



# **Fiber Optic Product Catalog**

Shanghai Goptica Co., Ltd. focuses on the design, research and development, and manufacturing of special optical fiber products. Our optical fibers are used in the fields of spectral detection, energy transmission, medical, and high-temperature resistant optical transmission. We have accumulated rich experience in customizing optical fiber devices and are an excellent partner for industrial batch users and complex customized devices.

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Product

Application Classification	Material Classification	Code	Core diameter/characteristics/applications	Wavelength Range	N. A.
	Uv-VIS-NIR Fiber	۷	50/100/105/200/300/400/600/800/1000μm	200-1100nm	0.22±0.02
Spectral Fiber	UV resistant Fiber	DV	100/200/400/600μm	190-1100nm	0.22±0.02
	PIR-Fiber	T	50/105/135/200/300/400/500/600/800/1000μm	360-2500nm	0.22±0.02
Energy transmission Fiber	Square core energy homogenization Fiber	/	400um, Suitable for high-power laser transmission, flat top homogenized laser spot	380-2200nm	0.22±0.02
High	Polyimide Fiber	/	-190°C~385°C, High temperature resistance, sensing, smoke, aviation	UV/IR	0.22±0.02
temperature resistant optical Fiber	Metal coated Fiber	/	Al400 °C /Cu600 °C /Au700 °C , extreme temperature, deep ultraviolet, oil and gas, strong corrosion, high vacuum special environment	DUV	0.22±0.02
Medical Fiber	Holmium Laser Fiber	/	Laser Medicine, Photodynamic Therapy	360-2500nm	0.22±0.02
Ultra-High Numerical Aperture Fibers	Hard plastic coated Fiber	Н	200/300/400/600um	360-2500nm	0. 37±0. 02
Infrared sulfur fiber	Sulfur fiber	MIRF INFG ZFG LIRF MLF	Single-mode, Multimode, Mid-wave Infrared, Long-wave Infrared	0.3-11μm	Customized
	Customized fiber optic components	/	Multi core/single core;Materials:Quartz/Glass/Plastic;End face: circular/curved/linear/hexagonal, etc	Customizable	Customizable
	Fused silica fiber bundle	/	Circular, multi-core	UV/IR	0. 22
Customized Fiber	Fiber optic probe	/	Reflection, transmission, industrial probes; Materials: stainless steel, Hastelloy, hard plastic, etc	UV/IR	Customizable
	Online liquid circulation pool	/	Real time liquid monitoring in industries such as steel metallurgy, petrochemicals, and pharmaceutical production; Materials: stainless steel, Hastelloy, hard plastic, etc; Lens material: sapphire, fused silica	UV/IR	Customizable





The model is subject to the manufacturer's quotation

Material Code	Connector		
V: Ordinary UV , 200-1100nm	<b>S:</b> Flat head SMA connector, stainless		
DV: DUV, 190-1100nm	steel insert		
I: IR, 360-2500nm	TA(): TA (customer length) connector		
H: Hard plastic coated	TB(): TB (customer length) connector		
optical Fiber HP,360-2500nm	FC: FC/PC connector, Flat ceramic plug		
	FCA: FC/APC connector		
	SC: SC/PC connector		
	SCA: SC/APC connector		
	Note: When two connectors are the same,		
	the second one is omitted		

#### Protection tube Code

1803001: 6.0-4.0Double buckle tube 1801016: 3.0-2.00range PVC pipe 1802003: 6.0-4.0Single buckle pipe-304 1806001: 3.0-1.4-1.1Blue PVC armored pipe 1806003: 5.5-3.8-3.0Blue PVC armored pipe 1806009: 5.5-3.8-3.0 Blue silicone armored tube

### **Example**: V400–1\*3–S–1806003–L1

400um core diameter straight through 3-core ultraviolet fiber, working band 200-1100nm, end SMA905, length 1 meter, 5.5mm blue PVC armor.



## UV Fiber

### Product Description

UV fiber is an optimized fiber with low loss in the wavelength range of 200nm to 670nm. It has excellent performance in fiber loss and resistance to laser damage, ensuring excellent UV light transmission performance.



