

# Specialty Multimode Step-Index Fiber



Leading Optical Innovations

## 0.43 NA HCS MM Step-Index Fibers

Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 850 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
HCS High NA 200 <b>FW</b>	200/230/500 μm	≤6 dB/km	ETFE	-65 to +125 °C	≥10/16 mm	CF05578-01
HCS High NA 400 <b>FW</b>	400/430/730 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥29/47 mm	CF05578-03

## 0.37 NA HCS MM Step-Index Fibers

Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 850 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
HCS 37 Low OH 125	125/140/250 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥9/15 mm	CF01493-09
HCS 37 Low OH 200 <b>FW</b>	200/230/500 μm	≤6 dB/km	ETFE	-65 to +125 °C	≥10/16 mm	CF01493-10
HCS 37 Low OH 300	300/330/650 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥15/24 mm	CF01493-11
HCS 37 Low OH 400 <b>FW</b>	400/430/730 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥29/47 mm	CF01493-12
HCS 37 Low OH 600	600/630/1040 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥58/94 mm	CF01493-14
HCS 37 Low OH 800	800/830/1040 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥73/118 mm	CF01493-65
HCS 37 Low OH 1000	1000/1035/1400 μm	≤8 dB/km	ETFE	-65 to +125 °C	≥73/118 mm	CF01493-15
HCS 37 Low OH 1500	1500/1535/2000 μm	≤15 dB/km	ETFE	-65 to +125 °C	≥182/295 mm*	CF01493-62

Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 820 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
HCS 37 High OH 200 <b>FW</b>	200/230/500 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥10/16 mm	CF01493-18
HCS 37 High OH 300	300/330/650 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥15/24 mm	CF01493-19
HCS 37 High OH 400 <b>FW</b>	400/430/730 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥29/47 mm	CF01493-20
HCS 37 High OH 600	600/630/1040 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥58/94 mm	CF01493-22
HCS 37 High OH 800	800/830/1040 μm	≤12 dB/km	ETFE	-65 to +125 °C	≥73/118 mm	CF01493-60

\* Statistically determined

## 0.29 NA All Silica MM Step-Index Fibers

Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 850 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
UltraSil 200	200/240/260/375 μm	≤17 dB/km	HCS/ETFE	-65 to +125°C	≥18/30 mm	BF04746 01
UltraSil 272 Blue	272/326/356/420 μm	≤17 dB/km	HCS/ETFE (Blue)	-65 to +125°C	≥16/26 mm	BF05246
UltraSil 330	330/400/430/730 μm	≤17 dB/km	HCS/ETFE	-65 to +125 °C	≥30/49 mm	BF04746 02
UltraSil 200 Pyro	200/240/270 μm	≤17 dB/km	PYROCOAT	-65 to +300 °C	≥18/30 mm	BF04830 01
UltraSil 320 Pyro	320/385/415 μm	≤17 dB/km	PYROCOAT	-65 to +300 °C	≥30/49 mm	BF04830 02



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## 0.22 NA All Silica MM Step-Index Fibers

Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 850 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
All Silica Low OH 200	200/240/260/375 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥9/14 mm	CF01493-51
All Silica Low OH 365	365/400/430/730 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥29/47 mm	CF01493-52
All Silica Low OH 550	550/600/630/750 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥58/94 mm	CF01493-53
All Silica Low OH 940	940/1000/1035/1400 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥73/118 mm	CF01493-54
All Silica Low OH 200 Pyro	200/220/250 μm	≤8 dB/km	PYROCOAT	-65 to +300 °C	≥17/28 mm	CF04406-13
All Silica Low OH 320 Pyro	320/385/415 μm	≤8 dB/km	PYROCOAT	-65 to +300 °C	≥29/49 mm	CF04406-15
All Silica Low OH 600 Pyro	600/660/690 μm	≤8 dB/km	PYROCOAT	-65 to +300 °C	≥99/167 mm	CF04406-17

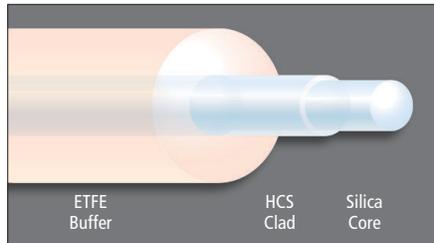
Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 820 nm	Buffer Type	Operating Temperature	Short/Long-Term Bend Radius	Part Number
All Silica High OH 200	200/240/260/375 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥9/14 mm	CF01493-41
All Silica High OH 365	365/400/430/730 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥29/47 mm	CF01493-42
All Silica High OH 550	550/600/630/750 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥58/94 mm	CF01493-43
All Silica High OH 940	940/1000/1035/1400 μm	≤10 dB/km	HCS/ETFE	-65 to +135 °C	≥73/118 mm	CF01493-44
All Silica High OH 100 Pyro	100/110/140 μm	≤14 dB/km	PYROCOAT	-65 to +300 °C	≥9/14 mm	CF04406-01
All Silica High OH 200/220 Pyro	200/220/250 μm	≤10 dB/km	PYROCOAT	-65 to +300 °C	≥17/28 mm	CF04406-03
All Silica High OH 200/240 Pyro	200/240/270 μm	≤10 dB/km	PYROCOAT	-65 to +300 °C	≥18/31 mm	CF04406-04
All Silica High OH 400 Pyro	400/440/470 μm	≤10 dB/km	PYROCOAT	-65 to +300 °C	≥66/112 mm	CF04406-05

## Low OH MM Step-Index Launch Fibers

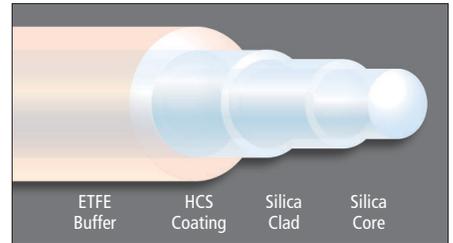
Fiber Description	Core/Clad/Buffer Diameter	Attenuation @ 850/1300	Buffer Type	Operating Temperature	NA	Short/Long-Term Bend Radius	Part Number
40/125 Launch	40/125/250 μm	≤10.0 dB/km	Dual UV Acrylate	-40 + 85 °C	0.22	10/17 mm	BF06269
50/125 Launch	50/125/250 μm	≤5.0 dB/km	Dual UV Acrylate	-40 + 85 °C	0.22	10/17 mm	BF06864
60/125 Launch	60/125/250 μm	≤6.0 dB/km	Dual UV Acrylate	-40 + 85 °C	0.22	10/17 mm	F8950
105/125 Launch	105/125/250 μm	≤12.0 dB/km	Dual UV Acrylate	-40 + 85 °C	0.22	10/17 mm	BF05859
105/125 Low NA Launch	105/125/250 μm	≤20.0 dB/km	Dual UV Acrylate	-40 + 85 °C	0.15	10/17 mm	F10017

**PLEASE NOTE:**  
Additional configurations available upon request. Please contact OFS to discuss your requirements. All drawings are not to scale.

