber Uniformity

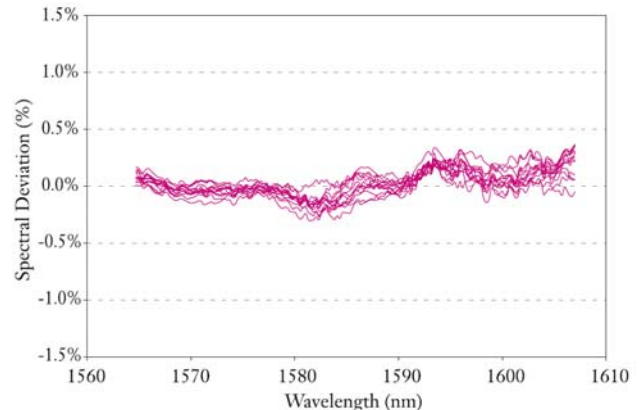
Perhaps the most critical parameter for Erbium-doped fiber in high performance amplifiers is the uniformity of the gain spectrum from one coil to the next. Because Corning produces fiber via the OVD process, it is by far the most uniform in the world. Individual starting core glass blanks are able to generate multiple fiber draw preforms of equivalent composition and profile, ensuring many hundreds of kilometers of fiber with equivalent properties. Other companies utilizing processes like MCVD require recipe replication for each draw preform, which imparts inherent variability. In fact, no other company can address customer requirements with the same level of experience, capacity and precision manufacturing as Corning. In typical high-performance amplifiers built with our Erbium-doped fiber, gain consistency is maximized due to spectral uniformity of the fiber, eliminating the need for frequent adjustments to gain flattening filter design. Variations in gain spectrum and pump power requirements are greatly reduced, which makes for a more predictable amplifier manufacturing process and translates directly to lower costs for customers.

Spectral Uniformity of Corning® ER 1550C3 Specialty Fiber



Representative samples from multiple batches totaling more than 350 km.

Spectral Uniformity of Corning® ER 1600L3 Specialty Fiber



Representative samples from multiple batches totaling more than 125 km.

Corning's ER Design Options

Corning's low cutoff design Type 3 C-band (ER 1550C3 LC), is specifically designed for EDFAs that do not use tight coiling. This fiber ensures single-mode attribute at 980 nm wavelength without coiling. Another benefit of the low cutoff C-band fiber is enhanced 980/1550 absorption ratio which can give enhanced pump power utilization and noise figure in specific EDFA designs. This product is compatible with other Erbium-doped fibers on the market. Corning's high cutoff C-band product (ER 1550C3), which can be coiled to maintain less than 980 nm cutoff, has an optimized profile for demonstrated performance improvements in efficiency as lower Erbium ion concentrations can be used to achieve similar signal band peak absorption (i.e. lower ion-ion interaction). The spectral characteristics of ER 1550C3 LC can be matched to ER 1550C3 while providing equivalent spectral uniformity performance. ER 1550C3 LC fiber offers customers a highly uniform OVD processed fiber alternative to established low cutoff designs, resulting in greater manufacturing control and procurement flexibility.

The Corning Advantage

All Erbium-doped fibers are not equal. Corning understands the each customer's amplifier design varies and their need for custom requirements and gain spectrums are paramount. By combining Corning's fundamental ER fiber processing and reliability features with our customer's unique design needs, Corning is leading the way in low cost EDFA designs. With the confidence of tens of thousands of kilometers experience, make Corning® Erbium-doped fiber your next choice, and feel the advantage.

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

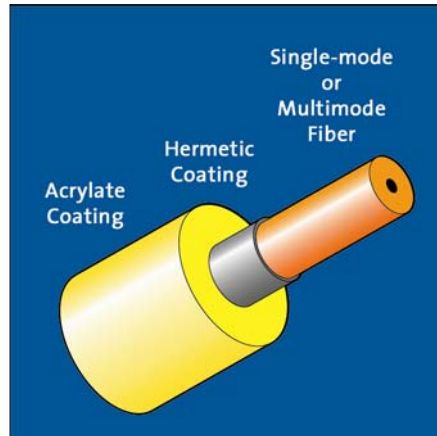
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Corning® Hermetic Single-mode and Multimode Specialty Optical Fibers



Corning's Hermetic Single-mode and Multimode Fibers are designed for applications requiring improved fatigue resistance, high useable strength and excellent resistance to hydrogen permeation into optical fibers. Corning's specially designed hermetic layer provides a protective barrier to help shield the glass from exposure to hydrogen, water, and corrosive chemicals while maintaining optical qualities comparable to standard fibers. The properties of the hermetic layer increase the fatigue performance of the fiber five times compared with non-hermetic fibers. Corning's hermetic layer is a thin layer of amorphous carbon that is bonded to the glass surface of the optical fiber. The fiber is manufactured with Corning's patented Outside Vapor Deposition (OVD) process. The Hermetic Single-mode and Multimode Specialty Fibers offer high reliability and consistent performance for a variety of applications.

Applications:

- Hydrogen-rich environments
- Long distance undersea links
- Towed arrays
- Sensors
- Increased fatigue resistance for tight bend applications

Features:

- No hydrogen aging at room temperature to 85°C
- Low attenuation
- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Efficient coupling
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Fibers include:
 - Single-mode: optimized for 1310 nm and 1550 nm wavelengths
 - Multimode: optimized for 850 nm and 1300 nm wavelengths
 - Inquire for other glasses

SMFHA

MMFHA

Key Optical Specifications

Operating Wavelength (nm)	1310, 1550	850, 1300
Maximum Attenuation (dB/km)	0.4 @ 1310 nm 0.25 @ 1550 nm	2.5 @ 850 nm 0.7 @ 1300 nm
Cutoff Wavelength (nm)	≤ 1290	---
Mode-field Diameter (μm)	9.2 ± 0.4 @ 1310 nm 10.4 ± 0.5 @ 1550 nm	---
Bandwidth (MHz-km)	---	≥ 500

Key Geometric, Mechanical and Environmental Specifications

Hermetic + Dual layer UV-curable acrylate

Cladding Outside Diameter (μm)	125 ± 0.7	125 ± 2.0
Coating Outside Diameter (μm)	245 ± 10	245 ± 10
Core-to-Cladding Offset (μm)	≤ 0.5	≤ 1.5
Core Diameter (μm)	8.2 (nominal)	50 ± 2.5
Standard Lengths	500 m, 1 km, 2 km, 5 km, 10 km*	
Proof Test (kpsi)	200	
Operating Temperature (°C)	-60 to 85	

* 10 km lengths available for SMFHA only

Performance Characterizations*

Numerical Aperture	0.12	0.20
Refractive Index Difference (%)	0.36	1.0
Fatigue Resistance Parameter (n_d)	> 100	> 100
Effective Group Index of Refraction (N_{eff})	1.4675 @ 1310 nm 1.4681 @ 1550 nm	---

* Values in this table are nominal or calculated values

Hydrogen Resistance (Single-mode only)

Test Condition	Results
21 Day Exposure to Hydrogen @ 11 ATM, 85°C	≤ 0.2 dB/km induced attenuation at 1240 nm

Note: Expected attenuation at 1310 nm and 1550 nm for 30 year life at 5 atmospheres Hydrogen and 10°C is ≤ 0.05 dB/km.