Fiber specification (acrylic)	Fiber core(μm)	Cladding(µm)	Coating(µm)		
UV50125245	50	125	245		
UV100110130	100	110	130		
UV105125245	105	125	245		
UV200220320	200	220	320		
UV300330520	300	330	520		
UV400440700	400	440	700		
UV600660900	600	660	900		
UV8008801100	800	880	1100		
UV100010501600	1000	1050	1600		
UV100011001600	1000	1100	1600		
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### UV resistant

### Product Description

The quartz core of the anti ultraviolet irradiation fiber has been optimized to improve the attenuation characteristics and stability of pure quartz materials in long-term deep ultraviolet environments. It is suitable for spectral analysis, lithography systems, and excimer laser transmission systems under strong ultraviolet irradiation environments.



### Features

- Operating Temperature : 40°C to +85°C
- Wavelength Range : 190nm-1100nm
- N.A. : 0.22 ± 0.02
- Fiber core material : UV optimized pure quartz fiber core
- Cladded material : Fluorine doped quartz cladding
- Coating material : Acrylic Resin
- Step index profile
- High damage threshold
- Filter tension 100kpsi
- Bending radius : Short term>100d; Long term>200d (d is the

cladding diameter of the optical fiber)

- Meets biocompatibility requirements
- Core package ratio/coating/buffer layer can be customized

### Application

- Deep ultraviolet spectroscopy analysis
- Optical sensing
- Spectral analysis
- Photodynamics therapy
- UV curing
- Aerospace

### Product Specification

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(µm)
DUV100110130	100	110	130
DUV200220245	200	220	245
DUV400440700	400	440	700
DUV600660900	600	660	900



## IR-Fiber

### Product Description

Infrared fiber has excellent transmission characteristics in the near-infrared band, which can achieve flexible transmission of single fiber lasers. It can be applied in energy transmission and sensing fields such as semiconductor laser systems and industrial laser cutting systems.



- Core package ratio/coating/buffer layer can be customized

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(µm)			
IR50125245	<b>IR50125245</b> 50		245			
IR105125245	105	125	245			
IR135155320	135	155	320			
IR200220320	200	220	320			
IR300330520	300	330	520			
IR400440700	400	440	700			
IR500550900	500	550	900			
IR600660900	IR600660900 600		900			
IR8008801100	800	880	1100			
IR100011001600 1000		1100	1600			
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### Square core energy homogenization

### Product Description

The energy homogenized fiber has a square pure quartz core made of low hydroxyl quartz, which can meet the requirements of high-power laser transmission and produce excellent flat top homogenized laser spots, meeting the needs of high-quality laser cutting.



- Meets biocompatibility requirements
- Core package ratio/coating/buffer layer can be customized

### Product Specification

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(μm)	
IR400x400670960R	50	670	960	







Core package ratio/coating/buffer layer can be customized

### Product Description

Polyimide high-temperature resistant optical fiber is designed to improve the temperature resistance of optical fibers, mainly used in high-temperature environments such as optical fiber sensing.

### Application

- Fiber Bragg Grating Temperature
   Measurement System
- High temperature and high pressure environment
- Smoke measurement system
- Military chemical industry
- High and low temperature
- measurement
- Aerospace

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(µm)		
UV100110PI	100	110	120		
UV200220PI	200	220	235		
UV300330PI	300	330	345		
UV400440PI	400	440	460		
UV600660PI	600	660	680		
IR62.5/125PI	62.5	125	145		
IR105125PI	105	125	145		
IR100140PI	100	140	160		
IR200220PI	200	220	240		
IR200280PI	200	280	300		
IR300330PI	300	330	365		
IR400440PI	400	440	470		
IR600660PI	600	660	690		
IR10001100PI	1000	1100	1150		
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Holmium laser



### Features

- Operating Temperature : -65°C to +150°C
- Wavelength Range: 360nm-2500nm
- N.A.: 0.22 ± 0.02
- Fiber core material : Low hydroxyl pure quartz fiber core
- Cladded material : Fluorine doped quartz cladding
- Coating material : Double layer UV cured acrylic resin
- Buffer layer: Teflon buffer layer
- Step index profile
- High damage threshold
- Filter tension 100kpsi
- Meets biocompatibility requirements
- Core package ratio/coating/buffer layer can be customized

### Product Description

Holmium laser fiber is mainly used in laser medical fields such as laser lithotripsy. It can transmit high-power 2100nm laser, meet biocompatibility requirements, and can be used in conjunction with endoscopy for minimally invasive surgical treatment. It has the advantages of minimal damage, fast recovery, and good hemostatic effect.