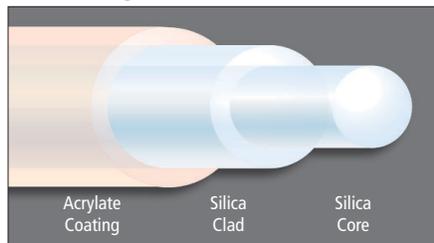
### Standard HCS Fiber



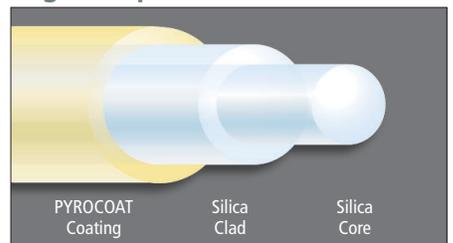
### All Silica Fiber



### Dual Acrylate Buffer Fiber



### High Temperature Fiber



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# SPECIALTY MULTIMODE STEP-INDEX FIBER

## Specification Sheet

# HCS High Numerical Aperture

## 0.43 NA FIBERS



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Multimode Step-Index

### Product Description

High NA fiber captures more input power with very low bend-induced attenuation, high coupling efficiency. It allows more light to be collected in delicate sensing applications. The hard clad silica (HCS) cladding provides higher tensile strength and greater resistance to moisture than conventional claddings. In addition, it allows connectors to be directly crimped to the cladding for fast, efficient field terminations. Together these features create a fiber well suited for a wide variety of medical and industrial applications.

### Typical Applications

- High-power laser delivery
- Sensors
- Industrial
- Medical communications

### Features and Benefits

- 400  $\mu\text{m}$  version can be used as a direct replacement for 1000  $\mu\text{m}$  plastic optical fiber
- Large core diameter for greater coupling efficiency to LED and laser sources
- Tolerant of wide fluctuations in temperature
- More efficient, less expensive interconnections than single-mode or graded-index fibers
- Very high tensile strength (greater than 700 kpsi)
- Good fatigue resistance
- USP Class VI, nontoxic, and biocompatible
- Sterilizable
- Can be terminated using crimp-and-cleave technology

### Related Products & Capabilities

- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Additional Coatings**
- Other Upgrades**

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1-888-438-9936 toll free  
(USA and Canada only)  
Fax 1-860-674-8818
- or by email inquiry to:  
Info@SpecialtyPhotonics.com

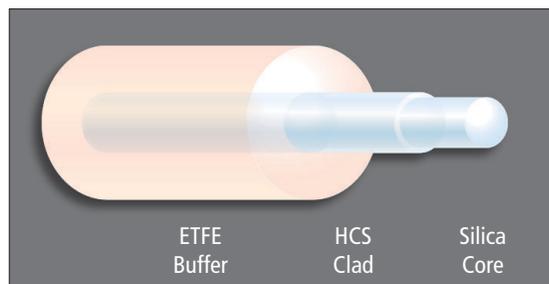


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# Fiber Specifications



## Optical Properties

### HCS High NA 200

### HCS High NA 400

Numerical aperture  
Attenuation @ 820 nm  
Water content

0.43  
≤6 dB/km  
Low OH

0.43  
≤8 dB/km  
Low OH

## Dimensions/Geometric Properties

Core diameter  
HCS cladding diameter  
ETFE buffer diameter  
Core/clad offset

200 ± 4 μm  
230 +0/-10 μm  
500 ± 30 μm  
≤5 μm

400 ± 8 μm  
430 +5/-10 μm  
730 ± 30 μm  
≤8 μm

## Coating/Buffer Descriptions

Cladding material  
Buffer material  
Operating temperature

HCS  
ETFE  
-65 to +125°C

HCS  
ETFE  
-65 to +125°C

## Mechanical and Testing Data

Short-term bend radius  
Long-term bend radius  
Proof test level

≥10 mm  
≥16 mm  
≥150 kpsi (1.034 GPa)

≥29 mm  
≥47 mm  
≥100 kpsi (0.689 GPa)

**Product Description Code**

**HCP-H0200T**

**HCP-H0400T**

**Order by Part Number**

**CF05578-01**

**CF05578-03**

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# SPECIALTY MULTIMODE STEP-INDEX FIBER

## Specification Sheet

# HCS Low OH

## 0.37 NA FIBERS



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Multimode Step-Index

### Product Description

Our low OH fiber is ideally suited for use with both 650 and 850 nm active devices. The Hard Clad Silica (HCS) cladding provides higher tensile strength and greater resistance to moisture than conventional claddings. In addition, it allows connectors to be directly crimped to the cladding for fast, efficient field terminations. Together these features create a fiber well suited for a wide variety of communications and industrial applications, as well as near-IR spectroscopy.

### Typical Applications

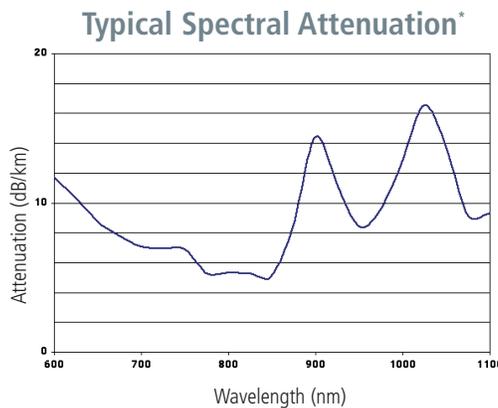
- High-power laser delivery
- Short-to-medium distance communications (up to 3 km)
- Avionics communications
- Medical sensing
- Factory automation
- Laser therapy and surgery
- Near-IR spectroscopy
- Optical pyrometry
- Nuclear plasma diagnostics

### Features and Benefits

- Large core diameter for even greater coupling efficiency to LED and laser sources
- Tolerant of wide fluctuations in temperature and humidity
- More efficient, less expensive interconnections than single-mode or graded-index fibers
- Very high tensile strength (greater than 700 kpsi)
- Good fatigue resistance
- USP Class VI, nontoxic, and biocompatible
- Sterilizable (Autoclave/ETO)
- Most core sizes can be terminated using crimp-and-cleave technology
- Radiation resistant
- Compatible with a variety of light sources, such as: LEDs, laser diodes, VCSELs, visible lamps, and gas lasers

### Related Products & Capabilities

- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.