Corning offers fiber stripping and splicing support for Hermetically-coated fibers.

Reference: White Paper “Corning’s Hermetically Coated Erbium-doped Specialty Fibers” by Kohli and Glaesemann

For more information about Corning’s leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

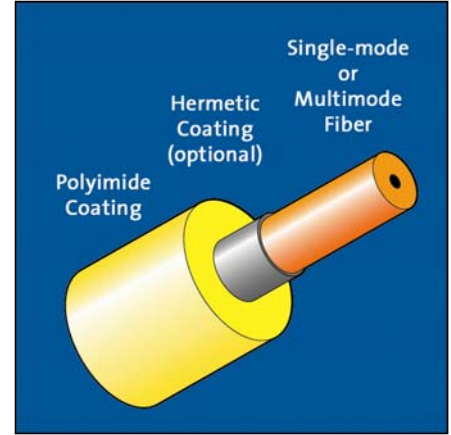
To obtain additional technical information, an engineering sample or to place an order for this product, please contact us at:

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Corning® High Temperature Single-mode and Multimode Specialty Optical Fibers



Corning's High Temperature Fibers are designed for applications requiring improved fatigue resistance, high useable strength and excellent resistance to high temperature and hydrogen permeation. The fiber consists of Single-mode or Multimode core and single or dual coating system, including a hermetic carbon layer (optional) and high temperature polyimide layer.

Corning's specially designed hermetic layer provides a protective barrier to help shield the glass from exposure to hydrogen, water and corrosive chemicals. It extends the lifetime of the fiber by stopping fiber fatigue. Corning's hermetic layer is a thin layer of amorphous carbon that is bonded directly to the glass surface of an optical fiber.

The outside coating, a high temperature polyimide material allows fiber to operate in an environment up to 300° C. The fiber is manufactured with Corning's patented Outside Vapor Deposition (OVD) process.

Applications:

- High temperature environments
- Hydrogen-rich environments
- Distributed or point-to-point sensing systems
- Towed arrays
- Increased fatigue resistance for tight bend applications

Features:

- Low attenuation
- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Excellent fatigue properties
- Operating range from -65°C to 300°C
- Hermetic layer provides improved hydrogen resistance
- Fibers include:
 - Single-mode: optimized for 1310 nm and 1550 nm wavelengths
 - Multimode: optimized for 850 nm and 1300 nm wavelengths
 - Inquire for other glasses

**SM-HT
SMH-HT**

**MM-HT
MMH-HT**

Key Optical Specifications

Coating Type	Polyimide or Hermetic Polyimide	
Operating Wavelength (nm)	1310, 1550	850, 1300
Maximum Attenuation* (dB/km)	≤ 0.6 @ 1310 nm ≤ 0.4 @ 1550 nm	≤ 3.0 @ 850 nm ≤ 0.8 @ 1300 nm
Bandwidth @ 850 nm and 1300 nm (MHz-km)	N/A	≥ 500
Cutoff Wavelength (nm)	≤ 1290	N/A
Mode Field Diameter @ 1310 nm (μm)	9.2 ± 0.4	N/A
Mode Field Diameter @ 1550 nm (μm)	10.4 ± 0.5	N/A

* For Attenuation measurement, the fiber is wound with near zero tension onto a greater than 36 cm diameter measurement spool.

Key Geometric, Mechanical and Environmental Specifications

Core Diameter (μm)	8.2 (nominal)	50 ± 2.5
Cladding Outside Diameter (μm)	125 ± 1	125 ± 2
Core-to-Cladding Offset (μm)	≤ 0.5	≤ 1.5
Coating Outside Diameter (μm)	155 ± 5	
Standard Lengths*	1 km, 2 km	
Proof Test** (kpsi)	100	
Operating Temperature Range*** (°C)	-65 to 300	

* Inquire for longer lengths

** Higher proof test level available upon customer request

*** Product performance over temperature (i.e., mechanical strength, optical properties) provided upon customer request
Hydrogen may penetrate hermetic layer at temperatures below 300°C

Performance Characterizations*

Numerical Aperture	0.12	0.20
Refractive Index Difference (%)	0.36	1.0

* Values in this table are nominal or calculated values

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

To obtain additional technical information, an engineering sample or to place an order for this product, please contact us at:

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Corning® RC SMF Specialty Optical Fiber

CORNING



Low loss fused components for EDFA and small bend radius applications

Manufactured with Corning's patented Outside Vapor Deposition (OVD) process, and based on decades of experience in specialty fiber development, Corning® RC SMF Specialty Fiber sets the industry standard for consistent geometric properties, high mechanical reliability and efficient splicing.

Applications:

- Low-loss miniature fused devices for C-band and L-band
- Ultra-compact components requiring small bend radii
- Pigtails in bend insensitive applications
- Sensors

Features:

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Ultra-tight specifications
- World-class reliability support for handling and deployment
- Technical support for splicing to 125 μm products
- Ultra-low splice loss to SMF-28e+®
- 80 μm diameter for miniature packaging
- Low bending loss
- Excellent geometry control

RC SMF

Key Optical Specifications

Operating Wavelength (nm)	> 1300
Maximum Attenuation @ 1310 nm (dB/km)	0.7
Maximum Attenuation @ 1550 nm (dB/km)	0.5
Cutoff Wavelength (nm)	≤ 1290
Coiled Cutoff at 80 mm Diameter (nm)	1210 ± 60
Coiled Cutoff at 32 mm Diameter (nm)	1140 ± 60
Mode-field Diameter @ 1310 nm (μm)	9.2 ± 0.3
Mode-field Diameter @ 1550 nm (μm)	10.4 ± 0.8

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	80 ± 1
Coating Outside Diameter (μm)	165 ± 10
Core-to-Cladding Offset (μm)	≤ 0.5
Standard Lengths	500 m, 1 km, 2 km, 5 km, 10 km
Proof Test (kpsi)	100 or 200
Operating Temperature (°C)	-60 to 85

Performance Characterizations*

Nominal Delta (%)	0.36
Numerical Aperture	0.12
Bend Loss (20 mm O.D.; 1550 nm) (dB/turn)	≤ 0.1
Core Diameter (μm)	8.0

* Values in this table are nominal or calculated values

Typical Splice Loss

	SMF-28e+ [®] Fiber	RC HI 1060	RC PANDA PM 1550	RC HI 1060 FLEX	RC HI 980
Wavelength (nm)	1550	1550	1550	1550	980
RC SMF Fiber (dB)	0.05	0.08	0.09	0.12	0.11

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

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Corning® RGB 400 Specialty Optical Fiber



*Optimized
for visible
light spectral
range
applications*

Corning RGB 400 Specialty Fiber is a single-mode fiber that is optimized for visible operating wavelength applications. The fiber's short cut-off wavelength design enables single-mode operation in the visible wavelength range. Outside Vapor Deposition (OVD) processing is used to fabricate this fiber, providing consistent geometric properties and high strength. In addition to exceptional performance as a single-mode visible fiber, the design is also optimized to produce low loss fused biconic tapered couplers.