### Application

- Laser Medical
- Photodynamics therapy

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(µm)	Buffer layer(μm)		
IR100110130RE250	100	110	130	250		
IR150165200RE350	150	165	200	350		
IR200220245RE380	200	220	245	380		
IR272299330RE420	272	299	330	420		
IR365400430RE550	365	400	430	550		
IR550600630RE750	550	600	630	750		
IR600660690RE890	600	660	690	890		
IR800880960RE1100	800	880	960	1100		
IR91010001100RE1400	910	1000	1100	1400		



## Hard plastic coated optical

### Product Description

The PTFE coated fiber with hard plastic cladding can provide high tensile strength and can be used in communication systems and industrial automation fields with a working wavelength of 850nm. It can also be made into fiber bundles for various near-infrared spectroscopy detection systems.



Product Specification

Fiber specification	Fiber core(µm)	Cladding(µm)	Coating(µm)
HP200230E500	200	230	500
HP300330E650	300	330	650
HP400430E730	400	430	730
HP600630E1040	600	630	1040



Metal Coated



### **Product Description**

Metal coated optical fibers have extremely high tensile strength and flexibility. There is a molecular bond between the metal coating and quartz cladding, which provides excellent airtightness. They can be used in extremely harsh temperature environments and are characterized by weldability and corrosion resistance. They are an inevitable choice for sensing optical fibers in high-temperature and high-pressure environments such as oil and gas downhole applications, aerospace jet engines, and gas turbine detection.

### Features

- Operating Temperature : +400°C Al/+600°C Cu/+700°C Ag
- Excellent mechanical strength and flexibility
- N.A.: 0.22 ± 0.02
- Step refractive index distribution
- Weldable
- Good heat dissipation
- Suitable for various sterilization environments
- Filter tension 100kpsi

Application

- Extreme high and low temperature environment
- Deep ultraviolet applications
- Deep ultraviolet applications
- Rocket and jet engine testing
- Oil and gas downhole environment
- Strong corrosive environment
- High vacuum environment



# Infrared Sulfur Fiber Optical Products Classification

Classification	Material Code	Core Diameter/Cladding Diameter/Coating Diameter	Wavelength Range	Numerical Aperture NA	Loss
	MIRF-12-112-0.19	12/112/120µm	1-6.5µm	0.19	0.4 dB/m@ 4.6µm
	MIRF-20-186-0.19	20/186/200µm	1-6.5µm	0.19	0.3 dB/m@ 4.6µm
Single-mode Mid-	MIRF-6-140-0.21	6/140/160µm	1-6.5µm	0.21	<0.8 dB/m@ 2.1µm
Infrared Sulfur- containing Fiber	MIRF-10-230-0.21	10/230/264µm	1-6.5µm	0.21@4.6µ m	<0.4 dB/m@ 2.1µm
	MIRF-5-115-0.38	5/115/132µm	1-6.5µm	0.38	<0.8 dB/m@ 2.1µm
	MIRF-8-184-0.38	8/184/212µm	1-6.5µm	0.38	<0.8 dB/m@ 2.1µm
	MIRF-95-118-0.15	95/118/130µm	1-6.5µm	0.15	<0.5 dB/m@ 2.1µm
	MIRF-100-125-0.15	100/125/140µm	1-6.5µm	0.15	<0.5 dB/m@ 2.1µm
	MIRF-66-125-0.21	66/125/138µm	1-6.5µm	0.21	0.25~0.3 dB/m@ 2.1μm&4.6μm
Multimode Mid-Wave	MIRF-100-125-0.21	100/125/140µm	1-6.5µm	0.21	0.3~0.4 dB/m@ 4.6µm
Infrared Sulfur Fiber	MIRF-100-190-0.21	100/190/210µm	1-6.5µm	0.21	0.25~0.3 dB/m@ 2.1μm&4.6μm
	MIRF-150-285-0.21	150/285/315µm	1-6.5µm	0.21	0.25~0.3 dB/m@ 2.1μm&4.6μm
	MIRF-200-250-0.21	200/250/280µm	1-6.5µm	0.21	0.3~0.4 dB/m@ 4.6µm
	MIRF-320-400-0.21	320/400/420µm	1.5-6.5µm	0.21	
	MIRF-100-125-140-0.38	100/125/140µm	1-6.5µm	0.38	0.5~0.6 dB/m@ 2.1µm
	MIRF-200-250-0.38	200/250/270µm	1-6.5µm	0.38	0.2 dB/m@ 4.6µm
	MIRF-200-250-270-0.38	200/250/270µm	1-6.5µm	0.38	0.5~0.6 dB/m@ 2.1µm
Multimode Mid-Wave	MIRF-300-375-410-0.38	300/375/410µm	1-6.5µm	0.38	0.2 dB/m@ 4.6µm
Infrared Sulfur Fiber	MIRF-300-375-0.38	300µm/375/420µm	1.5-6.5µm	0.38	
	MIRF-400-500-550-0.38	400/500/550μm	1-6.5µm	0.38	0.2 dB/m@ 4.6µm
	INFG-110-200-0.2	110/200/240µm	0.4-5.5µm	0.2	<0.1db/m@2.1µm
	ZFG-110-200-0.2	110/200/240µm	0.3-4.5µm	0.2	<0.1db/m@2.1µm