\*Graph represents data for fiber part number CF01493 10

Ask us about options available for these fibers:

- Polyurethane Cable Jacketing
- Connectorization
- Additional Coatings and Buffer Types/Colors
- Other Upgrades

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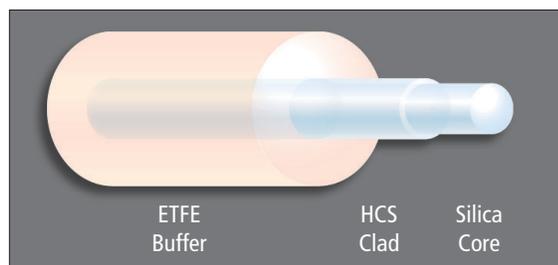


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# Fiber Specifications



Optical Properties	HCS 37 Low OH 125	HCS 37 Low OH 200	HCS 37 Low OH 300	HCS 37 Low OH 400
Numerical aperture	0.37	0.37	0.37	0.37
Attenuation @ 850 nm	≤12 dB/km	≤6 dB/km	≤8 dB/km	≤8 dB/km
Water content	Low OH	Low OH	Low OH	Low OH
Dimensions/Geometric Properties				
Core diameter	125 ± 5 μm	200 ± 4 μm	300 ± 6 μm	400 ± 8 μm
HCS cladding diameter	140 +2/-5 μm	230 +0/-10 μm	330 +5/-10 μm	430 +5/-10 μm
ETFE buffer diameter	250 +50/-0 μm	500 ± 30 μm	650 ± 30 μm	730 ± 30 μm
Core/clad offset	≤5 μm	≤5 μm	≤6 μm	≤8 μm
Buffer/Coating Descriptions				
Cladding material	HCS	HCS	HCS	HCS
Buffer material	ETFE	ETFE	ETFE	ETFE
Operating temperature	-65 to +125°C	-65 to +125°C	-65 to +125°C	-65 to +125°C
Mechanical and Testing Data				
Short-term bend radius	≥9 mm	≥10 mm	≥15 mm	≥29 mm
Long-term bend radius	≥15 mm	≥16 mm	≥24 mm	≥47 mm
Proof test level	≥100 kpsi (0.689 GPa)	≥150 kpsi (1.034 GPa)	≥150 kpsi (1.034 GPa)	≥100 kpsi (0.689 GPa)
Product Description Code	HCP-M0125T	HCP-M0200T	HCP-M0300T	HCP-M0400T
Order by Part Number	CF01493-09	CF01493-10	CF01493-11	CF01493-12

Multimode Step-Index

Optical Properties	HCS 37 Low OH 600	HCS 37 Low OH 800	HCS 37 Low OH 1000	HCS 37 Low OH 1500
Numerical aperture	0.37	0.37	0.37	0.37
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤15 dB/km
Water content	Low OH	Low OH	Low OH	Low OH
Dimensions/Geometric Properties				
Core diameter	600 ± 10 μm	800 ± 15 μm	1000 ± 15 μm	1500 ± 15 μm
HCS cladding diameter	630 +5/-10 μm	830 ± 15 μm	1035 ± 15 μm	1535 ± 15 μm
ETFE buffer diameter	1040 ± 30 μm	1040 ± 30 μm	1400 ± 50 μm	2000 ± 50 μm
Core/clad offset	≤8 μm	≤9 μm	≤10 μm	≤12 μm
Buffer/Coating Descriptions				
Cladding material	HCS	HCS	HCS	HCS
Buffer material	ETFE	ETFE	ETFE	ETFE
Operating temperature	-65 to +125°C	-65 to +125°C	-65 to +125°C	-65 to +125°C
Mechanical and Testing Data				
Short-term bend radius	≥58 mm	≥73 mm	≥73 mm	≥182 mm (statistically determined)
Long-term bend radius	≥94 mm	≥118 mm	≥118 mm	≥295 mm (statistically determined)
Proof test level	≥75 kpsi (0.517 GPa)	≥80 kpsi (0.551 GPa) (by radius bend method)	≥100 kpsi (0.689 GPa) (by radius bend method)	≥75 kpsi (0.517 GPa) (by radius bend method)
Product Description Code	HCP-M0600T	HCP-M0800T	HCP-M1000T	HCP-M1500T
Order by Part Number	CF01493-14	CF01493-65	CF01493-15	CF01493-62



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Multimode Step-Index

**Product Description**

For coupling to LED and laser sources, large core diameter multimode step-index fibers connect more efficiently and less expensively than single-mode or graded-index fibers. OFS' Hard Clad Silica (HCS) cladding permits performance over wide ranges of temperature and humidity with low attenuation. HCS cladding also allows termination with crimp-and-cleave technology for most core sizes.

These fibers are especially suitable for use in medical applications. Their high tensile strength and good fatigue resistance also contribute to optimal performance in a variety of demanding applications.

**Typical Applications**

- High-power laser delivery
- Laser surgery
- Medical diagnostic assemblies
- UV to visible spectroscopy
- Sensing

**Features and Benefits**

- USP Class VI, nontoxic, and biocompatible
- Sterilizable (Autoclave/ETO)
- Most core sizes can be terminated using crimp-and-cleave technology
- Performance over wide ranges of temperature and humidity
- Compatible with a variety of light sources, such as: LEDs, laser diodes, VCSELs, visible lamps, and gas lasers

**Related Products & Capabilities**

- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.
- Connectorized Medical Assemblies

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Complete Assemblies**
- Additional Coatings**
- Other Upgrades**

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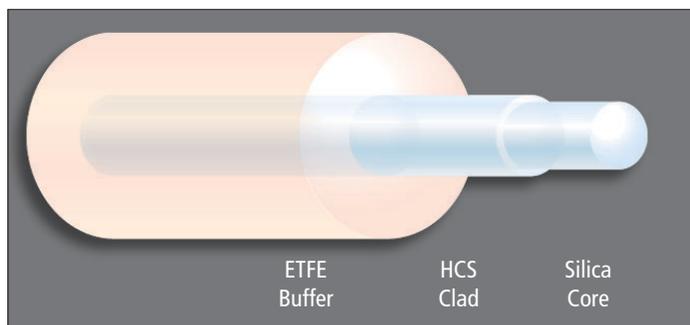


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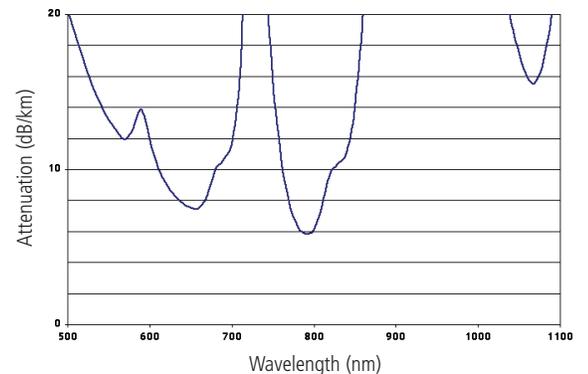
# Fiber Specifications