Applications:

- Blue lasers
- Sensors
- Photolithography
- Red-Green-Blue components
- Couplers
- Diode pigtailed
- High resolution display

Features:

- Outstanding consistency and uniformity using Corning's patented Outside Vapor Deposition (OVD) process
- Dual acrylate coating system provides excellent protection from microbend-induced attenuation and superior mechanical robustness
- Profile optimized for adiabatic taper loss
- Excellent geometry control
- High reliability

RGB 400

Key Optical Specifications

Operating Wavelength (nm)	450 - 700
Fiber Cutoff Wavelength (nm)	400 ± 50
Maximum Attenuation @ 500 nm (dB/km)	≤ 30
Maximum Attenuation @ 600 nm (dB/km)	≤ 20
Mode-field Diameter @ 500 nm* (μm)	3.2 ± 0.5
Mode-field Diameter @ 600 nm* (μm)	3.9 ± 0.5

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 0.5
Coating Outside Diameter (μm)	245 ± 10
Core-to-Cladding Offset (μm)	≤ 0.3
Standard Lengths	500 m, 1 km, 2 km, 5 km
Proof Test (kpsi)	100 or 200
Operating Temperature (°C)	-60 to 85

Performance Characterizations*

Numerical Aperture	0.12
Index of Refraction	1.46
Core Diameter (μm)	4.0

* Values in this table are nominal or calculated values

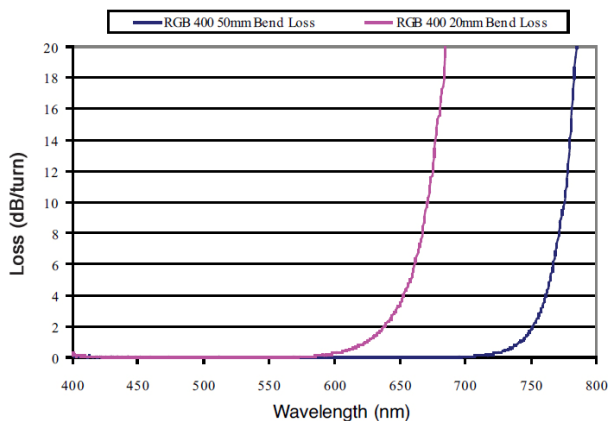


Figure 1

RGB 400 fiber bend loss at 20 mm and 50 mm diameters

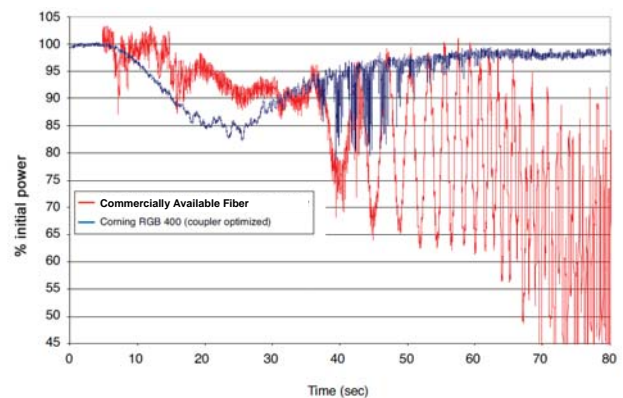


Figure 2

Single fiber taper loss pulls for RGB 400 and standard single-mode low wavelength fiber at 532 nm

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Corning® PANDA PM Specialty Optical Fibers



*High
Performance
Polarization
Maintaining
Fibers*

Corning's PANDA PM Specialty Fibers are designed with the best polarization maintaining properties, and are the industry standard in the world today. The fibers offer low attenuation and excellent birefringence for high performance applications. Available in a wide range of standard operating wavelengths up to 1550 nm, and with a variety of coating designs, Corning PANDA PM Specialty Fibers are optimal for high performance polarization retaining fiber applications. This field-proven fiber supports high growth applications, and performs well over a wide temperature range.

Applications:

- High performance transmission laser pigtailed
- Polarization-based modulators
- High data rate communications systems
- Polarization-sensitive components
- Raman amplifiers
- Fiber optic sensors, gyroscopes and instrumentation

Features:

- Extremely high birefringence
- Excellent polarization maintaining properties
- Low attenuation
- Single-mode designs from 400 nm – 1550 nm
- Dual-layer UV acrylate and 900 μm nylon and silicone coatings available
- Low sensitivity to bending-induced attenuation
- Low splice loss
- PANDA PM Fibers available:
 - High Numerical Aperture
 - Reduced claddings
 - Low birefringence
 - Erbium-doped
 - Dispersion shifted
 - Polyimide and flame retardant coatings are also available

Corning® PANDA PM Specialty Fibers

Key Optical Specifications	PM 1550	PM14XX	PM 1300	PM 980	PM 850	PM 630	PM 480	PM 400
	For all coatings							
Wavelength (nm)	1550	1400-1490	1300	980	850	630	480	410
Mode-field Diameter (μm)	10.5 ± 0.5	9.8 ± 0.5	9.0 ± 0.5	6.6 ± 0.5	5.5 ± 0.5	4.5 ± 0.5	4.0 ± 0.5	3.5 ± 0.5
Beat Length Range (mm)	3.0-5.0	2.8-4.7	2.5-4.0	1.5-2.7	1.0-2.0	≤ 2.0	≤ 2.0	≤ 1.7
Maximum Cross Talk at 100 m (dB)	-30	-30	-30	-30	-30	-30	-30	-30*
Typical Cross Talk at 4 m (dB)	-40	-40	-40	-40	-40	-40	-40	-40
Cutoff Wavelength (nm)	1300-1440	1260-1380	1130-1270	870-950	650-800	520-620	400-470	330-400
Maximum Attenuation (dB/km)	0.5	1.0	1.0	2.5	3.0	12	30	≤ 50

* PM 400 Cross Talk is ≤ -30dB/100 m at 410 nm and 480 nm measurement wavelengths