# Infrared Sulfur Fiber Optical Products Classification

Classification	Material Code	Core Diameter/Cladding Diameter/Coating Diameter	Wavelength Range	Numerical Aperture NA	Loss
Multimode Long-Wave Infrared Sulfur Fiber	LIRF-130-164-0.12	130/164µm/180µm	3-11µm	0.12	<0.8 dB/m@ 8.4µm
	LIRF-150-190-0.24	150/190/210μm	3-11µm	0.24	0.5-0.6 dB/m@8.34µm
	LIRF-200-250-0.15	200/250/270µm	3-11µm	0.15	<0.8 dB/m@ 9.3µm
	LIRF-200-250-0.24	200/250/280µm	3-11µm	0.24	0.5-0.6 dB/m@8.34µm
Single-mode Mid-wave Infrared Sulfur Fiber	MIRF-30-280-0.19	30/280/300µm	1-6.5µm	0.19	0.3 dB/m@ 4.6µm
Mid-long wave infrared bare fiber	MLF-190	190µm	1.5-9µm		0.7 dB/m@2.1µm



## **Infrared Sulfur Fiber**

# **Chalcogenide Infrared Fibers**



### **Product Features**

- Operating Temperature:–273 °C ~ +90 °C
- Wavelength range: 1.5-6.5 μm (sulfides), 2-9 μm (selenides), 3-11.5 μm (tellurides)
- Transmission loss: <0.2 dB/m @ low loss band</p>
- Numerical aperture: 0.12-0.56 customizable
- Fiber diameter uniformity: ≤0.5%
- Minimum bending radius: Fiber diameter × 100
- Fiber tensile strength: >100 MPa
- Customizable special structure optical fibers with

rectangular core, convex core, suspended core, hollow multicore, etc.

- Customizable large-mode-field (diameter ≥ 100 µm)
- photonic crystal fibers
- Customizable Fiber Coupler

# Product Description

Sulfur-containing optical fibers are infrared glass optical fibers made by drawing sulfur-containing glass near the softening temperature, with sulfur 族 elements (Sulfur S, Selenium Se, Tellurium Te) as the main matrix. Their transmission band range is relatively wide, with the transmission band of fibers with S as the matrix ranging from 1 to 6 µm, with Se as the matrix from 1.5 to 9 µm, and with Te as the matrix from 2 to 12 µm. Sulfur-containing optical fibers can be used in infrared signal and laser transmission, gas/biological/chemical molecular sensing, and the generation of supercontinuum spectrum in the fields of infrared optics and nonlinear optics. Advanced drawing technology and polymer double-coating technology provide sulfur-containing optical fibers with superior mechanical strength and flexibility. Due to lower optical loss and smaller absorption peaks in the 1.1 - 6.5 µm spectral range, sulfurcontaining optical fibers are widely used.



### **Product Applications**

- Mid-Infrared Spectroscopy
- QCL Laser Energy Transfer
- Flexible Infrared Imaging System
- Flexible Radiation Line Measurement
- Remote Non-contact Infrared Temperature Measurement,
   200 600k Range



### Fiber Loss Spectrum



## Infrared Sulfur Fiber





### Sulfur Fiber Bundle

 Face-to-face, line-to-face conversion infrared optical fiber image bundle

- Maximum single fiber quantity  $\ge 1$  million, minimum single fiber diameter  $\le 15 \ \mu$ m, maximum filling factor  $\ge 70\%$
- Resolution  $\ge$  20 lp/mm, broken fiber rate  $\le$  0.5%

• Customizable single fiber cross-sectional shape (circular, square, etc.)