	FiberWire INDUSTRIAL COMMUNICATIONS SYSTEM		FiberWire INDUSTRIAL COMMUNICATIONS SYSTEM		
Optical Properties	HCS 37 High OH 200	HCS 37 High OH 300	HCS 37 High OH 400	HCS 37 High OH 600	HCS 37 High OH 800
Numerical aperture	0.37	0.37	0.37	0.37	0.37
Attenuation @ 820 nm	≤12.0 dB/km	≤12.0 dB/km	≤12.0 dB/km	≤12.0 dB/km	≤12.0 dB/km
Water content	High OH	High OH	High OH	High OH	High OH
Dimensions/Geometric Properties					
Core diameter	200 ± 4 μm	300 ± 6 μm	400 ± 8 μm	600 ± 10 μm	800 ± 15 μm
HCS clad diameter	230 +0/-10 μm	330 +5/-10 μm	430 +5/-10 μm	630 +5/-10 μm	830 ± 15 μm
ETFE buffer diameter	500 ± 30 μm	650 ± 30 μm	730 ± 30 μm	1040 ± 30 μm	1040 ± 30 μm
Core/clad offset	≤5.0 μm	≤6.0 μm	≤8.0 μm	≤8.0 μm	≤9.0 μm
Buffer/Coating Descriptions					
Cladding material	HCS	HCS	HCS	HCS	HCS
Buffer material	ETFE	ETFE	ETFE	ETFE	ETFE
Operating temperature	-65 to +125°C	-65 to +125°C	-65 to +125°C	-65 to +125°C	-65 to +125°C
Mechanical and Testing Data					
Short-term bend radius	≥10 mm	≥15 mm	≥29 mm	≥58 mm	≥73 mm
Long-term bend radius	≥16 mm	≥24 mm	≥47 mm	≥94 mm	≥118 mm
Proof test level	≥150 kpsi (1.034 GPa)	≥150 kpsi (1.034 GPa)	≥100 kpsi (0.689 GPa)	≥75 kpsi (0.517 GPa)	≥80 kpsi* (0.551 GPa)
Product Description Code	HCN-M0200T	HCN-M0300T	HCN-M0400T	HCN-M0600T	HCN-M0800T
Order by Part Number	CF01493-18	CF01493-19	CF01493-20	CF01493-22	CF01493-60

Multimode Step-Index

\* By radius bend method

Typical Spectral Attenuation



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Multimode Step-Index

**Product Description**

The high-numerical aperture, low-OH content of these fibers results in a large usage window. Low OH concentration is especially effective for using these fibers in near-IR spectroscopy applications.

A choice of coatings — PYROCOAT or hard clad silica (HCS) — provides performance characteristics to meet the needs of the environment. The PYROCOAT coating creates resistance to chemicals and high temperatures (-65 to +300°C). This coating also strips cladding modes for enhanced performance in sensing and spectroscopy applications. With HCS coating, cladding modes are preserved through bends, distributing lost power over a greater area and lowering the probability of “hot spots,” a key characteristic for high-power laser delivery applications.

**Typical Applications**

- For fibers with PYROCOAT polyimide coating
  - Remote high-temperature sensing
  - FTIR spectroscopy
  - Raman spectroscopy
  - Near-IR spectroscopy
  - High temperature process control
  - General fiber-optic sensing
- For fibers with HCS coating
  - Cascaded laser power delivery
  - Near-IR (up to 2100 nm) laser power delivery
  - High-power laser delivery

**Related Products & Capabilities**

- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.

**Features and Benefits**

- High numerical aperture (0.29)
- Better coupling to high NA sources
- Low core, wide aperture for sensing applications (500-2100 nm)
- Low loss over a wide range of wavelengths (see graph below)
- Power transmission up to 1 GW/cm<sup>2</sup>
- Low thermal sensitivity

**HCS Coating**

Great for high-power laser delivery applications

- HCS propagates cladding modes to reduce bend loss, disperse power more evenly, and reduce hot spots
- Adds strength (chemically bonded HCS)
- Steam and ETO sterilizable
- Biocompatible, class VI, and non-toxic

**PYROCOAT Coating**

Great for sensing applications

- PYROCOAT coating strips cladding modes for optical noise reduction
- High temperature resistance (-65 to +300°C)

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Metalization**
- Carbon Coating**
- Other Upgrades**

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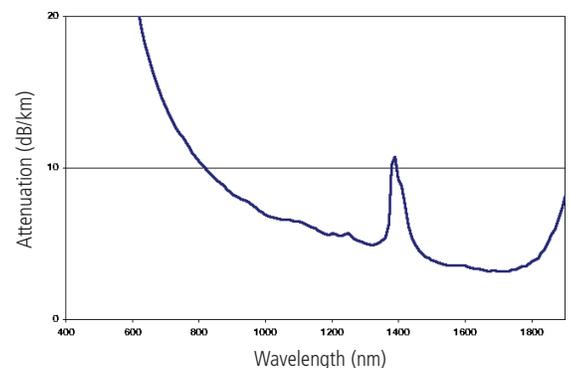
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**Typical Spectral Attenuation\***



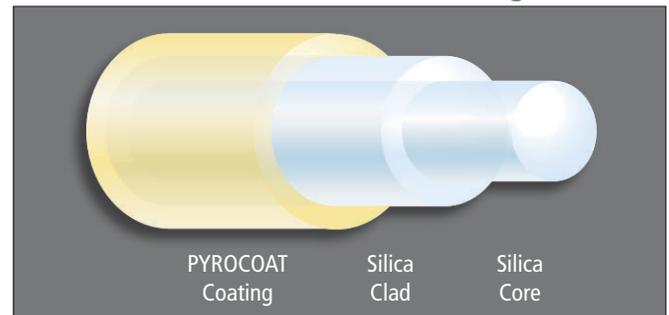
\*Graph represents data for fiber part number BF04830-02

# Fiber Specifications

Optical Properties	UltraSil 200	UltraSil 272 Blue	UltraSil 330	UltraSil 200 Pyro	UltraSil 320 Pyro
Numerical aperture	0.29	0.29	0.29	0.29	0.29
Attenuation @ 850 nm	≤17 dB/km				
Water content	Low OH				
Dimensions/Geometric Properties					
Core diameter	200 ± 6 μm	272 ± 10 μm	330 ± 10 μm	200 ± 6 μm	320 ± 10 μm
Cladding diameter	240 ± 5 μm	326 ± 10 μm	400 ± 8 μm	240 ± 5 μm	385 ± 8 μm
Coating diameter	260 ± 5 μm	356 ± 10 μm	430 +5/-10 μm	270 ± 5 μm	415 ± 5 μm
Buffer diameter	375 ± 30 μm	420 ± 30 μm	730 ± 30 μm	unbuffered	unbuffered
Clad/coating offset	≤7 μm	≤10 μm	≤8 μm	n/a	n/a
Coating concentricity	n/a	n/a	n/a	≥80%	≥80%
Buffer/Coating Descriptions					
Coating material	HCS	HCS	HCS	PYROCOAT	PYROCOAT
Buffer material	ETFE	ETFE (Blue)	ETFE	none	none
Operating temperature	-65 to +125°C	-65 to +125°C	-65 to +125°C	-65 to +300°C	-65 to +300°C
Mechanical and Testing Data					
Short-term bend radius	≥18 mm	≥24 mm	≥30 mm	≥18 mm	≥30 mm
Long-term bend radius	≥30 mm	≥40 mm	≥49 mm	≥30 mm	≥49 mm
Proof test level	≥100 kpsi (0.689 GPa)				
Product Description Code	HCE-HB200T	Uncoded	HCE-HB330T	TCE-HB200H	TCE-HB320H
Order by Part Number	BF04746-01	BF05246	BF04746-02	BF04830-01	BF04830-02