Key Geometric, Mechanical and Environmental Specifications (-U25A) UV/UV Acrylate

Part Number	PM15-U25A	PM14-U25A	PM13-U25A	PM98-U25A	PM85-U25A	PM63-U25A	PM48-U25A	PM40-U25A
Core-to-Cladding Offset (μm)	≤ 0.5							
Coating Outer Diameter (μm)	245 ± 15							
Cladding Outer Diameter (μm)	125 ± 1							
Standard Lengths	100 m, 200 m, 300 m, 400 m, 500 m							
Proof Test (kpsi)	100 (200 optional)							
Operating Temperature (°C)	-40 to 85							

Key Geometric, Mechanical and Environmental Specifications (-U40A) UV/UV Acrylate

Part Number	PM15-U40A	PM14-U40A	PM13-U40A	PM98-U40A	PM85-U40A	PM63-U40A	PM48-U40A	PM40-U40A
Core-to-Cladding Offset (μm)	≤ 0.5							
Coating Outer Diameter (μm)	400 ± 15							
Cladding Outer Diameter (μm)	125 ± 1							
Standard Lengths	100 m, 200 m, 300 m, 400 m, 500 m							
Proof Test (kpsi)	100 (200 optional)							
Operating Temperature (°C)	-40 to 85							

Key Geometric, Mechanical and Environmental Specifications (-N90A) UV/Nylon

Part Number	PM15-N90A	PM14-P90A	PM13-N90A	PM98-N90A	PM85-N90A	PM63-N90A	PM48-N90A	PM40-N90A
Core-to-Cladding Offset (μm)	≤ 0.5							
Coating Outer Diameter (μm)	900 ± 100							
Cladding Outer Diameter (μm)	125 ± 1							
Standard Lengths	100 m, 200 m, 300 m, 400 m, 500 m							
Proof Test (kpsi)	100 (200 optional)							
Operating Temperature (°C)	-40 to 60							

Corning® RC PANDA PM Specialty Fibers

	RC PM 1550	RC PM14XX	RC PM 1300	RC PM 980
Key Optical Specifications				
Wavelength (nm)	1550	1400-1490	1300	980
Mode-field Diameter (μm)	9.5 ± 0.5	9.0 ± 0.5	8.2 ± 0.5	6.0 ± 0.5
Beat Length Range (mm)	2.5 – 4.5	2.3 – 4.2	2.0 – 3.5	1.4 – 2.6
Cutoff Wavelength (nm)	1290 – 1450	1200 – 1380	1100 – 1290	870 – 950
Maximum Attenuation (dB/km)	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.5
Maximum Cross Talk at 100 m (dB)			-25	
Typical Cross Talk at 4 m (dB)			-40	

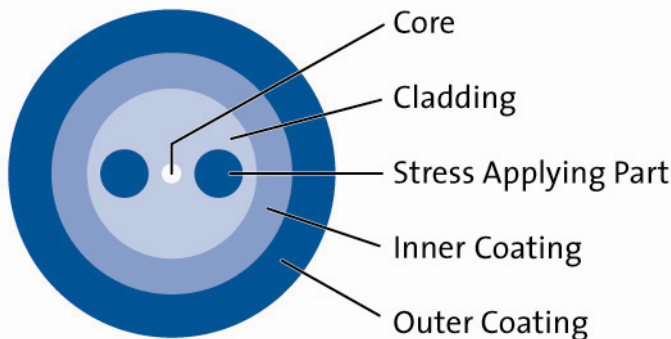
Key Geometric, Mechanical and Environmental Specifications				UV/UV Acrylate
Part Number	RCPM 15	RCPM 14	RCPM 13	RCPM 98
Core-to-Cladding Offset (μm)				≤ 0.5
Coating Outer Diameter (μm)				165 ± 10
Cladding Outer Diameter (μm)				80 ± 1
Standard Lengths		100 m, 200 m, 300 m, 400 m, 500 m		
Proof Test (kpsi)		100 (200 optional)		
Operating Temperature (°C)		-40 to 85		

Performance Characteristics*				
Numerical Aperture	0.09	0.09	0.09	0.10

* Values in this table are nominal or calculated values

	RC SMF Fiber	SMF-z8e+® Fiber	RC HI 1060
Wavelength (nm)	1550	1550	1550
RC PANDA PM 980 (dB)	0.25	0.25	0.07
RC PANDA PM 1550 (dB)	0.09	0.10	N/A

Typical Cross-sectional View of Corning PANDA PM Specialty Optical Fiber



Corning® PANDA PM Specialty Optical Fiber design uses two stress applying parts to create an extremely high birefringence, resulting in fiber with excellent polarization maintaining properties. This design was invented and patented by Corning Incorporated. Corning continues to have a manufacturing partnership with Fujikura Ltd.

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Corning® PANDA PM Flame Retardant Specialty Optical Fibers



Polarization Maintaining Fibers Buffered with Polyester Elastomer

Corning® PANDA PM Flame Retardant Specialty Fibers are 400 μm UV coated fibers buffered to 900 μm with a flame retardant polyester elastomer. The buffer is a UL® recognized component plastic with a flammability classification of V-O in accordance with UL94. In addition, the buffered fiber has a VW-1 end product flammability classification in accordance with UL1581. All Corning PANDA PM fibers are designed with the best polarization maintaining properties and are the industry standard in the world today, offer low attenuation and excellent birefringence for high performance applications.

Applications:

- Systems with requirements for low flammability
- Gyroscopes and interferometers
- High performance transmission laser pigtailed
- Polarization-based modulators
- High data rate communications systems
- Polarization-sensitive components

Features:

- Tight buffer composed of polyester elastomer and flame retarder is a UL® recognized component plastic with a flammability classification of V-O in accordance with UL94
- Fibers have a VW-1 end product flammability classification in accordance with UL1581
- Extremely high birefringence
- Excellent polarization maintaining properties
- Low attenuation.

