Corning® ER Specialty Optical Fibers
Erbium-Doped Fibers

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 micro-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
# C-band Fibers

## Key Optical Specifications

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

## Key Geometric, Mechanical, and Environmental Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>ER 1550C3</th>
<th>ER 1550C3 LC</th>
<th>RC ER 1550C3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cladding Outside Diameter (μm)</td>
<td>125 ± 1</td>
<td>125 ± 1</td>
<td>80 ± 1</td>
</tr>
<tr>
<td>Coating Outside Diameter (μm)</td>
<td>245 ± 10</td>
<td>245 ± 10</td>
<td>165 ± 10</td>
</tr>
<tr>
<td>Core-to-Cladding Concentricity (μm)</td>
<td>≤ 0.4</td>
<td>≤ 0.4</td>
<td>≤ 0.4</td>
</tr>
<tr>
<td>Standard Lengths</td>
<td>100m, 500m, 1 km, 2 km, 5 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proof Test (ksi)</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature (°C)</td>
<td>-60 to +85</td>
<td>-60 to +85</td>
<td>-60 to +85</td>
</tr>
</tbody>
</table>

## Performance Characterizations*

<table>
<thead>
<tr>
<th>Specification</th>
<th>ER 1550C3</th>
<th>ER 1550C3 LC</th>
<th>RC ER 1550C3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical Aperture</td>
<td>0.23</td>
<td>0.22</td>
<td>0.23</td>
</tr>
<tr>
<td>Backscatter (% per meter)</td>
<td>≤0.0001</td>
<td>≤0.0001</td>
<td>≤0.0001</td>
</tr>
</tbody>
</table>

*Values in this table are nominal or calculated values

## Typical Splicing Loss

<table>
<thead>
<tr>
<th>Specification</th>
<th>ER 1550C3</th>
<th>ER 1550C3 LC</th>
<th>RC ER 1550C3</th>
</tr>
</thead>
<tbody>
<tr>
<td>To SMF-28e+® Optical Fiber (dB)</td>
<td>0.10</td>
<td>0.10</td>
<td>0.13</td>
</tr>
<tr>
<td>To Corning® HI 1060 FLEX Specialty Fiber (dB)</td>
<td>0.05</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>To Corning® HI 980 Specialty Fiber (dB)</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>To Corning® HI 1060 Specialty Fiber (dB)</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

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

Typical Splice Loss of Corning® ER 1550C3 Specialty Fiber to SMF-28e+® Optical Fiber
**L-band Fibers**

### Key Optical Specifications

<table>
<thead>
<tr>
<th></th>
<th>ER 1600L3</th>
<th>RC ER 1600L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Absorption Range @ 1530 nm (dB/m)</td>
<td>18.0 to 29.0</td>
<td></td>
</tr>
<tr>
<td>Variation Around Peak Absorption per Batch (%)</td>
<td>≤ ± 1</td>
<td></td>
</tr>
<tr>
<td>Fiber Cutoff Wavelength (nm)</td>
<td>≤ 1400</td>
<td></td>
</tr>
<tr>
<td>Maximum Attenuation @ 1200 nm (dB/km)</td>
<td>≤ 15.0</td>
<td></td>
</tr>
<tr>
<td>Mode-field Diameter @ 1000 nm (μm)</td>
<td>5.5 ± 0.3</td>
<td></td>
</tr>
<tr>
<td>Polarization Mode Dispersion (fs/m)</td>
<td>≤ 5</td>
<td></td>
</tr>
</tbody>
</table>

### Key Geometric, Mechanical, and Environmental Specifications

<table>
<thead>
<tr>
<th></th>
<th>ER 1600L3</th>
<th>RC ER 1600L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cladding Outside Diameter (μm)</td>
<td>125 ± 1</td>
<td>80 ± 1</td>
</tr>
<tr>
<td>Coating Outside Diameter (μm)</td>
<td>245 ± 10</td>
<td>165 ± 10</td>
</tr>
<tr>
<td>Core-to-Cladding Concentricity (μm)</td>
<td></td>
<td>≤ 0.4</td>
</tr>
<tr>
<td>Standard Lengths</td>
<td>100m, 500m, 1 km, 2 km, 5 km</td>
<td></td>
</tr>
<tr>
<td>Proof Test (kpsi)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature (°C)</td>
<td>-60 to +85</td>
<td></td>
</tr>
</tbody>
</table>

### Performance Characterizations*

<table>
<thead>
<tr>
<th></th>
<th>ER 1600L3</th>
<th>RC ER 1600L3</th>
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</thead>
<tbody>
<tr>
<td>Numerical Aperture</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Backscatter (% per meter)</td>
<td>≤0.0002</td>
<td></td>
</tr>
<tr>
<td>Non-linear Index of Refraction (n2) (m²/W)</td>
<td>≤3.5 x 10⁻²⁰</td>
<td></td>
</tr>
<tr>
<td>Effective Area (Aeff) (μm²)</td>
<td>22.5 ± 2.5</td>
<td></td>
</tr>
</tbody>
</table>

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### Typical Splicing Loss

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>To SMF-28e+ Optical Fiber (dB)</td>
<td>0.10</td>
</tr>
<tr>
<td>To Corning® HI 980 Specialty Fiber (dB)</td>
<td>0.10</td>
</tr>
<tr>
<td>To Corning® HI 1060 Specialty Fiber (dB)</td>
<td>0.10</td>
</tr>
</tbody>
</table>

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*Typical Gain Shape for Corning® ER 1600L3 Specialty Fiber*

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