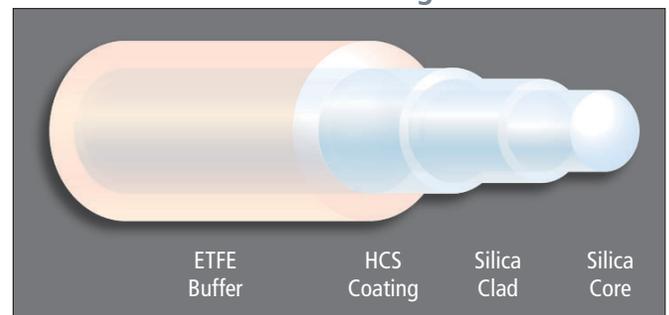
Multimode Step-Index

## UltraSil Fiber with PYROCOAT Coating



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## UltraSil Fiber with HCS Coating



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# SPECIALTY MULTIMODE STEP-INDEX FIBER

## Specification Sheet

# All Silica Low OH

## 0.22 NA FIBERS



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Multimode Step-Index

### Product Description

Low OH concentration, together with bio-compatibility features, makes these fibers ideal for laser surgery and other medical applications. The all-silica base construction also creates a high damage threshold and high-performance optical properties.

When these fiber features are necessary in a high-temperature environment, we also offer All Silica Low OH with PYROCOAT, our proprietary high-temperature coating.

### Typical Applications

- Laser surgery
- Near-IR spectroscopy
- Laser welding and cutting
- Sensing
- High-power laser delivery
- Radiation analysis
- Engine controls
- Laser ordnance initiation
- Aircraft/industrial cabling

### Features and Benefits

- Efficient, low-loss power transmission from visible through near-infrared wavelengths
- High tensile strength
- Fatigue resistant
- Allows tight bend radius
- Handles peak power delivery approaching 1 GW/cm<sup>2</sup>
- USP Class VI, nontoxic, and biocompatible
- Sterilizable (steam or ETO)

### Related Products & Capabilities

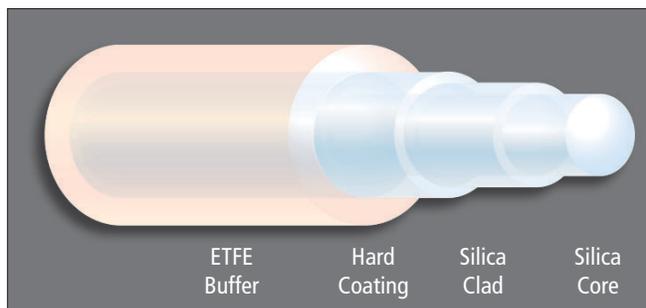
- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Metalization**
- Additional Coatings**
- Blue and other Buffer Colors**
- Other Upgrades**

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- Avon, Connecticut  
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- or by email inquiry to:  
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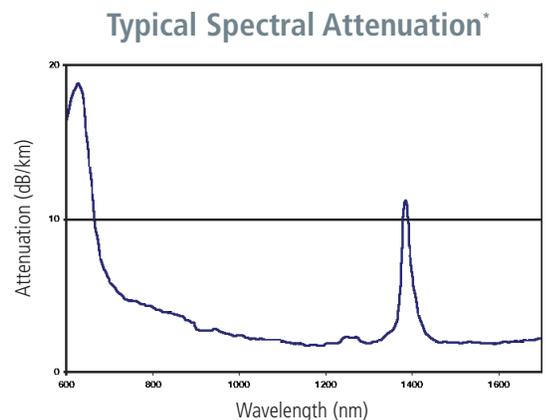
# Fiber Specifications

Optical Properties	All Silica Low OH 200	All Silica Low OH 365	All Silica Low OH 550	All Silica Low OH 940
Numerical aperture	0.22	0.22	0.22	0.22
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤10 dB/km
Water content	Low OH	Low OH	Low OH	Low OH
Dimensions/Geometric Properties				
Core diameter	200 ± 5 μm	365 ± 10 μm	550 ± 12 μm	940 ± 15 μm
Cladding diameter	240 ± 5 μm	400 ± 10 μm	600 ± 10 μm	1000 ± 15 μm
Coating diameter	260 ± 5 μm	430 +5/-10 μm	630 ± 10 μm	1035 ± 15 μm
Buffer diameter	375 ± 30 μm	730 ± 30 μm	750 ± 30 μm	1400 ± 50 μm
Clad/coating offset	≤7 μm	≤9 μm	≤9 μm	≤11 μm
Standard buffer color	natural	natural	natural	natural
Buffer/Coating Descriptions				
Coating material	Hard coating	Hard coating	Hard coating	HCS
Buffer material	ETFE	ETFE	ETFE	ETFE
Operating temperature	-65 to +135°C	-65 to +135°C	-65 to +135°C	-65 to +125°C
Mechanical and Testing Data				
Short-term bend radius	≥9 mm	≥29 mm	≥58 mm	≥73mm
Long-term bend radius	≥14 mm	≥47 mm	≥94 mm	≥118 mm
Proof test level	≥200 kpsi (1.378 GPa)	≥100 kpsi (0.689 GPa)	≥75 kpsi (0.517 GPa)	≥100 kpsi* (0.689 GPa)
Product Description Code	HCL-M0200T	HCL-M0365T	HCL-M0550T	HCL-M0940T
Order by Part Number				
	CF01493-51	CF01493-52	CF01493-53	CF01493-54

\* By radius bend method

Multimode Step-Index

λ(nm)		dB/km
532	KTP	18
755	Alexandrite	4
850	LED	4
1064	Nd: YAG	4
1093	Cr: MgF	3
1300	Diode Laser	6
1550	Diode Laser	8
2010	Thulium	34
2100	Ho: YAG	70



\*Graph represents data for fiber part number CF01493-51

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**SPECIALTY MULTIMODE STEP-INDEX FIBER**  
**Specification Sheet**  
**All Silica Low OH PYROCOAT**  
**0.22 NA FIBERS**



Multimode Step-Index

**Product Description**

Low OH concentration, together with biocompatibility features, makes these fibers ideal for laser surgery and other medical applications. The all-silica base construction also creates a high damage threshold and high-performance optical properties.