Key Optical Specifications

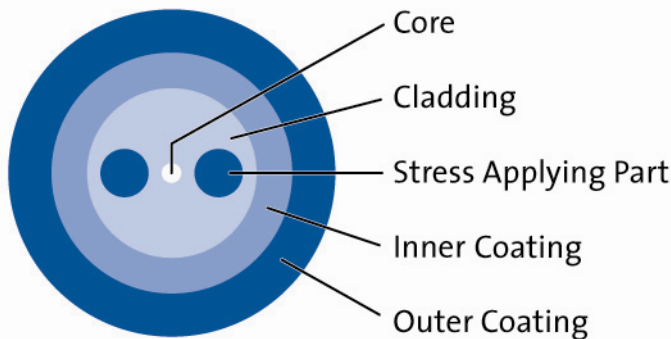
Wavelength (nm)	1550	1400-1490	1300	980	850
Mode-field Diameter (μm)	10.5 ± 0.5	9.8 ± 0.5	9.0 ± 0.5	6.6 ± 0.5	5.5 ± 0.5
Beat Length Range (mm)	3.0 – 5.0	2.8 – 4.7	2.5 – 4.0	1.5 – 2.7	1.0 – 2.0
Cutoff Wavelength (nm)	1300 – 1440	1260 – 1380	1130 – 1270	870 – 950	650 – 800
Maximum Attenuation (dB/km)	0.5	1.0	1.0	2.5	3.0
Maximum Cross Talk at 100 m (dB)			-30		
Typical Cross Talk at 4 m (dB)			-40		

Key Geometric, Mechanical and Environmental Specifications

UV Polyester Elastomer

Part Number	PM15-H90A	PM14-H90A	PM13-H90A	PM98-H90A	PM85-H90A
Coating Outer Diameter (μm)			900 ± 100		
Cladding Outer Diameter (μm)			125 ± 1.0		
Core-to-Cladding Offset (μm)			≤ 0.5		
Standard Lengths		100 m, 200 m, 300 m, 400 m, 500 m			
Proof Test (kpsi)			100 or 200		
Operating Temperature (°C)			-40 to 85		

Typical Cross-sectional View of Corning PANDA PM Specialty Optical Fiber



Corning® PANDA PM Specialty Optical Fiber design uses two stress applying parts to create an extremely high birefringence, resulting in fiber with excellent polarization maintaining properties. This design was invented and patented by Corning Incorporated. Corning continues to have a manufacturing partnership with Fujikura Ltd.

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Corning® PANDA PM High NA Specialty Optical Fibers



*High Numerical Aperture
Polarization Maintaining
Fibers*

Designed for demanding applications including fiber optic gyroscopes, probes, sensors and miniaturized components, Corning's PANDA PM high numerical aperture (NA) fibers deliver extremely high birefringence, low insertion loss and excellent dimensional uniformity.

Applications:

- Fiber optic gyroscopes
- Sensors
- Probes / Instrumentation
- Miniaturized components
- Polarization sensitive components

Features:

- High numerical aperture
- Extremely high birefringence
- 80 µm cladding for 850 nm fiber
- Single-mode design
- Dual-layer UV acrylate coating
- Proof test available in 100 kpsi or 200 kpsi

PM 1300 (High NA)

RC PM 850 (High NA)

Key Optical Specifications

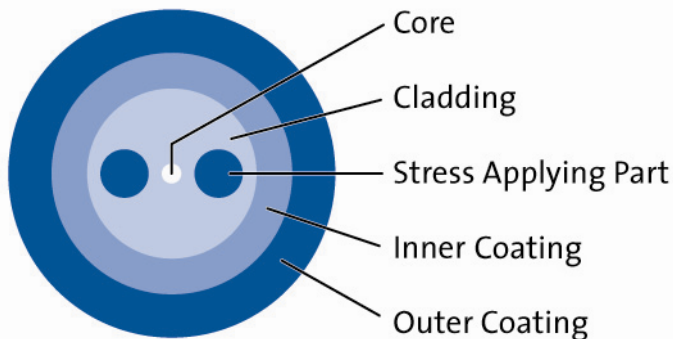
Wavelength (nm)	1300	850
Mode-field Diameter (μm)	5.5 ± 1	3.5 ± 0.5
Maximum Beat Length (mm)	≤ 2.5	2.0
Maximum Cross Talk at 100 m (dB)	-30	-30
Typical Cross Talk at 4 m (dB)	-40	-40
Cutoff Wavelength (nm)	1000 – 1290	650 – 800
Maximum Attenuation (dB/km)	2.0	3.5

Key Geometric, Mechanical and Environmental Specifications

UV/UV Acrylate

Part Number	PM13-HNA	RC PM85-HNA
Coating Outer Diameter (μm)	245 ± 15	165 ± 10
Cladding Outer Diameter (μm)	125 ± 1	80 ± 1
Core-to-Cladding Offset (μm)	≤ 0.5	≤ 0.5
Standard Lengths	100 m, 200 m, 300 m, 400 m, 500 m	
Proof Test (kpsi)	100 or 200	
Operating temperature ($^{\circ}\text{C}$)	-40 to 85	

Typical Cross-sectional View of Corning PANDA PM Specialty Optical Fiber



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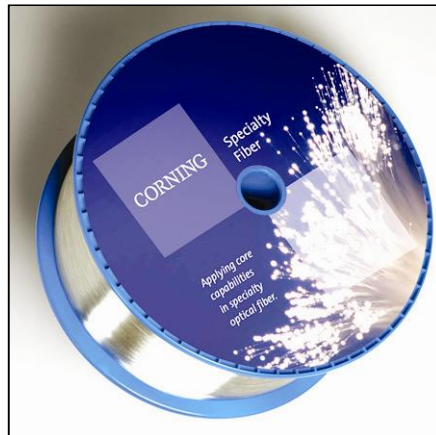
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NEW!

Corning® PANDA PM Bend Insensitive Specialty Optical Fibers

CORNING



Polarization Maintaining Fibers for Bend Sensitive Applications

Corning® PANDA PM Bend Insensitive Specialty Optical Fiber is designed with significantly improved bending capacity, suited to meet the needs of package size reductions and 100 Gbps systems.

Corning® PANDA PM fibers are optimized for high reliability, and our Boron-doped stress rod profile is field proven to support high growth applications over a wide temperature range.

Applications:

- Small package size transponders, transceivers, modulators and laser fiber assemblies
- Sensors
- Bend sensitive applications
- Miniaturized components
- Polarization sensitive components

Features:

- Significantly improved bending capacity
- Extremely high birefringence
- Single-mode design
- Fibers available with dual-layer UV acrylate and flame retardant polyester coatings

PM 1550 (Bend Insensitive)

For all coatings

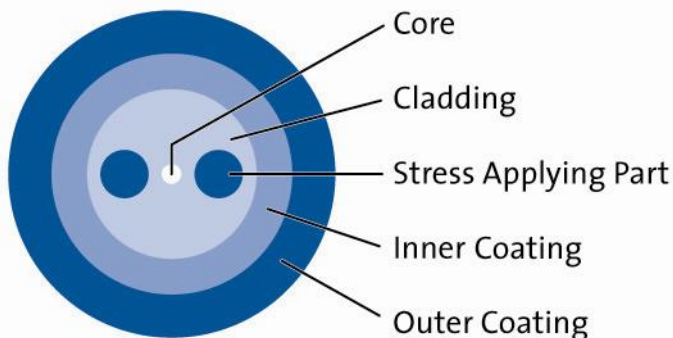
Key Optical Specifications

Wavelength (nm)	1550
Mode-field Diameter (μm)	9.5 ± 0.4
Maximum Beat Length (mm)	2.0 – 5.0
Maximum Cross Talk at 100 m (dB)	-30
Maximum Bending Cross Talk (dB) (30 mm O.D; 1550 nm, 10 turns)	-30
Cutoff Wavelength (nm)	≤ 1440
Maximum Attenuation (dB/km)	0.50
Maximum Bending Loss (dB) (30 mm O.D; 1550 nm, 10 turns)	0.50

