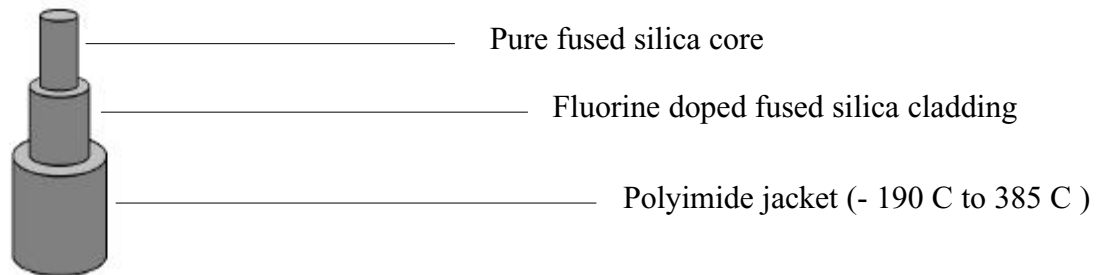


QUARTZ / QUARTZ FIBER Polyimide Coated

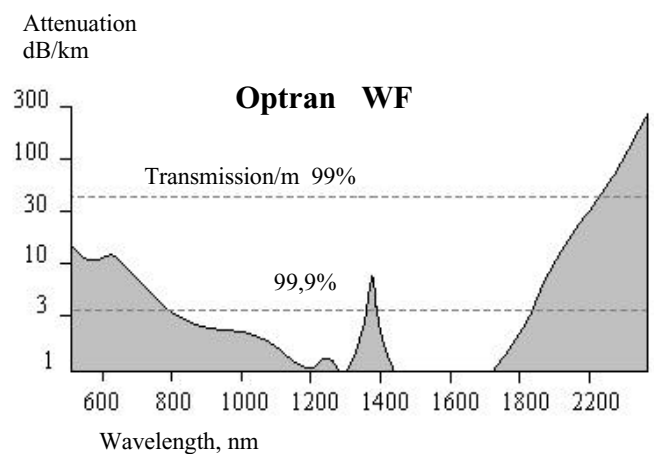
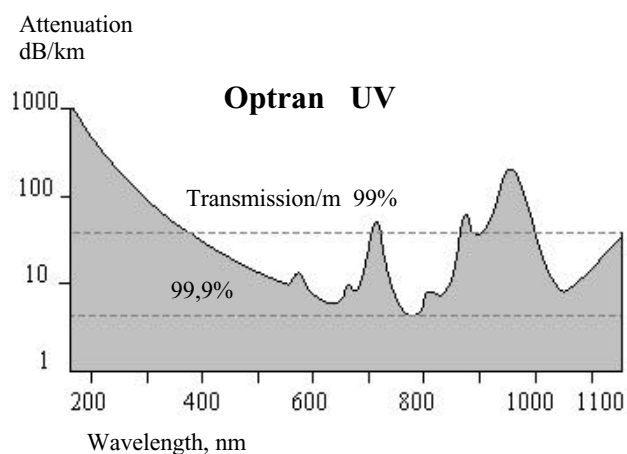


APPLICATIONS:

- High vacuum environment
- High efficiency bundles and arrays
- High temperature bundles
- High temperature sensors
- Spectroscopy
- Laser welding/soldering
- Medical laser delivery systems

FEATURES:

- Broad temperature range (-190 C to + 385 C)
- Thin jacket diameter
- Laser damage resistant
- High core to clad ratio
- Biocompatible materials
- Radiation resistant
- High transmission in NIR
- Sterilizable by EtO, gamma and steam



PROPERTIES:

- Step index profile
- Pure silica core
- Numerical aperture: 0.22 ± 0.02
- Bend radius: momentary 100 x clad radius
 long term 600 x clad radius
- Polyimides high refractive index (1.78) strips cladding modes
- Useful spectral transmission range: from 180 to 2400 nm
- Standard proofstest: 70 kpsi

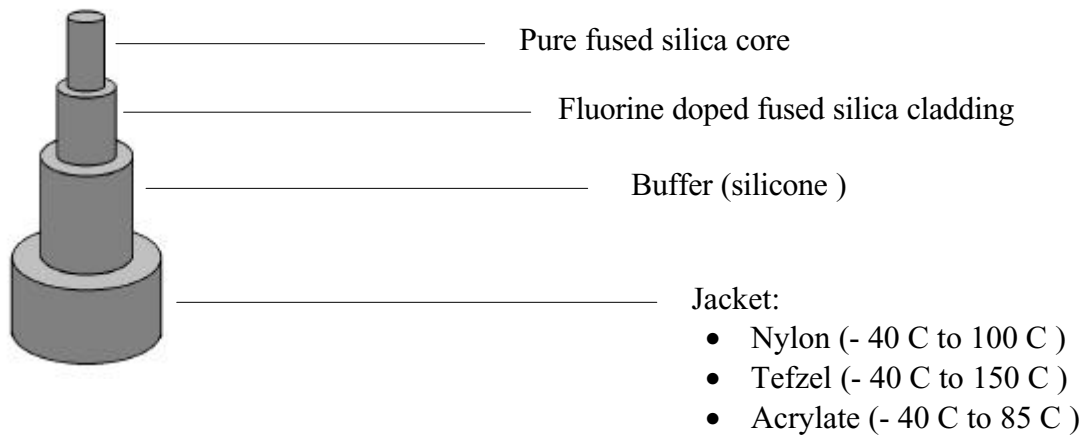
Product Code	Ø Core m - 2 %	Ø Clad m - 2 %	Ø Jacked m - 2 %
UV 50/125 P	50	125	150
UV 100/110 P	100	110	135
UV 100/120 P	100	120	145
UV 100/140 P	100	140	165
UV 105/125 P	105	125	150
UV 200/220 P	200	220	245
UV 200/240 P	200	240	265
UV 320/385 P	320	385	410
UV 400/424 P	400	424	450
UV 400/480 P	400	480	505
UV 600/636 P	600	636	660

Product Code	Ø Core m - 2 %	Ø Clad m - 2 %	Ø Jacked m - 2 %
WF 50/125 P	50	125	150
WF 100/110 P	100	110	135
WF 100/120 P	100	120	145
WF 100/140 P	100	140	165
WF 105/125 P	105	125	150
WF 200/220 P	200	220	245
WF 200/240 P	200	240	265
WF 320/385 P	320	385	410
WF 400/480 P	400	480	505
WF 600/660 P	600	660	685

NOTES: Additional protective jackets can be extruded over the polyimide coated fibers.
 Other core/clad ratios and numerical apertures available upon requests.

