

**PI1042**

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ISO 9001 Registered

# Corning® Titan® Single-Mode Optical Fiber

**GENERAL**

Corning® Titan® single-mode optical fiber is designed to meet increasingly demanding requirements for improved toughness. Titan fiber is more abrasion-resistant than other fibers, reducing the likelihood that the fiber can be damaged during routine handling and installation. Titan fiber also has improved fatigue resistance, so that the fiber better retains its strength over time.

This product is suitable for applications requiring single-mode fiber, including telephony, cable television, submarine and private network applications in the transmission of voice, data and/or video services.

Titan fiber features a titania-doped outer cladding that improves the abrasion and fatigue resistance of the fiber. Titan fiber's enhanced glass composition provides performance not possible with coating solutions, because the added performance doesn't get stripped off during splicing and termination.

Titan fiber is optimized for use in the 1310 nm wavelength region. With low dispersion in this operating window, fiber information-carrying capacity is at its highest. Titan fiber also can be used effectively in the 1550 nm wavelength region.

Corning fiber is protected for long-term performance and reliability by the CPC coating system. Corning's enhanced, dual acrylate CPC coatings provide excellent fiber protection and are easy to work with. CPC coatings are designed to be mechanically stripped and have an outside diameter of 245 µm. CPC coatings are optimized for use in many single and multi-fiber cable designs including loose tube, ribbon, slotted core and tight buffer cables.

Titan fiber is manufactured using the Outside Vapor Deposition (OVD) process, which produces a totally synthetic, ultra-pure fiber. As a result, Corning Titan fiber has consistent geometric properties, high strength and low attenuation. Corning Titan fiber can be counted on to deliver excellent performance and high reliability, reel after reel.

**FEATURES & BENEFITS**

- Improved abrasion and fatigue performance for long-term reliability.
- Versatility in 1310 nm and 1550 nm applications.
- Outstanding geometrical properties for low splice loss and high splice yields.
- OVD manufacturing reliability and product consistency.
- Optimized for use in loose tube, ribbon and other common cable designs.

**OPTICAL SPECIFICATIONS****• Attenuation**

Standard Attenuation Cells		
Wavelength (nm)	Attenuation Cells (dB/km)	
	Premium*	Standard
1310	≤0.35	≤0.40
1550	≤0.25	≤0.30

\* Lower attenuation available in limited quantities.

*Point Discontinuity*

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

*Attenuation at the Water Peak*

The attenuation at  $1383 \pm 3$  nm shall not exceed 2.1 dB/km.

**OPTICAL SPECIFICATIONS, (continued)**

Attenuation vs Wavelength		
Range (nm)	Ref. $\lambda$ (nm)	Max Increase $\alpha$ (dB/km)
1285 - 1330	1310	0.05
1525 - 1575	1550	0.05

◀ The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength ( $\lambda$ ) by more than the value  $\alpha$ .

Attenuation With Bending			
Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation (dB)
32	1	1550	$\leq 0.50$
75	100	1310	$\leq 0.05$
75	100	1550	$\leq 0.10$

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

• **Cable Cutoff Wavelength ( $\lambda_{ccf}$ )**

$$\lambda_{ccf} < 1260 \text{ nm}$$

• **Mode-Field Diameter**

$$9.30 \pm 0.50 \text{ } \mu\text{m at } 1310 \text{ nm}$$

$$10.50 \pm 1.00 \text{ } \mu\text{m at } 1550 \text{ nm}$$

• **Dispersion**

Zero Dispersion Wavelength ( $\lambda_0$ ):  $1301.5 \text{ nm} \leq \lambda_0 \leq 1321.5 \text{ nm}$

Zero Dispersion Slope ( $S_0$ ):  $\leq 0.092 \text{ ps}/(\text{nm}^2 \cdot \text{km})$

Fiber Polarization Mode Dispersion Coefficient (PMD):  $\leq 0.5 \text{ ps}/\sqrt{\text{km}}$

Dispersion Calculation	
Dispersion = D ( $\lambda$ ):	$\approx \frac{S_0}{4} \left[ \lambda - \frac{\lambda_0^4}{\lambda^3} \right] \text{ ps}/(\text{nm} \cdot \text{km}), \text{ for } 1200 \text{ nm} \leq \lambda \leq 1600 \text{ nm} \quad \lambda = \text{Operating Wavelength}$

**ENVIRONMENTAL SPECIFICATIONS**

Environmental Test Condition	Induced Attenuation (dB/km)	
	1310 nm	1550 nm
Temperature Dependence -60°C to +85°C*	$\leq 0.05$	$\leq 0.05$
Temperature-Humidity Cycling -10°C to +85°C*, up to 98% RH	$\leq 0.05$	$\leq 0.05$
Water Immersion, 23°C	$\leq 0.05$	$\leq 0.05$
Heat Aging, 85°C	$\leq 0.05$	$\leq 0.05$