High-temperature environments are accommodated with the application of our proprietary polyimide coating, taking the fiber from  $-65$  to  $\pm 300^{\circ}\text{C}$ , even up to  $400^{\circ}\text{C}$  for short-duration soldering operations.

**Typical Applications**

- Laser surgery
- Sensors
- Industrial sensors
- Visible to near-IR spectroscopy
- Fluorescence sensing
- Radiation analysis
- Illumination
- Laser welding and cutting

**Features and Benefits**

- Efficient, low-loss power transmission from near-IR wavelengths
- Handles peak power delivery approaching  $1 \text{ GW}/\text{cm}^2$
- USP Class VI, nontoxic, and biocompatible
- Sterilizable
- Withstands temperature ranges from  $-65$  to  $+300^{\circ}\text{C}$  and up to  $400^{\circ}\text{C}$  for short durations

**Related Products & Capabilities**

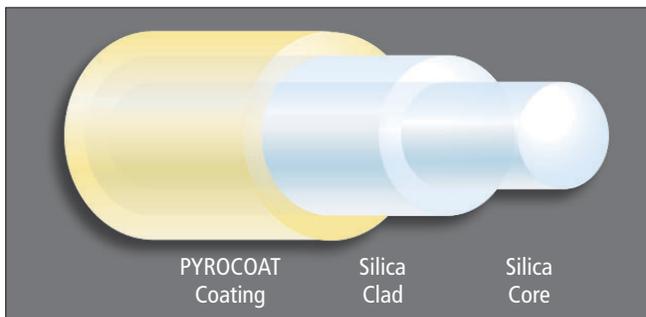
- Custom Cabling — OFS does not recommend the application of fluorinated polymers directly over the PYROCOAT coatings

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Metalization**
- Additional Coatings**
- Other Upgrades**

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- Avon, Connecticut  
 1-860-678-0371  
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- or by email inquiry to:  
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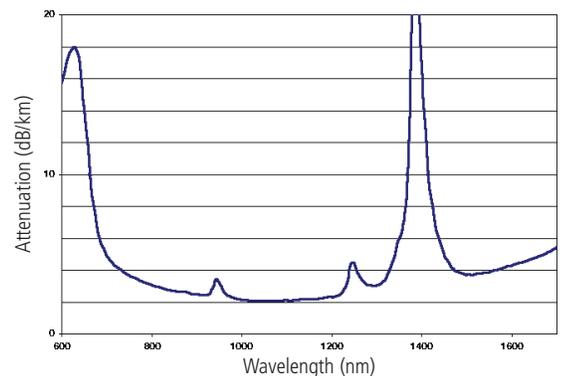
[www.SpecialtyPhotonics.com](http://www.SpecialtyPhotonics.com)

# Fiber Specifications

Optical Properties	All Silica Low OH 200 Pyro	All Silica Low OH 320 Pyro	All Silica Low OH 600 Pyro
Numerical aperture	0.22	0.22	0.22
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km
Water content	Low OH	Low OH	Low OH
Dimensions/Geometric Properties			
Core diameter	200 ± 5 μm	320 ± 10 μm	600 ± 12 μm
Cladding diameter	220 ± 5 μm	385 ± 10 μm	660 ± 12 μm
PYROCOAT diameter	250 ± 5 μm	415 ± 5 μm	690 ± 5 μm
Coating concentricity	≥80%	≥80%	≥80%
Buffer/Coating Descriptions			
Coating material	PYROCOAT	PYROCOAT	PYROCOAT
Operating temperature	-65 to +300°C	-65 to +300°C	-65 to +300°C
Mechanical and Testing Data			
Short-term bend radius	≥17 mm	≥29 mm	≥99 mm
Long-term bend radius	≥28 mm	≥49 mm	≥167 mm
Proof test level	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)
Product Description Code	TCL-MA200H	TCL-MB320H	TCL-MA600H
Order by Part Number	CF04406-13	CF04406-15	CF04406-17

Multimode Step-Index

Typical Spectral Attenuation\*



\*Graph represents data for fiber part number CF04406-13

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**Product Description**

Exceptional strength and fatigue-resistance properties for these fibers come from their hard clad silica (HCS) coating. High OH concentration results in efficient power transmission in the high UV range through visible light. The all-silica base construction also creates a high damage threshold and high-performance optical properties.

When these fiber features are necessary in a high-temperature environment, we also offer all silica high OH fiber with PYROCOAT, our proprietary high-temperature coating.

**Typical Applications**

- Laser surgery
- Sensors
- Industrial sensors
- UV spectroscopy
- UV fluorescence
- Radiation analysis
- Illumination
- Laser welding and cutting

**Features and Benefits**

- Efficient, low-loss power transmission from UV through visible wavelengths
- High tensile strength
- Fatigue resistant
- Handles peak power delivery approaching 1 GW/cm<sup>2</sup>
- USP Class VI, nontoxic, and biocompatible
- Sterilizable

**Related Products & Capabilities**

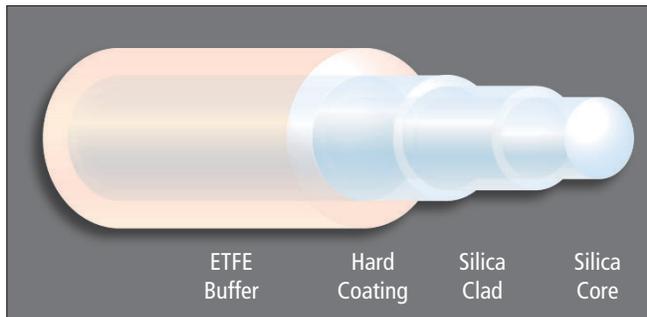
- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types.