QUARTZ / QUARTZ FIBER

Optran UV, Optran WF

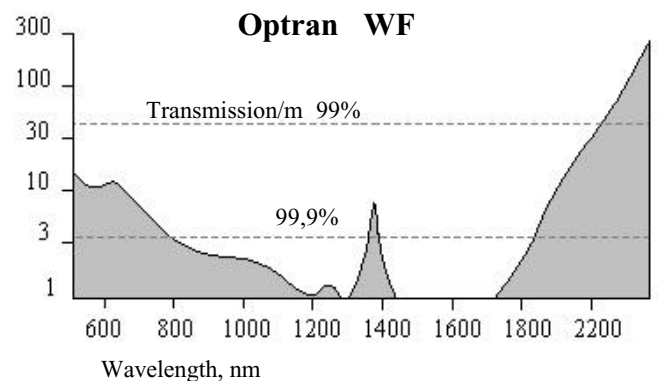
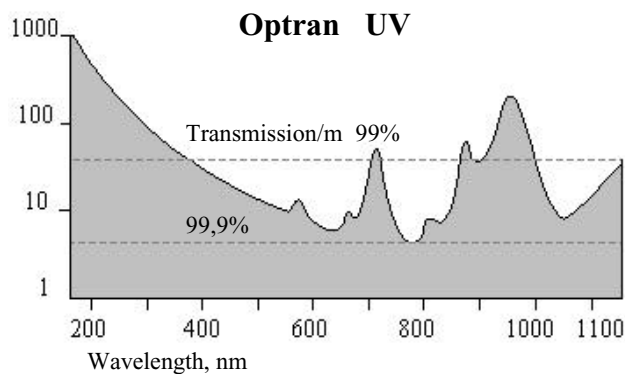


APPLICATIONS:

- Medical
 - Angioplasty
 - Urology
 - Ophthalmology
 - Tissue cutting
 - Gastroenterology
 - Photodynamic therapy
- Industrial / Scientific
 - Spectroscopy
 - Laser welding/soldering
 - Sensors

FEATURES:

- Broad VIS / NIR spectral range
- Laser damage resistant
- High core to clad ratio
- Biocompatible materials
- Radiation resistant
- Broad temperature range
- Sterilizable by EtO and gamma
- Special coatings available for high temperatures, high vacuum and harsh chemicals



PROPERTIES:

- Step index profile
- Pure silica core
- Numerical aperture: 0.22 ± 0.02
- Bend radius: momentary 100 x clad radius
 long term 600 x clad radius
- Standard proofstest: 70 kpsi

Nylon jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Buffer m - 2 %	∅ Jacketed m - 2 %
100/140 N	100	140	240	310
200/240 N	200	240	340	410
300/360 N	300	360	460	560
400/424 N	400	424	520	620
400/480 N	400	480	580	680
600/636 N	600	636	740	840
600/720 N	600	720	820	920
800/960 N	800	960	1060	1160
1000/1060 N	1000	1060	1160	1260
1000/1200 N	1000	1200	1300	1400
1500/1800 N	1500	1800	1950	2100

Tefzel jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Buffer m - 2 %	∅ Jacketed m - 2 %
200/240 T	200	240	340	510
300/360 T	300	360	510	770
400/424 T	400	424	570	800
400/480 T	400	480	630	950
600/636 T	600	636	760	950
600/660 T	600	660	780	1100
600/720 T	600	720	870	1300
800/960 T	800	960	1110	1650
1000/1060 T	1000	1160	1210	1700
1000/1200 T	1000	1200	1350	2020
1500/1800 T	1500	1800	1950	2900

Acrylate jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Buffer m - 2 %	∅ Jacketed m - 2 %
50/125 A	50	125	-	250
105/125 A	105	125	-	250
100/140 A	100	140	-	250
200/240 A	200	240	-	320

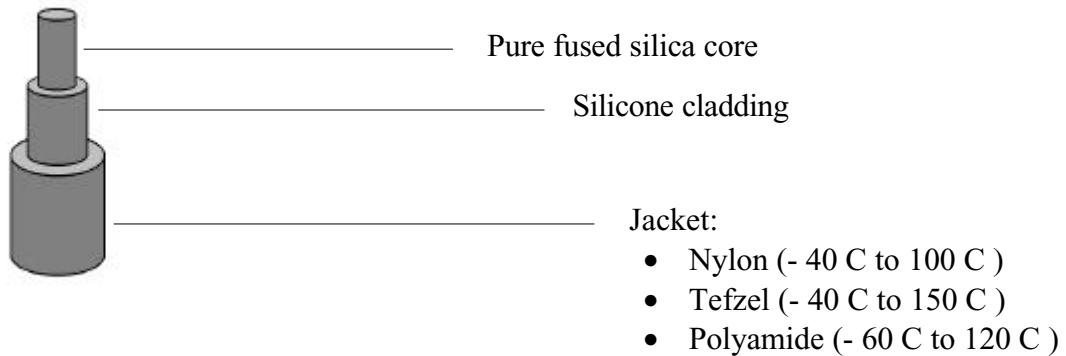
NOTES: Prefix product with UV or WF according to your wavelength.
 Other core/clad ratios and numerical apertures available upon requests.
 Fibers with double layer acrylates for low microbending can be supplied.