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

\*Reference temperature = +23°C

## **DIMENSIONAL SPECIFICATIONS**

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

*\* Longer lengths available at a premium.*

### **Glass Geometry**

Fiber Curl:  $\geq 4.0$  m radius of curvature

Cladding Diameter:  $125.0 \pm 1.0$   $\mu\text{m}$

Core-Clad Concentricity:  $\leq 0.6$   $\mu\text{m}$

Cladding Non-Circularity:  $\leq 1.0\%$

$$\text{Defined as: } \left[ 1 - \frac{\text{Min. Cladding Diameter}}{\text{Max. Cladding Diameter}} \right] \times 100$$

### **Coating Geometry**

Coating Diameter:  $245 \pm 10$   $\mu\text{m}$

Coating-Cladding Concentricity  $< 12$   $\mu\text{m}$

## **MECHANICAL SPECIFICATIONS**

### **Proof Test:**

The entire length of fiber is subjected to a tensile proof stress  $\geq 100$  kpsi ( $0.7$  GN/m<sup>2</sup>)\*.

*\* Higher proof test levels available at a premium.*

## **PERFORMANCE CHARACTERIZATIONS**

*Characterized parameters are typical values.*

### **Core Diameter:**

8.3  $\mu\text{m}$

### **Numerical Aperture:**

0.13

*NA was measured at the one percent power angle of a one-dimensional far-field scan at 1310 nm.*

### **Zero Dispersion Wavelength ( $\lambda_0$ ):**

1312 nm

### **Zero Dispersion Slope ( $S_0$ ):**

0.090 ps/(nm<sup>2</sup>•km)

### **Refractive Index Difference:**

0.36%

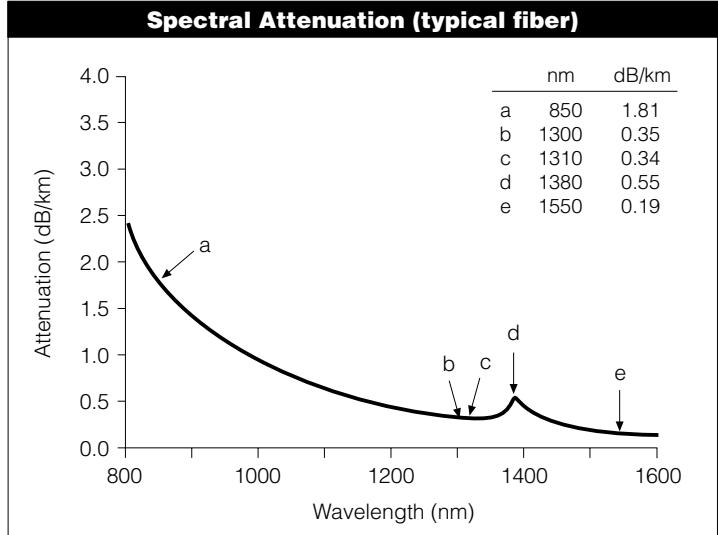
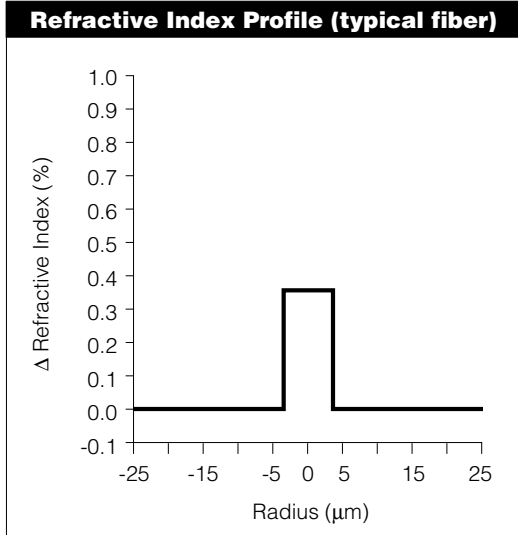
### **Effective Group Index of Refraction ( $N_{\text{eff}}$ ):**

1.4675 at 1310 nm

1.4681 at 1550 nm

### **Fatigue Resistance Parameter ( $n_d$ ):**

$\geq 25$



### Ordering Information

To order Corning® Titan® optical fiber, contact your sales representative, or call the Telecommunications Products Division Customer Service Department at **910-395-7659** (in North America) and **607-974-7174** (outside of North America). Please specify the following parameters when ordering.

Fiber Type: Corning® Titan® single-mode fiber

Coating: 245 μm outside diameter

Fiber Attenuation Cell: \_\_\_\_\_ dB/km

Fiber Quantity: \_\_\_\_\_ kms

Other: (Requested ship date, etc.)

## CORNING

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Corning Fiber is  
 Made in the USA.