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Metalization**
- Additional Coatings**
- Other Upgrades**

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# Fiber Specifications

Optical Properties	All Silica High OH 200	All Silica High OH 365	All Silica High OH 550	All Silica High OH 940
Numerical aperture	0.22	0.22	0.22	0.22
Attenuation @ 820 nm	≤10 dB/km	≤10 dB/km	≤10 dB/km	≤10 dB/km
Water content	High OH	High OH	High OH	High OH
Dimensions/Geometric Properties				
Core diameter	200 ± 5 μm	365 ± 10 μm	550 ± 12 μm	940 ± 15 μm
Clad diameter	240 ± 5 μm	400 ± 10 μm	600 ± 10 μm	1000 ± 15 μm
Hard coating diameter	260 ± 5 μm	430 +5/-10 μm	630 ± 10 μm	1035 ± 15 μm
Buffer diameter	375 ± 30 μm	730 ± 30 μm	750 ± 30 μm	1400 ± 50 μm
Clad/coating offset	≤7 μm	≤9 μm	≤9 μm	≤11 μm
Buffer/Coating Descriptions				
Coating material	Hard coating	Hard coating	Hard coating	Hard coating
Buffer material	ETFE	ETFE	ETFE	ETFE
Operating temperature	-65 to +135°C	-65 to +135°C	-65 to +135°C	-65 to +135°C
Mechanical and Testing Data				
Short-term bend radius	≥9 mm	≥29 mm	≥58 mm	≥73 mm
Long-term bend radius	≥14 mm	≥47 mm	≥94 mm	≥118 mm
Proof test level	≥200 kpsi (1.378 GPa)	≥100 kpsi (0.689 GPa)	≥75 kpsi (0.517 GPa)	≥100 kpsi* (0.689 GPa)
<b>Product Description Code</b>	<b>HCG-M0200T</b>	<b>HCG-M0365T</b>	<b>HCG-M0550T</b>	<b>HCG-M0940T</b>
<b>Order by Part Number</b>	<b>CF01493-41</b>	<b>CF01493-42</b>	<b>CF01493-43</b>	<b>CF01493-44</b>

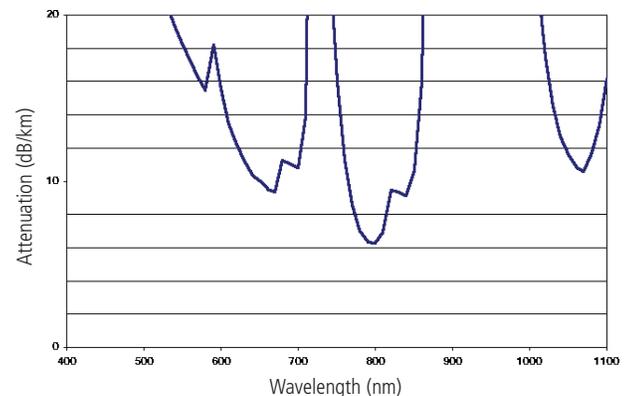
\* By radius bend method

Multimode Step-Index

## Attenuation at Key Wavelengths

Wavelength	Typical Use	Attenuation
248 nm	Krypton Fluoride	1.1 dB/m
308 nm	Excimer	0.27 dB/m
488 nm	Argon Blue	13 dB/km
515 nm	Argon Green	14 dB/km
532 nm	KTP	13 dB/km
647 nm	Krypton Red	8 dB/km
850 nm	LED	13 dB/km
1064 nm	Nd: YAG	9 dB/km

## Typical Spectral Attenuation\*



\*Graph represents data for fiber part number CF01493-42

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# SPECIALTY MULTIMODE STEP-INDEX FIBER

## Specification Sheet

# All Silica High OH PYROCOAT

## 0.22 NA FIBER



Leading Optical Innovations

Multimode Step-Index

### Product Description

High-temperature environments are accommodated with the application of our proprietary polyimide PYROCOAT coating, taking the fiber from -65 to +300°C, even up to 400°C for short-duration soldering operations.

High OH concentration results in efficient power transmission in the UV range through visible light. The all-silica base construction also creates a high damage threshold and high-performance optical properties.

### Typical Applications

- Laser surgery
- Sensors
- Industrial sensors
- UV spectroscopy
- UV fluorescence
- Radiation analysis
- Illumination
- Laser welding and cutting

### Related Products & Capabilities

- Custom Cabling — OFS does not recommend the application of fluorinated polymers directly over the PYROCOAT coatings

### Features and Benefits

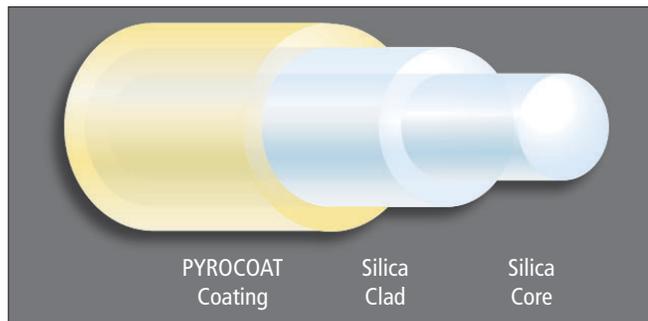
- Efficient, low-loss power transmission from UV through visible wavelengths
- High strength
- Fatigue resistant
- Handles peak power delivery approaching 1 GW/cm<sup>2</sup>
- USP Class VI, nontoxic, and biocompatible
- Sterilizable
- Withstands temperature ranges from -65 to +300°C and up to 400° for short durations

Ask us about options available for these fibers:

- Cabling**
- Connectorization**
- Metalization**
- Additional Coatings**
- Other Upgrades**

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1-888-438-9936 toll free  
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- or by email inquiry to:  
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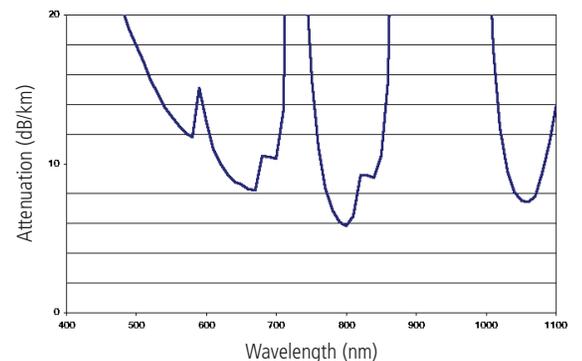
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# Fiber Specifications

Optical Properties	All Silica High OH 100 Pyro	All Silica High OH 200/220 Pyro	All Silica High OH 200/240 Pyro	All Silica High OH 400 Pyro
Numerical aperture	0.22	0.22	0.22	0.22
Attenuation @ 820 nm	≤14 dB/km	≤10 dB/km	≤10 dB/km	≤10 dB/km
Water content	High OH	High OH	High OH	High OH
Dimensions/Geometric Properties				
Core diameter	100 ± 3 μm	200 ± 5 μm	200 ± 5 μm	400 ± 10 μm
Clad diameter	110 ± 3 μm	220 ± 5 μm	240 ± 5 μm	440 ± 10 μm
PYROCOAT diameter	140 ± 5 μm	250 ± 5 μm	270 ± 5 μm	470 ± 5 μm
Coating concentricity	≥80%	≥80%	≥80%	≥80%
Buffer/Coating Descriptions				
Coating material	PYROCOAT	PYROCOAT	PYROCOAT	PYROCOAT
Operating temperature	-65 to +300°C	-65 to +300°C	-65 to +300°C	-65 to +300°C
Mechanical and Testing Data				
Short-term bend radius	≥9 mm	≥17 mm	≥18 mm	≥66 mm
Long-term bend radius	≥14 mm	≥28 mm	≥31 mm	≥112 mm
Proof test level	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)
Product Description Code	<b>TCG-MA100H</b>	<b>TCG-MA200H</b>	<b>TCG-MB200H</b>	<b>TCG-MA400H</b>
Order by Part Number				
	<b>CF04406-01</b>	<b>CF04406-03</b>	<b>CF04406-04</b>	<b>CF04406-06</b>

Multimode Step-Index

Typical Spectral Attenuation\*



\*Graph represents data for fiber part number CF04406 06

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# SPECIALTY MULTIMODE STEP-INDEX FIBER

## Specification Sheet

### Launch Fibers



Multimode Step-Index

#### Product Description

Launch fibers are a family of multimode step-index fibers in an all-silica construction. They are designed with low numerical apertures and are available in a variety of core diameters.