Attenuation
dB/km

Attenuation
dB/km

PCS FIBER

Optran UV, Optran WF

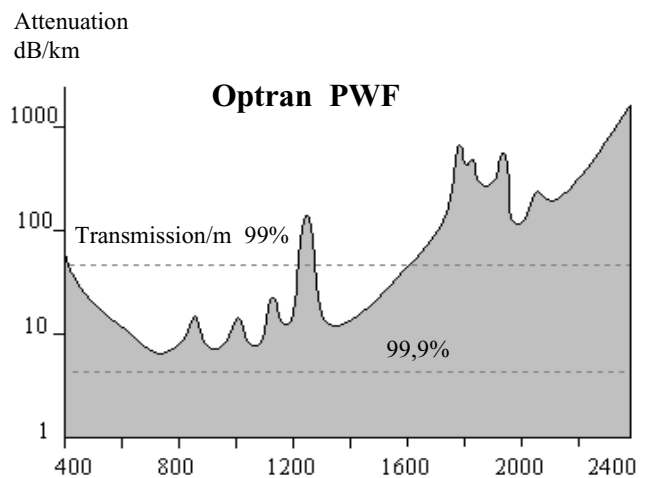
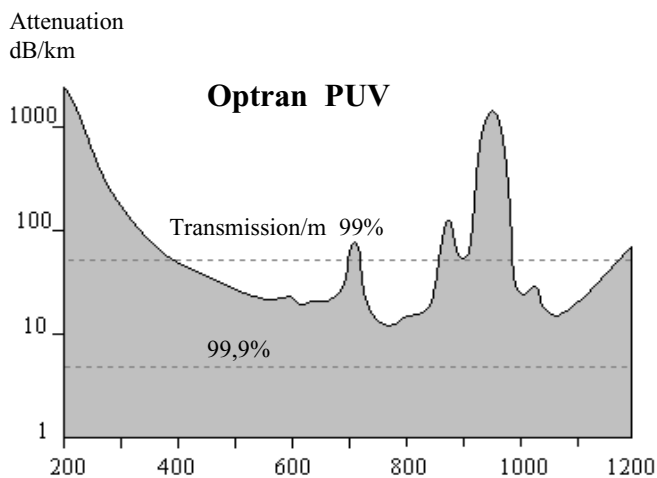


APPLICATIONS:

- Medical
 - Angioplasty
 - Urology
 - Dermatology
 - Tissue cutting / welding
 - Photodynamic therapy
- Industrial / Scientific
 - Spectroscopy
 - Sensors
 - Remote illustration
 - Laser etching

FEATURES:

- High numerical aperture
- Biocompatible materials
- Radiation resistant
- Sterilizable by EtO and gamma
- Specialty coatings available



PROPERTIES:

- Step index profile
- Pure silica core
- Numerical aperture: 0.40 (2 meters)
 0.30 (greater than 40 meters)
- Bend radius: momentary 100 x core radius
 long term 600 x core radius
- Standard proofstest: 70 kpsi

Nylon jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Jacketed m - 2 %
100 N	100	200	270
200 N	200	300	370
300 N	300	400	500
400 N	400	500	600
600 N	600	700	800
800 N	800	900	1000
1000 N	1000	1100	1200
1500 N	1500	1650	1800

Polyamide jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Jacketed m - 2 %
125	125	240	500
200	200	300	500
400	400	500	750
600	600	800	1200
800	800	1050	1500
1000	1000	1250	1800
1200	1200	1600	2000
1300	1300	1700	2200

Tefzel jacketed fibers

Product Code	∅ Core m - 2 %	∅ Clad m - 2 %	∅ Jacketed m - 2 %
200 T	200	300	450
300 T	300	440	660
400 T	400	550	850
600 T	600	750	1010
800 T	800	950	1400
1000 T	1000	1150	1650

NOTE: Prefix product with PUV or PWF according to your wavelength.

SILICA OPTICAL FIBER BUNDLES

The flexible lightguiding bundles consist of a number of quartz /quartz or PCS optical fibers within a sheathing and terminated into metallic ferrules; the end surfaces are carefully polished. The silica fiber bundle design provide efficient delivery of ultraviolet, visible and infrared radiation to one or several distantly located areas.

Wide variety of types and configurations of the bundles is available, including single- and multi-branch bundles, entrance/exit profile transforming bundles, bundles with randomized or nonrandomized fibers, PVC monocoil-, stainless steal-, silicone resin- and silicone resin monocoil-sheathed bundles, bundles with patented high temperature (1000 C) tip design, etc. Custom- designed special silica fiber bundles are available, too.

Biomedical applications:

- cold light illumination
- UV - curing in dentistry
- photodynamic therapy
- biomedical sensing
- UV - sterilization
- laser treatment
- express diagnosis

Scientific application:

- photophysics and photochemistry
- microscope illumination
- fluorescence excitation
- low - light detection
- photodetector - monochromator coupling
- dosimetry
- remote spectroscopy

Industrial applications:

- local illumination
- high- power laser delivery
- colour analysis
- optical pyrometry
- machine- vision lighting
- in-line sensing, monitoring and signaling
- reemit control of process in hard-to-reach areas and harsh environments
- ultraviolet technologies

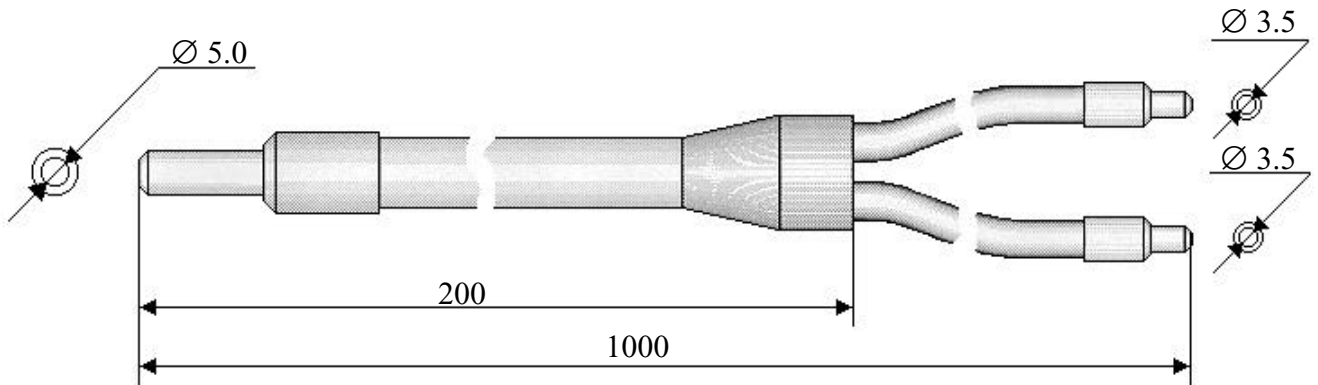
Advantages:

- high numerical aperture for easy light coupling
- high transmission in the UV region
- high thermal resistance
- mechanical strength
- flexibility
- simple connectorization
- variety of shapes and sizes for custom applications

SPECIFICATIONS

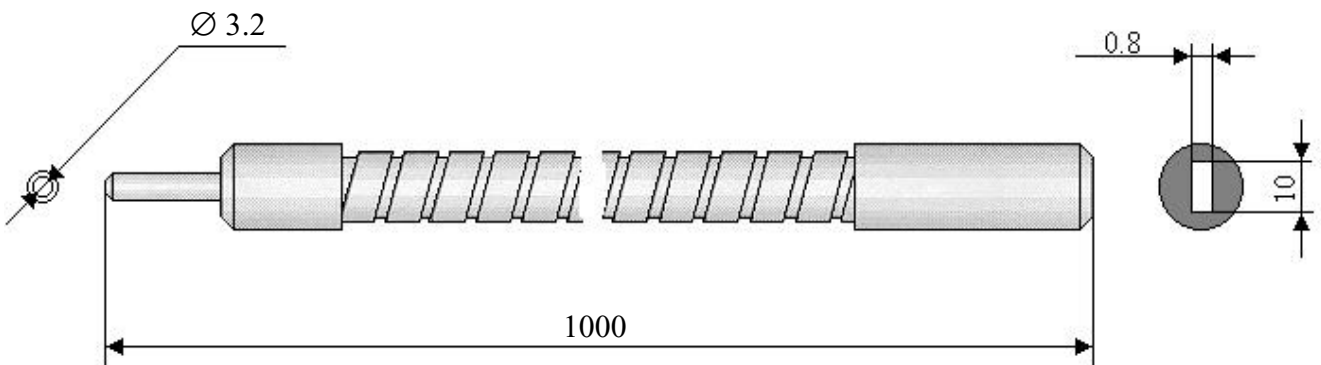
Optical Fiber	Type - A - B - C - D	WF polyimide coated quartz/quartz fiber UV polyimide coated quartz/quartz fiber WF PCS fiber UV PCS fiber
Numerical Aperture	Type - A and B Type - C and D	0.22 0.36
Individual fiber diameter		See pages Nr. 1; Nr. 2; Nr.5 and Nr. 6
Spectral range	Type - A - B - C - D	350 to 2400 nm 180 to 1100 nm 350 to 2200 nm 220 to 1100 nm
Temperature Range: - at the edge - along the body	Type of the edge: - I - II - III - IV	- 60 C to + 1000 C - 60 C to + 200 C - 40 C to + 120 C - 40 C to + 260 C
	Type of the sheathing: - PVC monocoil - stainless steal jacket - silicone resin tube - silicone resin monocoil	- 20 C to + 80 C - 60 C to + 380 C - 60 C to + 200 C - 60 C to + 200 C
	Optical fiber materials: - type -A and B - type -C and D	- 70 C to + 380 C - 60 C to + 200 C
Other characteristics	Type - A and C Type - B and D	Shows some fluorescence at 254 nm, and will darken in gamma or X- ray environment. Practically free of secondary fluorescence at 254 nm, exhibits no discoloration under X- ray, gamma or short UV radiation.

Explanation of Sales Codes



A III - 3 - S - 2B 200 - 5.0 / 1000 R

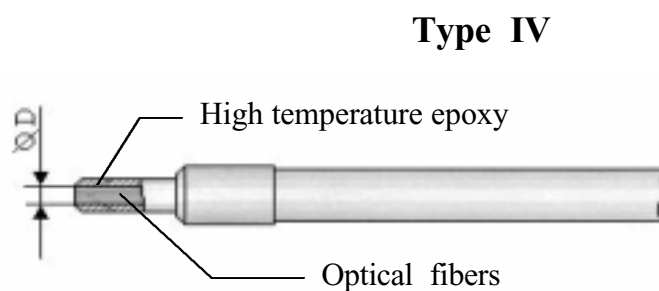
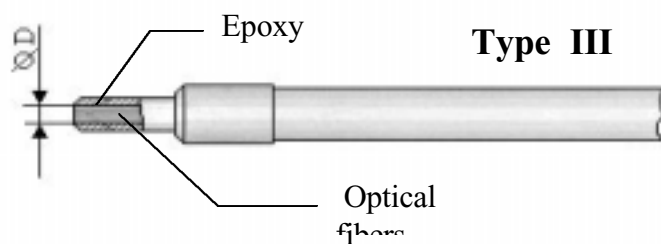
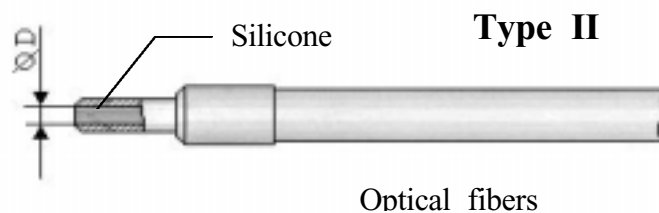
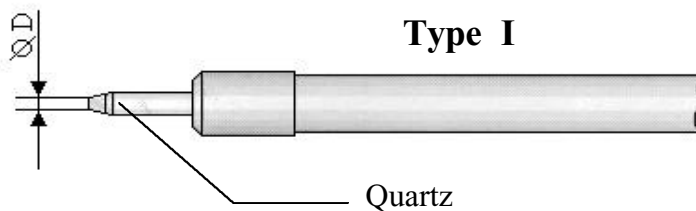
- Fiber ————— A
- Type of the edge ————— III
- Configuration ————— 3
- Type of the sheathing ————— S
- Number of branches ————— 2B
- Length of common leg, mm ————— 200
- Diameter of the bundle, mm ————— 5.0
- Length of the bundle, mm ————— 1000
- Location of fibers ————— R