Key Geometric, Mechanical and Environmental Specifications

Coating Type	UV/UV Acrylate	UV Acrylate/Polyester-Elastomer
Part Number	PMSR15-U40A-H	PMSR15-H90A-H
Core-to-Cladding Offset	≤ 0.5	≤ 0.5
Coating Outer Diameter (μm)	400 ± 15	900 ± 100
Cladding Outer Diameter (μm)	125 ± 1	125 ± 1
Operating temperature ($^{\circ}\text{C}$)	-40 to 85	
Standard Lengths	100 m, 200 m, 300 m, 400 m, 500 m	
Proof Test (kpsi)	200	

Typical Cross-sectional View of Corning PANDA PM Specialty Optical Fiber



Corning® PANDA PM Specialty Optical Fiber design uses two stress applying parts to create an extremely high birefringence, resulting in fiber with excellent polarization maintaining properties. This design was invented and patented by Corning Incorporated. Corning continues to have a manufacturing partnership with Fujikura Ltd.

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 E-mail: specialtyfiber@corning.com

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Corning® SMF-28e+® Photonic Optical Fiber



A full spectrum fiber for components and assemblies with tighter geometry for more consistent splicing

Corning's SMF28e+® photonic fiber provides further evidence of Corning's long history of service to original equipment manufacturers (OEMs). This fiber's attributes are specifically customized for optical connectorization and component applications, allowing OEMs to reduce manufacturing costs, standardize processes, and improve performance.

Applications:

- Connectors
- EDFA
- Couplers
- Pigtails
- DWDM components
- Other components

Features:

- Industry-leading optical and geometry specifications
- Exceptional performance and splice-ability
- Suitable for all transmission systems and fully compatible with SMF-28e+® optical fiber, the world's most widely demanded full-spectrum fiber
- In compliance with, or exceeds the industry's most stringent requirements including:
 - ITU-T Recommendations G.652 (Tables A, B, C & D)
 - IEC Specifications 60793-2-50 Type B1.3
 - TIA/EIA 492-CAAB
 - Telcordia Generic Requirements GR-20-Core
 - ISO 11801 OS2
- Improved macro-bend specification from less than 0.05 dB to less than 0.03 dB, allowing better handling and ease of installation
- Tighter zero dispersion wavelength specification
- New coating for improved micro-bending
- Smaller coating outside diameter (242 μm nominal) for improved usage in ribbon applications

SMF-28e+^o Photonic

Optical Specifications

Fiber Cutoff Wavelength (λ_{cf})	≤ 1280 nm	
	Wavelength (nm)	Maximum Value* (dB/km)
Maximum Attenuation	1310	≤ 0.35
	$1383 \pm 3^{**}$	≤ 0.35
	1490	≤ 0.24
	1550	≤ 0.20
	1625	≤ 0.23

* Maximum specified attenuation value available within the stated ranges

** Attenuation post-hydrogen aging according to IEC 60793-2-50 Section C.5 for B.1.3 fibers.

	Wavelength (nm)	MFD (μm)
Mode-field Diameter	1310	9.2 ± 0.4
	1550	10.4 ± 0.5

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

Zero Dispersion Wavelength (λ_0): $1304 \text{ nm} \leq \lambda_0 \leq 1324 \text{ nm}$

Zero Dispersion Slope (S_0): $\leq 0.088 \text{ ps}/(\text{nm}^2 \cdot \text{km})$

Polarization Mode Dispersion (PMD)	Value (ps/ $\sqrt{\text{km}}$)
PMD Link Design Value	$\leq 0.06^*$
Maximum Individual Fiber	≤ 0.1

* Complies with IEC 60794-3: 2001, Section 5.5, Method 1, September 2001

The PMD link design is a term used to describe the PMD of concatenated lengths of fiber (also known as PMD_0). This value represents a statistical upper limit for total PMD. Individual PMD values may change when fiber is cabled. Corning's fiber specification supports network design requirements for $0.5 \text{ ps}/\sqrt{\text{km}}$ maximum PMD.

	Wavelength (nm)	Point Discontinuity (dB)
Point Discontinuity	1310	≤ 0.05
	1550	≤ 0.05

SMF-28e+^o Photonic

Key Geometric, Mechanical and Environmental Specifications

Cladding Diameter (μm)	125.0 ± 0.3
Core-Clad Concentricity (μm)	≤ 0.3
Cladding Non-Circularity (%)	≤ 0.7
Core Diameter (μm)	8.2
Coating Diameter (μm)	242 ± 5
Coating-Cladding Concentricity (μm)	< 12
Coloring Diameter* (μm)	250 +15/-9
Fiber Curl (m)	≥ 5.0 radius of curvature

* If applicable

Environmental Test	Test Condition	Induced Attenuation 1310 nm, 1550 nm & 1625 (dB/km)
Temperature Dependence (°C)	-60 to 85 *	≤ 0.05
Temperature-Humidity Cycling (°C)	-10 to 85 * up to 98% RH	≤ 0.05
Water Immersion (°C)	23 * ± 2	≤ 0.05
Dry Heat Soak (°C)	85 * ± 2	≤ 0.05
Damp Heat (°C)	85 * at 85% RH	≤ 0.05
Operating Temperature Range (°C)	-60 to 85	
Proof Test (kpsi)	≥ 200	
Lengths	Available up to 50.4 km per spool	

* Reference temperature: 23°C

Performance Characterizations*

Numerical Aperture	0.12		
Refractive Index Difference (%)	0.36		
Effective Group Index of Refraction (N_{eff})	1.4670 @ 1310 nm 1.4677 @ 1550 nm		
Fatigue Resistance Parameter (N_d)	20		
Coating Strip Force	Dry: 0.6 lb. (3N) Wet 14 day room temperature: 0.6 lb. (3N)		
Rayleigh Backscatter Coefficient	-77 dB @ 1310 nm -82 dB @ 1550 nm		
Macrobend Loss			
Mandrel Diameter (mm)	Number of Turns	Wavelength	Induced Attenuation** (dB)
32	1	1550	≤ 0.03
50	100	1310	≤ 0.03
50	100	1550	≤ 0.03
60	100	1625	≤ 0.03

* Values in this table are nominal or calculated values

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

The Single-Mode Fiber for Connectors and Components

Corning uses its legendary geometry control and quality leadership to manufacture SMF-28e+[®] photonic fiber. We focus on tailoring product attributes that allow OEMs to minimize scrap and overall insertion loss while improving active and splice performance. Through precise manufacturing techniques, we assure geometric performance along the entire length of fiber while maintaining nominal mode-field performance.