These fibers have a standard 125  $\mu\text{m}$  cladding diameter and are coated with a 250  $\mu\text{m}$  dual-acrylate buffer, which allows for easy mechanical stripping. For adverse environments, where tight bend radii or high temperatures are encountered, OFS offers carbon or PYROCOAT coatings. These coatings may also be layered on a single fiber where conditions warrant the properties of both.

All launch fibers can be metalized for hermetic sealing into opto-electronic devices.

#### Typical Applications

- Free space optics
- Single-mode and multimode communications, especially in diode pumping systems
- Raman pumping
- Industrial
- Printing
- Military

#### Features and Benefits

- Efficient low-loss power transmission from visible through near-infrared wavelengths
- Allows tight bend radius
- Handles peak power delivery approaching  $1\text{GW}/\text{cm}^2$
- Compatible with the input fibers in PowerMAX Combiners

#### Related Products & Capabilities

- See our High Power Products
- PowerMAX Combiners, Gain Modules, and Cladding Pumped Fiber Lasers
- Multimode fibers are available in High or Low OH content formulas, graded or step-index, various NAs, and with a variety of cladding/buffer sizes and types
- These fibers are also available by special order with NAs from 0.12 to 0.29
- Metalized Multimode Launch Fiber Pigtails

Ask us about options available for these fibers:

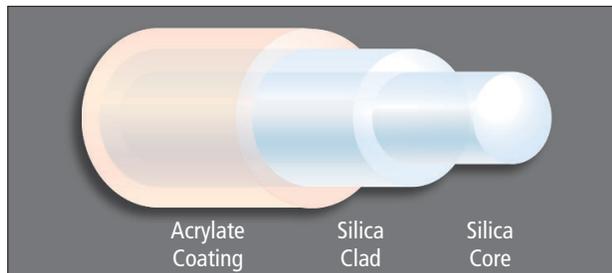
- Custom End Face Preparations
- Metalization and Hermetically Soldered Ferrules
- Antireflective Coatings
- Connectorization
- Custom Upbuffering

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- or by email inquiry to:  
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Metalized pigtail with both Alignment and Hermetic Strain Relief Ferrules



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# Fiber Specifications

## Optical Properties

	40/125 Launch	50/125 Launch	60/125 Launch	105/125 Launch	105/125 Low NA Launch
Numerical aperture	0.22 ± 0.02	0.22 ± 0.02	0.22 ± 0.02	0.22 ± 0.02	0.15 ± 0.015
Attenuation @ 850 nm	≤10 dB/km	≤5.0 dB/km	≤6.0 dB/km	≤12 dB/km	≤20 dB/km
Water content	Low OH	Low OH	Low OH	Low OH	Low OH

## Dimensions/Geometric Properties

	40/125 Launch	50/125 Launch	60/125 Launch	105/125 Launch	105/125 Low NA Launch
Core diameter	40 ± 3.0 μm	50 ± 3.0 μm	60 ± 3.0 μm	105 ± 3.0 μm	105 ± 3.0 μm
Cladding diameter	125 ± 2.0 μm	125 ± 2.0 μm			
Coating diameter	250 ± 15 μm	250 ± 15 μm			
Core/clad offset	≤2.0 μm	≤3.0 μm	≤2.0 μm	≤3.0 μm	≤3.0 μm
Coating concentricity	≥80%	≥80%	≥80%	≥80%	≥80%
Clad non-circularity	≤2.0%	≤2.0%	≤2.0%	≤2.0%	≤2.0%

## Buffer/Coating Descriptions

	40/125 Launch	50/125 Launch	60/125 Launch	105/125 Launch	105/125 Low NA Launch
Coating material	Dual UV Acrylate				
Operating temperature	-40 to +85°C				

## Mechanical and Testing Data

	40/125 Launch	50/125 Launch	60/125 Launch	105/125 Launch	105/125 Low NA Launch
Short-term bend radius	≥10 mm	≥10 mm	≥10 mm	≥5 mm	≥5 mm
Long-term bend radius	≥17 mm	≥17 mm	≥17 mm	≥9 mm	≥9 mm
Proof test level	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)	≥100 kpsi (0.689 GPa)	≥200 kpsi (1.378 GPa)	≥200 kpsi (1.378 GPa)

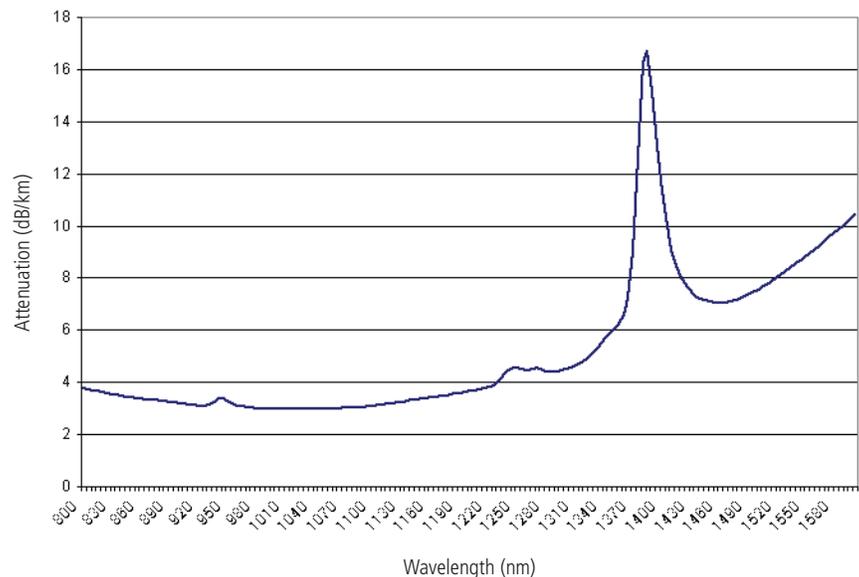
## Order by Part Number

40/125 Launch	50/125 Launch	60/125 Launch	105/125 Launch	105/125 Low NA Launch
BF06269	BF06864	F8950	BF05859	F10017

Multimode Step-Index

## Spectral Attenuation

Typical for all-silica low OH fibers



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