B II - 2 - M - 0.8 x 10 / 1000

- Fiber ————— B
- Type of the edge ————— II
- Configuration ————— 2
- Type of the sheathing ————— M
- Dimensions of the line, mm ————— 0.8 x 10
- Length of the bundle, mm ————— 1000

Types of The Edge



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Ph: 413/525-0600, Fax: 413/525-0611

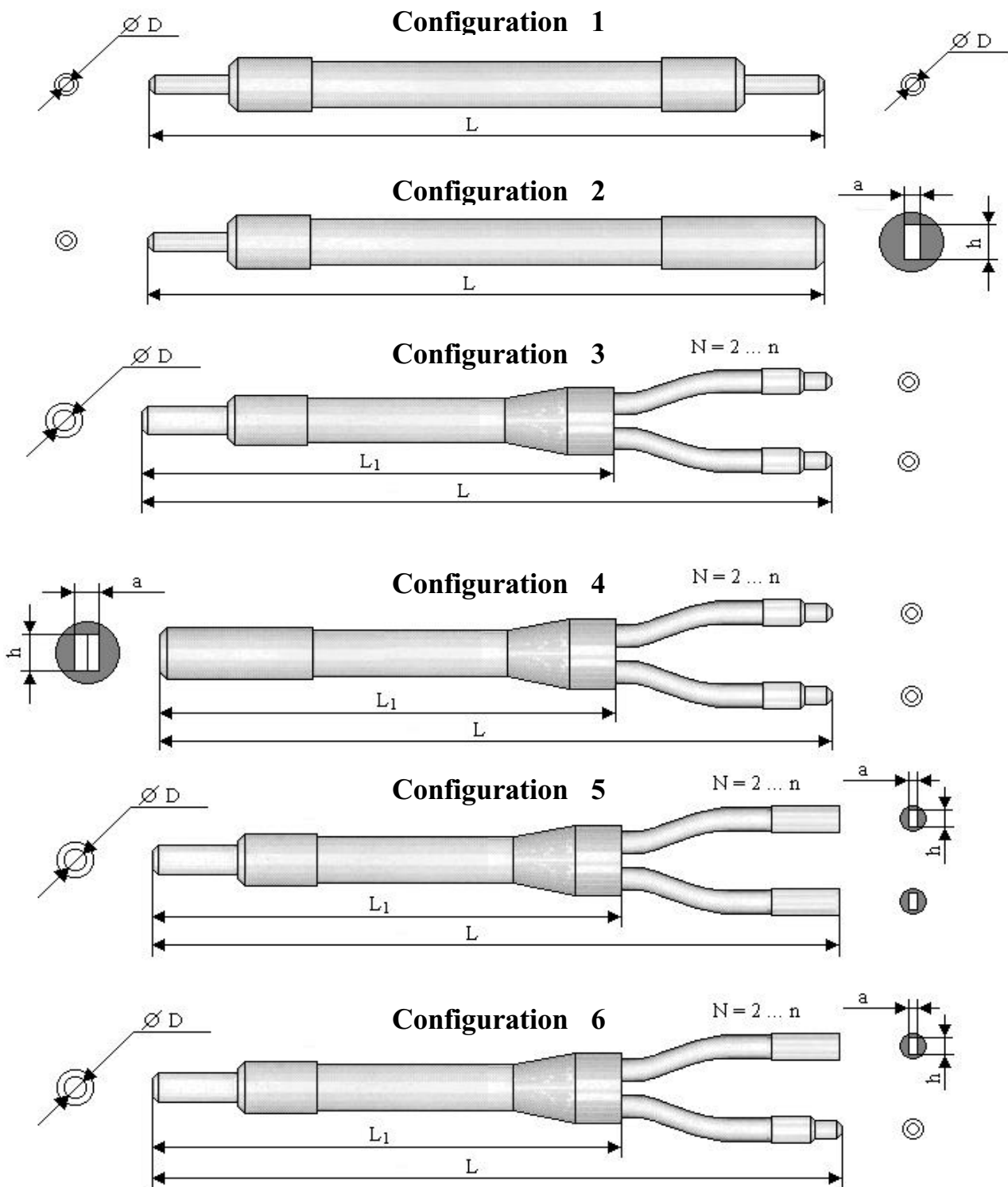
Ceram Optec GmbH

Siemensstrasse 8, 53121 Bonn, Germany
Tel.: 228 / 979670, Fax: 228/9796799

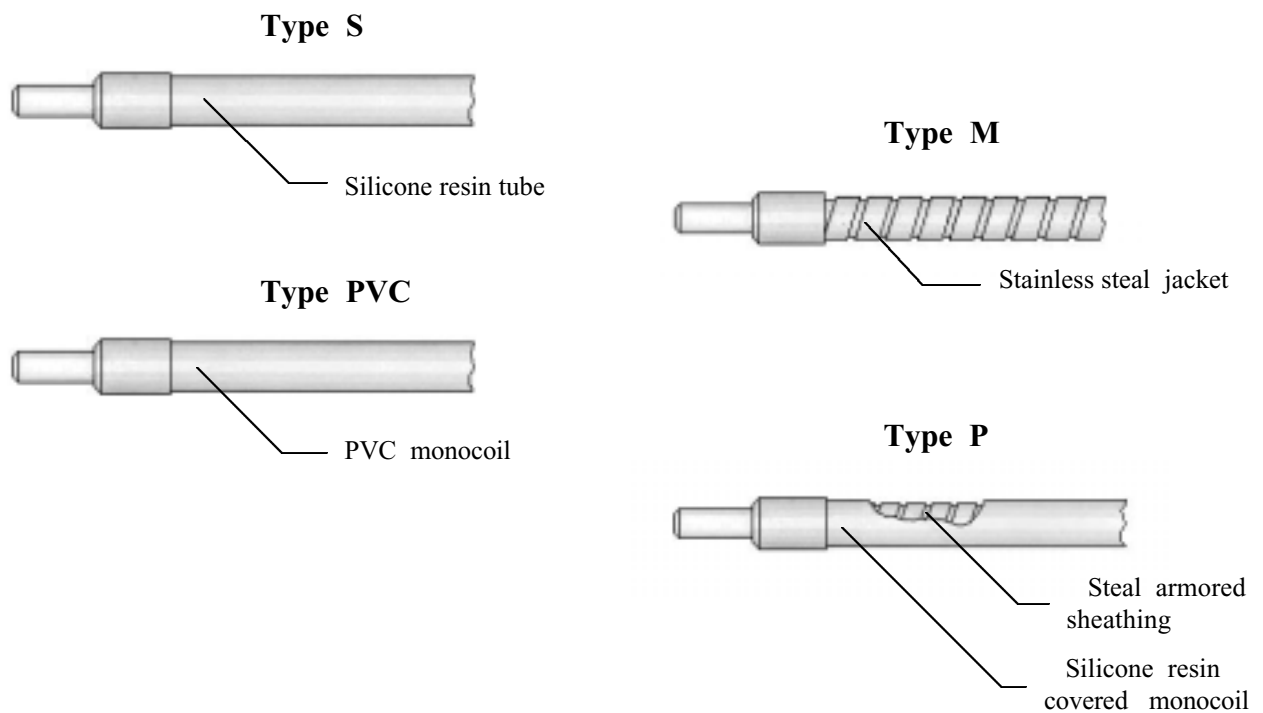
Ceram Optec Sdn. Bhd.

2nd Floor, N 19 A, Jalan Templer 1/21,
46000 Pentaling Jaya,
Tel.: 603-7936428, Fax: 603-7929307

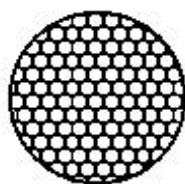
Available Configurations



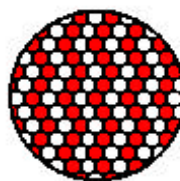
Types of the Sheathing



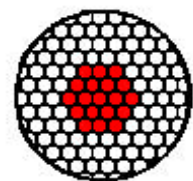
Location of Fibers



Standard; S



Randomized; R