We proof stress the entire length of SMF-28e+[®] photonic fiber to ≥ 200 kpsi, which provides OEMs with increased reliability and reduced handling concerns. In addition, we specify a fiber cutoff wavelength of 1280 nm, enabling operability at both 1310 nm and 1550 nm in bare fiber applications.

Designed for Versatility and Performance

For better understanding of the applicable value to customers, Corning has completed studies using active and passive alignment techniques as well as modeled results. This research shows that significant splice performance improvement can result from focusing on nominal geometry performance and reducing deviation of a fiber's core-clad concentricity, cladding diameter, cladding non-circularity and fiber curl. This improvement minimizes high-loss outliers and reduces the average splice loss, contributing to maximized OEM process efficiencies.

Corning manufactures the family of SMF-28e+[®] fibers using an Outside Vapor Deposition (OVD) process, which produces a totally synthetic, ultra-pure fiber. As a result, Corning fibers have consistent geometric properties, high strength, and low attenuation. OEMs can count on Corning SMF-28e+[®] photonic fiber to deliver excellent performance and reliability, reel after reel. Measurement methods comply with ITU recommendations G650, IEC 60793-1, and Telcordia GR20-CORE.

Formulas

Dispersion:

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

For $1200 \text{ nm} \leq \lambda \leq 1625 \text{ nm}$

Cladding Non Circularity:

$$\frac{\text{Cladding}}{\text{Non - Cladding}} = \left[1 - \frac{\text{MinCladdingDiameter}}{\text{MaxCladdingDiameter}} \right] \times 100$$

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To obtain additional technical information, an engineering sample or to place an order for this product, please contact us at:

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Corning® ClearCurve® XB Optical Fiber



Reduced footprint components and bend sensitive applications

Corning's ClearCurve® XB fiber is a full-spectrum optical fiber with improved macro-bend performance compared to legacy single-mode fibers. Products of all types are constantly decreasing their size and becoming more complex. Having the ability to place fibers in increasingly smaller footprints without performance degradation is crucial to keeping the optical loss budgets low. The contribution by bend loss to the overall loss budget increases as the amount of fiber that is deployed in the bent state increases. Having a fiber that is designed for low bend loss makes these new smaller products a reality.

Applications:

- Bend sensitive applications
- Footprint reduction
- Small size and integrated EDFA's
- Couplers
- Pigtails/patchcords

Features:

- Low bend loss design
- Fully compatible with legacy fibers
- Ease of handling and splice ability of standard single mode fibers
- Economical bend loss performance
- Optical attenuation that is flat across the C & L-Bands
- 200 kpsi proof test for higher mechanical reliability in small bend scenarios
- Fully compliant with the following standards:
 - ITU-T G.652.D
 - ITU-T G.657.A1

Optical Specifications

Cable Cutoff Wavelength (λ_{cp}) (nm)	≤ 1260
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	Wavelength (nm)	Maximum Value* (dB/km)
Maximum Attenuation	1310	0.33 - 0.35
	1550	0.19 - 0.20
	1625	0.20 - 0.23

* Maximum specified attenuation value available within the stated ranges

** Attenuation post-hydrogen aging according to IEC 60793-2-50 Section C.5 for B.1.3 fibers.

	Wavelength (nm)	MFD (μm)
Mode-field Diameter	1310	8.6 ± 0.4
	1550	9.8 ± 0.5

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

Zero Dispersion Wavelength (λ_0): $1304 \text{ nm} \leq \lambda_0 \leq 1324 \text{ nm}$ Zero Dispersion Slope (S_0): $\leq 0.089 \text{ ps}/(\text{nm}^2 \cdot \text{km})$

Polarization Mode Dispersion (PMD)	Value (ps/ $\sqrt{\text{km}}$)
Maximum Individual Fiber	≤ 0.1

	Wavelength (nm)	Point Discontinuity (dB)
Point Discontinuity	1310	≤ 0.05
	1550	≤ 0.05

Key Geometric, Mechanical and Environmental Specifications

Cladding Diameter (μm)	125.0 ± 0.7
Core-Clad Concentricity (μm)	≤ 0.5
Cladding Non-Circularity (%)	≤ 0.7
Coating Diameter (μm)	242 ± 5
Coating-Cladding Concentricity (μm)	< 12
Coloring Diameter* (μm)	$250 +15/-9$
Fiber Curl (m)	≥ 4.0 radius of curvature

* If applicable

Environmental Test	Test Condition	Induced Attenuation 1310 nm, 1550 nm & 1625 (dB/km)
Temperature Dependence ($^{\circ}\text{C}$)	-60 to 85 *	≤ 0.05
Temperature-Humidity Cycling ($^{\circ}\text{C}$)	-10 to 85 * up to 98% RH	≤ 0.05
Water Immersion ($^{\circ}\text{C}$)	23 * ± 2	≤ 0.05
Dry Heat Soak ($^{\circ}\text{C}$)	85 * ± 2	≤ 0.05
Damp Heat ($^{\circ}\text{C}$)	85 * at 85% RH	≤ 0.05
Operating Temperature Range ($^{\circ}\text{C}$)	-60 to 85	
Proof Test (kpsi)	≥ 200	
Lengths	Available up to 50.4 km per spool	

* Reference temperature: 23°C

ClearCurve® XB

Performance Characterizations*

Index of Refraction (Core)		1.45	
Numerical Aperture		0.13	
Macrobend Loss			
Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation** (dB)
20	1	1625	1.5
20	1	1550	0.5

* Values in this table are nominal or calculated values

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

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber
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CORNING

HICER 98
Splice-Optimized
Coupler fiber



NEW!

Corning® HICER 98 Specialty Optical Fibers
High Index Coupler Fiber

A new addition to the *Corning® FBT* coupler optimized fiber family; *HICER 98* is the ideal fiber for applications where a single splice recipe is required. Designed for splicing flexibility to industry standard Erbium and single-mode fibers, *HICER 98* benefits from Corning's Outside Vapor Deposition (OVD) process consistency, allowing for large quantities of fiber with identical composition which minimizes coupler tuning time.