### **Customized Fiber**



### Product Description

Goptica can design, customize, and produce various non-standard fiber optic products according to different customer needs. Designers can provide great flexibility by incorporating various options into the design. Not only can different joint specifications and protective tube types be customized, but different fibers can also be selected to ensure optimal optical performance. In addition to pure quartz core fibers, we can also provide products such as borate glass fibers and ESKA plastic fibers to meet customer budget requirements. We have a full range of precision machining and engraving equipment, which can fully meet the flexible needs of customized components such as fine processing, short-term sampling, and batch processing.

#### Product parameter

#### Customized wavelength range

- VIS Glass Fiber , wavelength range : 380-800nm
- UV quartz fiber , wavelength range : 200-1100nm

UV resistant quartz fiber , wavelength range :
 190-1100nm

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    NIR- quartz fiber , wavelength range : 360-
2500nm
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#### Customized protective tube type

- PVC: Soft material, used for ordinary spectral measurement
- Stainless steel: used in outdoor, corrosive environments
- Composite: multi-layer armor, metal mesh, and plastic multi-layer protection, used for environments requiring bending resistance

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# Fiber Optic Product

## Customized fiber components

### Customized fiber structure

Single core fiber: used for spectral transmission

Customized fiber bundle structure

- Y-shaped fiber: used for reflectance spectroscopy measurement
- Forked fiber: used for multi-channel spectral measurement
- Z-shaped fiber: used for reflectance spectroscopy measurement that requires a reference optical path
- Customization: Customers can customize complex fibers according to their specific needs

### Customized connector types

- SMA905 connector: used for spectral measurement instruments and equipment
- TA connector: diameter 6.35mm stainless steel
- TB connector: 10.0mm diameter stainless steel
- FC connector: used for communication equipment
- Customized connectors according to customer requirements



**Specific product specifications** Please consult us:

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### Fused silica fiber



### Product Description

The quartz fiber bundle produced by hot melt technology is a type of fiber optic device that uses high temperature heating to tightly bond multiple fibers together. It involves peeling off the coating layer of a bundle of fibers and arranging them together in a certain way, heating them at high temperature to melt them, and forming a whole fiber bundle. Compared to fiber bundles produced by traditional bonding processes, the melting process can increase the duty cycle by 10% -15%.

In high-power laser transmission, fiber bundles need to withstand high optical energy density, so there are high requirements for their materials and processes. Quartz fiber bundles made by hot melt technology have high melting points and chemical stability, and can withstand high temperature and high energy density transmission under high-power excitation. Meanwhile, the refractive index of quartz fiber bundles is relatively low, which can reduce the loss and scattering of optical signals, ensuring the quality and stability of signal transmission.

#### Features

- Fiber optic category: UV fiber. infrared fiber
- Number of optical fibers: customized
- Output type: Circular
- Numerical aperture: 0.22
- Fiber optic structure: SMA905, customized
- Structure type: Customized

Specific product specifications Please consult us:

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## Fiber Optical



### Product Description

According to different customer needs, Goptica designs, customizes, and produces various types of fiber optic probes, including reflective probes, transmissive probes, industrial probes, etc. Materials include stainless steel, Hastelloy, hard plastic, etc.



### Features

- Fiber optic category: UV fiber, infrared fiber
- Number of optical fibers: single core, 7-core, customized
- Output types: transmissive, reflective, diffuse reflective
- Optical path length: 2-40mm
- Fiber optic materials: stainless steel, Hastelloy metal, PVC, PEEK, customized
- Fiber optic connector: SMA905
- Temperature tolerance: ≤ 120°C
- Enduring pressure: ≤ 0.5MPa
- Lens material: sapphire, fused silica
- Coating materials: gold, silver, aluminum, customized
- Probe diameter: customized

Specific product specifications Please consult us:

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Online liquid circulation pool



### Product Description

Fiber optic flow pools can be widely used in various industries, such as steel metallurgy, petrochemicals, pharmaceutical production, etc., to monitor real-time changes in liquids and ensure stability and safety in the production process.

### Features

- Fiber optic category: UV fiber, infrared fiber
- Number of optical fibers: dual core, customized
- Optical path length: 2-20mm
- Fiber optic materials: stainless steel, Hastelloy, customized
- Fiber optic connector: SMA905
- Temperature tolerance: ≤ 120°C
- Enduring pressure: ≤ 1MPa
- Lens material: sapphire, fused silica



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