Coaxial; C

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LIGHTGUIDE INSTRUMENTS FOR MEDICAL LASER SYSTEMS

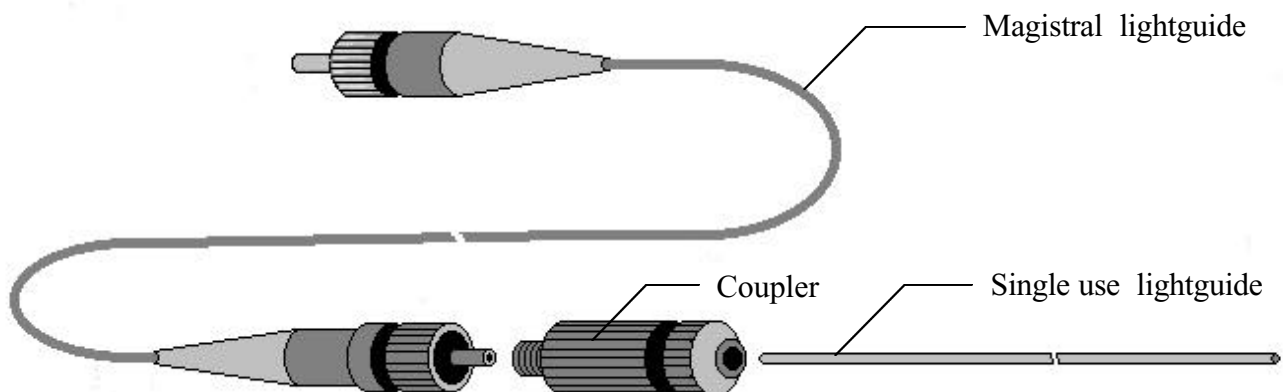
Medical laser lightguide delivery instruments are proposed for efficient treatment and rehabilitation by means of laser radiation. Anda Optec offers flexible and convenient lightguide instruments for numerous medical applications:

- endoscopy
- surgery
- dermatology
- gynaecology
- urology
- otorinolaringology
- cardiology
- pulmanology
- toxicology
- dentistry
- intensive therapy
- photodynamic therapy

FEATURES:

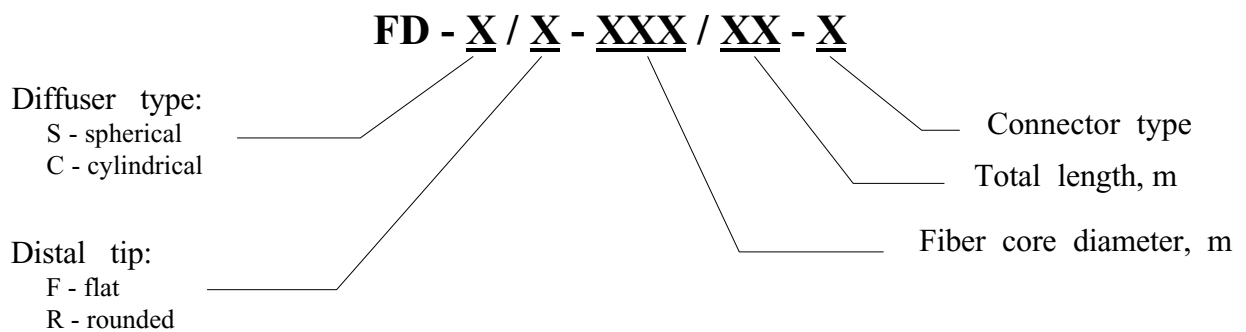
- optimized for low power and high power laser applications
- ultraviolet-visible-infrared transmittive (220 nm to 2200 nm)
- individually packaged and sterilized
- configurations and dimensions adjustable to customer s needs