Applications:

- Couplers and Optical Components
- WDM Couplers
- CATV Couplers
- Splitters and Combiners

Features:

- Splice Optimized to Industry Standard Erbium and Single-mode Fibers
- Versatile Splicing with a Single Splice Recipe
- No New Splice Recipe Required
- Outstanding Consistency and Uniformity Using Corning's Patented Outside Vapor Deposition (OVD) Process
- Dual Acrylate Coating System Provides Excellent Protection from Microbend Induced Attenuation and Superior Mechanical Robustness

HICER 98

Key Optical Specifications

Operating Wavelength (nm)	980, 1550
Cutoff Wavelength (nm)	≤ 960
Maximum Attenuation (dB/km)	≤ 2.5 @ 980 nm ≤ 1.0 @ 1550 nm
Mode-field Diameter (μm)	5.0 ± 0.3 @ 980 nm 7.5 ± 0.75 @ 1550 nm

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 0.5
Coating Outside Diameter (μm)	245 ± 10
Core-to-Cladding Offset (μm)	≤ 0.3
Proof Test (kpsi)	200
Operating Temperature (°C)	-60 to 85
Coating	Dual UV Acrylate
Recommended Minimum Bending Radius (mm)	30

Performance Characterizations*

Nominal Delta/Profile (%)	0.68
Numerical Aperture	0.17
Refractive Index Value – Core	1.467 @ 651 nm
Dispersion (ps/nm/km)	-55.4 @ 980 nm 0.2 @ 1550 nm
Core Diameter (μm)	4.5

* Values in this table are nominal or calculated values

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CORNING

Single-mode and multimode optical fiber with mid-temperature acrylate-based coating



Inquire for information about the application of mid-temperature coatings on glasses with optical properties that match your application or custom need.

NEW!

Corning® Mid-Temperature Specialty Optical Fibers

Corning Specialty Fiber now extends its optical fiber coating portfolio for operation at 150 °C. While this coating provides the ability to operate at elevated temperatures, it is also acrylate-based for ease of use and handling. When combined with Corning's extensive range of optical glass properties, the introduction of mid-temperature coatings opens a new dimension for the uses of fiber optics. With the addition of Corning's distinctive hermetic layer, these mid-temperature fibers offer improved hydrogen resistance and fatigue performance in mid-temperature ranges.

Applications:

- Fiber Sensing and Data Transmission for:
 - Aerospace and Defense
 - Medical
 - Structural Health Monitoring
 - Down-Hole Drilling

Features:

- Acrylate-base for Ease of Handling
- Hermetic Coating (optional) for Protection Against Hydrogen Induced Attenuation Increase and Improved Fatigue Resistance
- Rated for Use Up to 150 °C
- Consistent Strength Over Time at Elevated Temperatures
- Multimode Fiber is Made with a Graded Index Refractive Index Profile for Increased Performance

**SM-MT
SMH-MT**

**MM-MT *
MMH-MT**

Key Optical Specifications

Operating Wavelength (nm)	1310, 1550	850, 1060, 1300
Cutoff Wavelength (nm)	≤ 1290	n/a
Maximum Attenuation (dB/km)	0.5 @ 1310 nm 0.4 @ 1550 nm	2.8 @ 850 nm 0.8 @ 1300 nm
Bandwidth @ 850 nm and 1300 nm (MHz-km)	n/a	≥ 500
Mode-field Diameter (μm)	9.2 ± 0.4 @ 1310 nm 10.4 ± 0.5 @ 1550 nm	n/a
Numerical Aperture	0.12 (nominal)	0.20 ± 0.015

Key Geometric, Mechanical and Environmental Specifications

Core Diameter (μm)	8.2 (nominal)	50 ± 2.5
Cladding Outside Diameter (μm)	125 ± 1.0	125 ± 2.0
Coating Outside Diameter (μm)	245 ± 10	245 ± 10
Core-to-Cladding Offset (μm)	≤ 0.5	≤ 1.5
Proof Test (kpsi)	100	100
Operating Temperature (°C)	-60 to 150	-60 to 150
Coating	Mid-Temperature Acrylate Optional Hermetic Layer	Mid-Temperature Acrylate Optional Hermetic Layer

* MM-MT contains a graded index Refractive Index profile

Note:

SM-MT and MM-MT: Single-mode and Multimode optical fiber with mid-temperature coating

SMH-MT and MMH-MT: Single-mode and Multimode optical fiber with hermetic layer and mid-temperature coating

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CORNING

*Polarization fiber
optimized for
RGB wavelength
band*



NEW!

Corning® RGB PM Specialty Optical Fibers *PM Fibers*

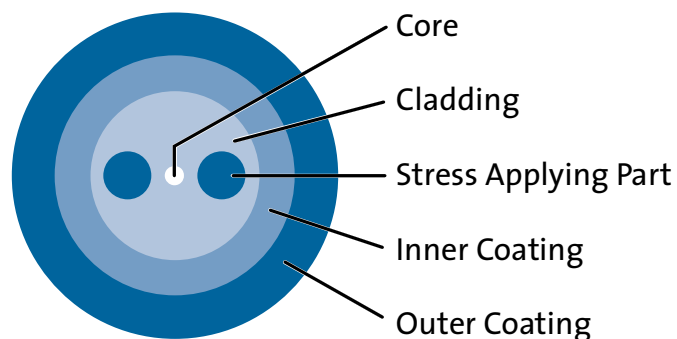
Corning's newly designed *Panda RGB PM Specialty Optical Fiber* is a polarization maintaining fiber optimized for operation over the entire visible spectrum. This increased wavelength range enables greater flexibility by allowing for the use of a single fiber in applications across this region.

Applications:

- Medical
- Spectroscopy
- Display

Features:

- Designed for Use at Wavelengths Between 405 nm and 630 nm
- Extremely High Birefringence
- Excellent Polarization Maintaining Properties



RGB PM

Key Optical Specifications

Operating Wavelength (nm)	405-640
Cutoff Wavelength (nm)	≤ 400
Maximum Attenuation (dB/km)	$\leq 50 @ 405 \text{ nm}$
Mode-field Diameter (μm)	$2.3 \pm 0.6 @ 410 \text{ nm}$ $3.8 \pm 1.0 @ 630 \text{ nm}$
Beat Length (mm)	$< 2.0 @ 630 \text{ nm}$
Polarization Crosstalk @ 60mm bend diameter dB (dB/10 turn)	$-30 @ 630 \text{ nm}$

Key Geometric, Mechanical and Environmental Specifications

Cladding Outside Diameter (μm)	125 ± 1.0
Coating Outside Diameter (μm)	245 ± 15
Core-to-Cladding Offset (μm)	1.0
Proof Test (kpsi)	200
Operating Temperature* ($^{\circ}\text{C}$)	-40 to 85
Coating	UV Curable Acrylate
Recommended Minimum Bending Radius (mm)	30**

* without coiling on a shipping reel

** set due to crosstalk performance

For more information about Corning's leadership in Specialty Fiber technology visit our website at www.corning.com/specialtyfiber

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