OPTICAL FIBER SYSTEM FOR INTRAVASCULAR BLOOD IRRADIATION



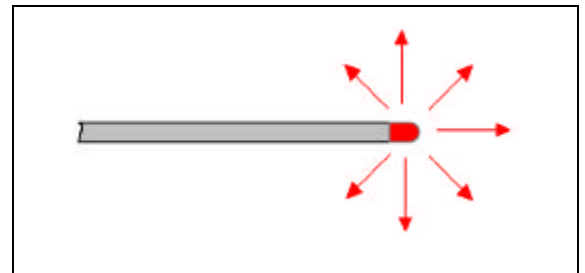
OPTICAL FIBER INSTRUMENTS FOR PHOTODYNAMIC THERAPY

Explanation of Sales Codes:



SPHERICAL DIFFUSERS

Anda Optec's Spherical diffusers have been specially designed for use in PDT, where uniform illumination of photosensitized tissue is required. The Spherical Diffusers provides a diffuse, spherical pattern of output laser radiation.

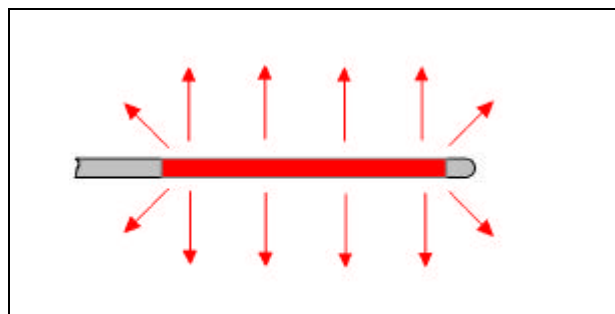


SPECIFICATIONS

DIMENSIONS: OVERALL DIAMETER OVERALL LENGTH	1,6 mm 3 m (other lengths on request)
OPTICAL FIBER: FIBER TYPE CORE DIAMETER	PCS 400 m; 600 m
CONNECTOR	SMA 905 (other types on request)
MAXIMUM INPUT POWER	2,0 W
WAVELENGTH RANGE	400 ... 1100 nm

CYLINDRICAL DIFFUSERS

Anda Optec's Cylindrical Diffusers have been specially designed for use in PDT, where uniform illumination of photosensitized tissue is required. The Cylindrical Diffusers provides a diffuse, cylindrical pattern of output laser radiation, which is homogenous all along the diffuser's tip. Diffuser is very flexible and active length of tip is 5; 10; 20; 40; 60 and 90 mm available.



SPECIFICATIONS

DIMENSIONS:	
OVERALL DIAMETER	1,6 mm
OVERALL LENGTH	3 m (other lengths on request)
AVAILABLE IRRADIATION LENGTH	5; 10; 20; 40; 60; 90 mm
OPTICAL FIBER:	
FIBER TYPE	PCS
CORE DIAMETER	400 μm; 600 μm
NUMERICAL APERTURE	0.37
CONNECTOR	SMA 905 (other types on request)
MAXIMUM INPUT POWER	2,0 W
WAVELENGTH RANGE	400 ... 1100 nm

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Ceram Optec GmbH

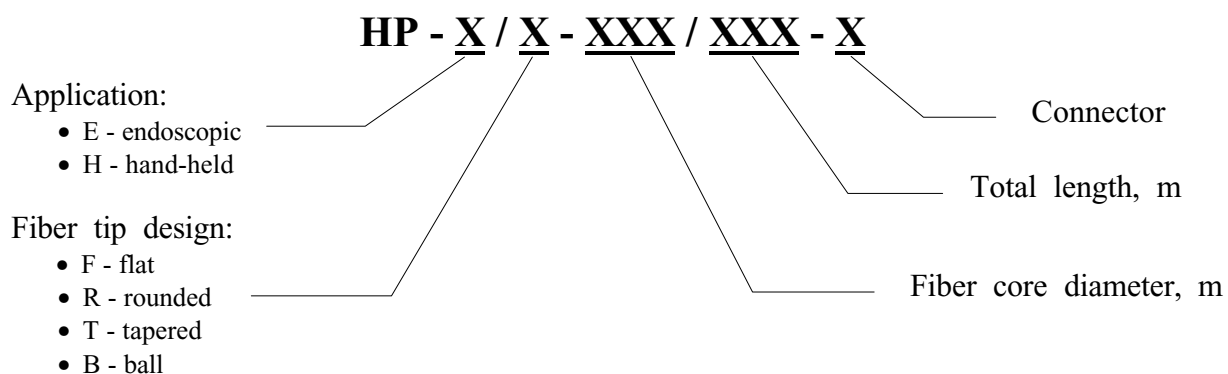
Siemensstrasse 8, 53121 Bonn, Germany
Tel.: 228 / 979670, Fax: 228/9796799

Ceram Optec Sdn. Bhd.

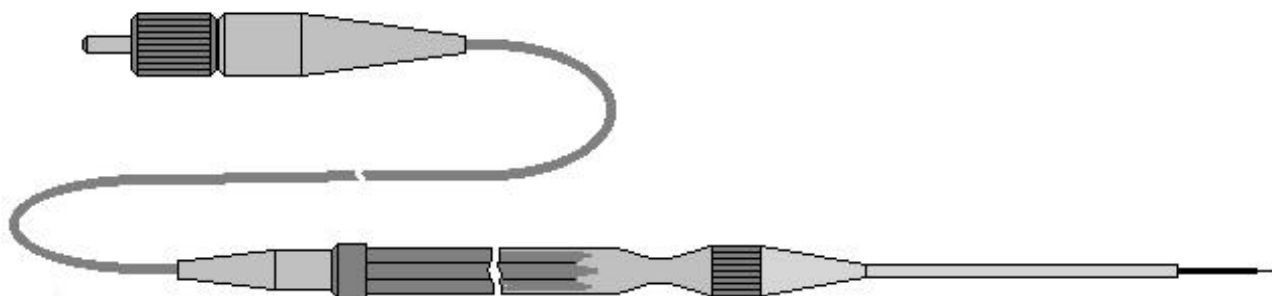
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46000 Pentaling Jaya,
Tel.: 603-7936428, Fax: 603-7929307

OPTICAL FIBER INSTRUMENTS FOR HIGH POWER LASER SYSTEMS

Explanation of Sales Codes:

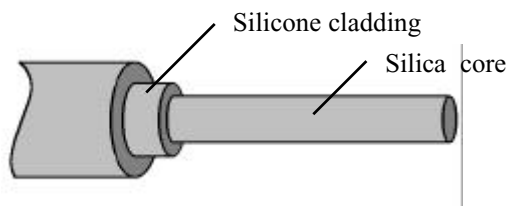


Anda Optec's fiber delivery systems have been specially designed to deliver laser energy to the surgical site in a variety of surgical procedures. Instruments with rounded, flat, tapered, ball and other types of fiber tips on request allow precise incision, coagulation, cutting and vaporization. All delivery systems are designed with or without handpieces.

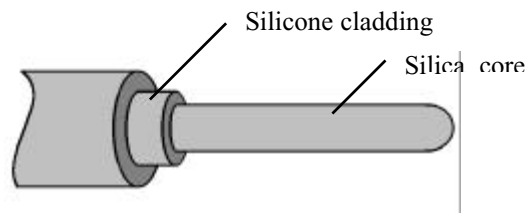


Fiber Tip Designs

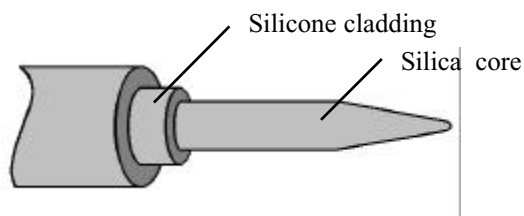
Flat tip



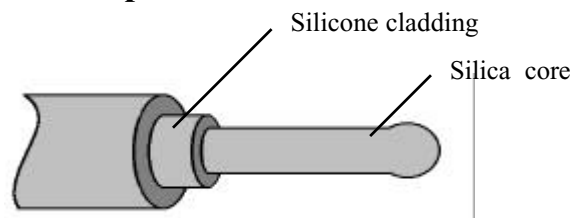
Rounded tip



Tapered tip



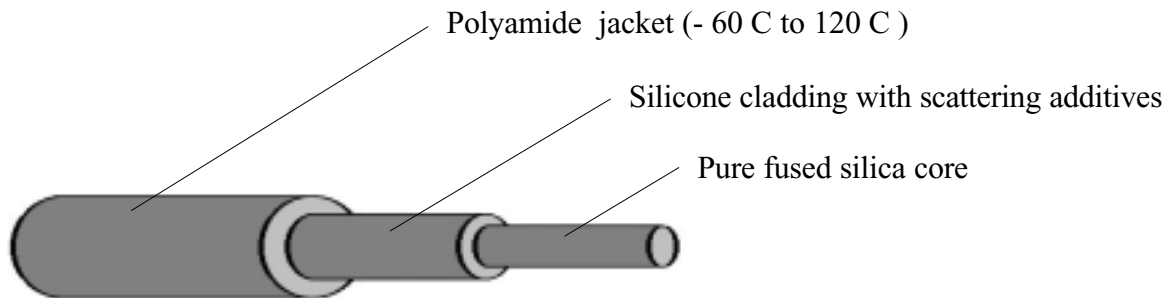
Ball tip



SPECIFICATIONS

Total length	3 m (other length on request)
Optical Fiber: fiber type	quartz / quartz (NA=0.22) PCS (NA=0.37)
core diameter	400; 600; 800; 1000 m
Connector	SMA 905 (other types on request)
Wavelength Range	220 ... 1100 nm

GLOWING FIBER



APPLICATIONS:

- Decorative linear illumination for interiors, shows, etc.
- Framing of large objects like buildings, towers and bridges,
- emergency light guidance for tunnels, corridors, stairs, etc.
- safe underwater illumination and framing
- luminous signs and high-power laser demonstrations
- infrared security control and surveillance
- local phototherapy for treatment of tumors, infant Hyperbilirubinemia and skin diseases
- linear cold light illumination for biomedical applications

Side-emission intensity as well as length of fiber with desired side-glowing uniformity depends on side-scattering efficiency coefficient. More scattering efficiency cause much more side-emission intensity but in the same time is reason for decreasing length of fiber with desired side-glowing uniformity.

To obtain more uniform and more intense side-glowing you can:

- use two light sources e. g. lasers at each end of the fiber - side emissions initiated by both sources are to be summarized;
- use a reflector e. g. miniature plane mirror at the distal end of fiber - side emissions initiated by light source and by reflected light from mirror are to be summarized.

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46000 Pentaling Jaya,
Tel.: 603-7936428, Fax: 603-7929307

PROPERTIES:

- Step index profile
- Pure silica core
- Numerical aperture: 0.37
- Bend radius: momentary 100 x core radius
long term 600 x core radius
- Standard proofstest: 70 kpsi

FEATURES:

- High numerical aperture
- Biocompatible materials
- Radiation resistant
- Laser damage resistant
- Maximal length of glowing fiber: 200 m

Product Code	Ø Core m - 2 %	Ø Clad m - 2 %	Ø Jacked m - 2 %	Length of fiber with relatively uniform side-glowing
GF 400/5	400	500	750	5 m
GF 400/10	400	500	750	10 m
GF 400/30	400	500	750	30 m
GF 400/60	400	500	750	60 m
GF 400/100	400	500	750	100 m
GF 800/5	800	1050	1500	5 m
GF 800/10	800	1050	1500	10 m
GF 800/30	800	1050	1500	30 m
GF 800/60	800	1050	1500	60 m
GF 800/100	800	1050	1500	100 m

NOTE: Other fiber core diameters and other lengths of fiber with relatively uniform side-glowing available upon requests.

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NEW PRODUCT !!! HIGH SENSITIVITY OPTICAL FIBER !

Principle scheme how can use this optical fiber in security systems.

