

# Specialty Optical Fibres



Yangtze Optical Fibre and Cable Joint Stock Limited Company (also known as 'YOFC' ) established in Wuhan, Hubei Province in May 1988, is a technologically innovative enterprise specializing in optical fibre preforms, optical fibres, optical fibre cables and integrated solutions, and also a global leading supplier in these areas.

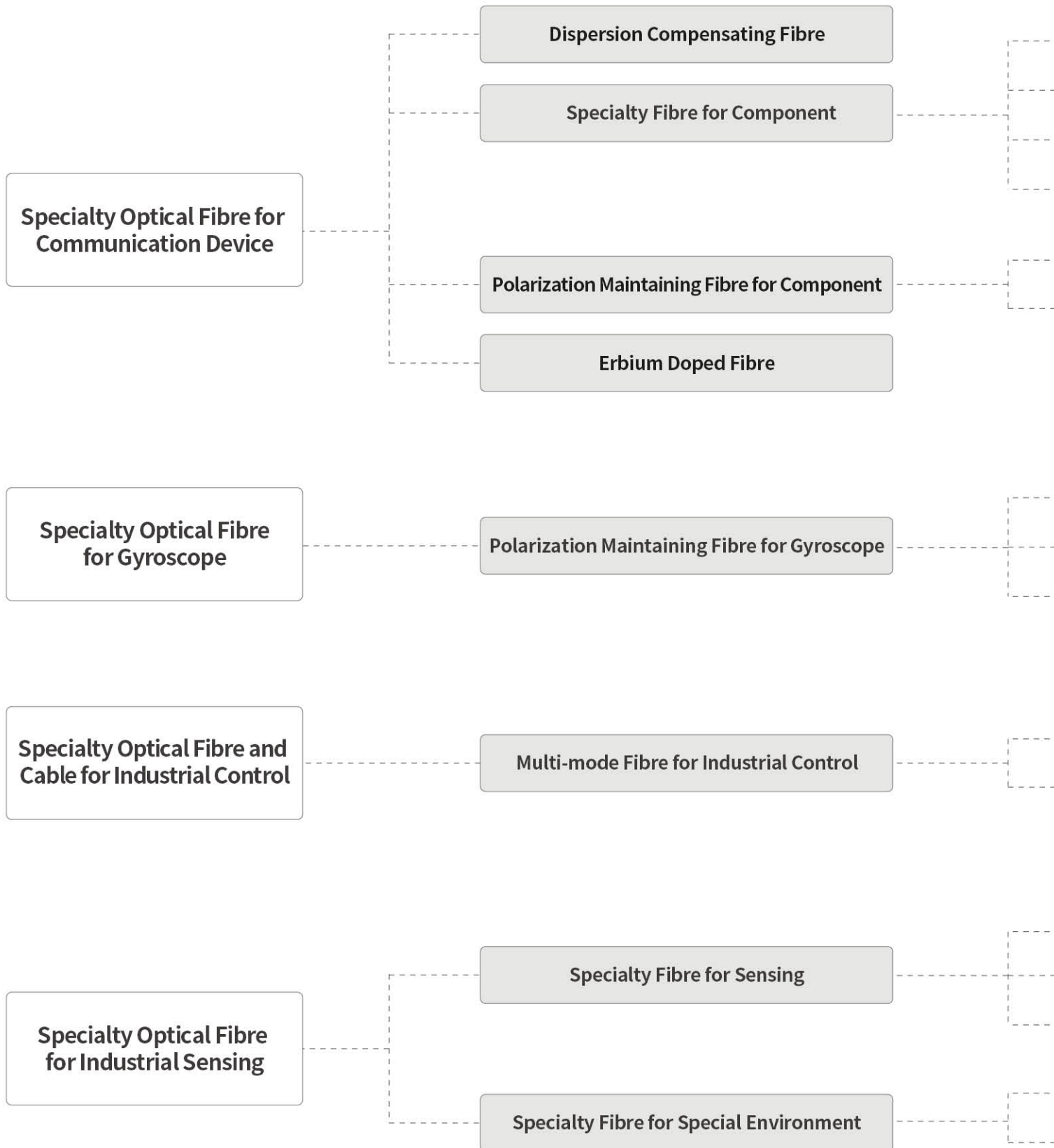
YOFC was listed in the Hong Kong Stock Exchange on December 10, 2014 (Stock Code: 06869.HK), and listed in the Shanghai Stock Exchange on July 20, 2018 (Stock Code: 601869.SH), and is the only A&H shares company in China's optical fibre and cable industry as well as the first one in Hubei Province.

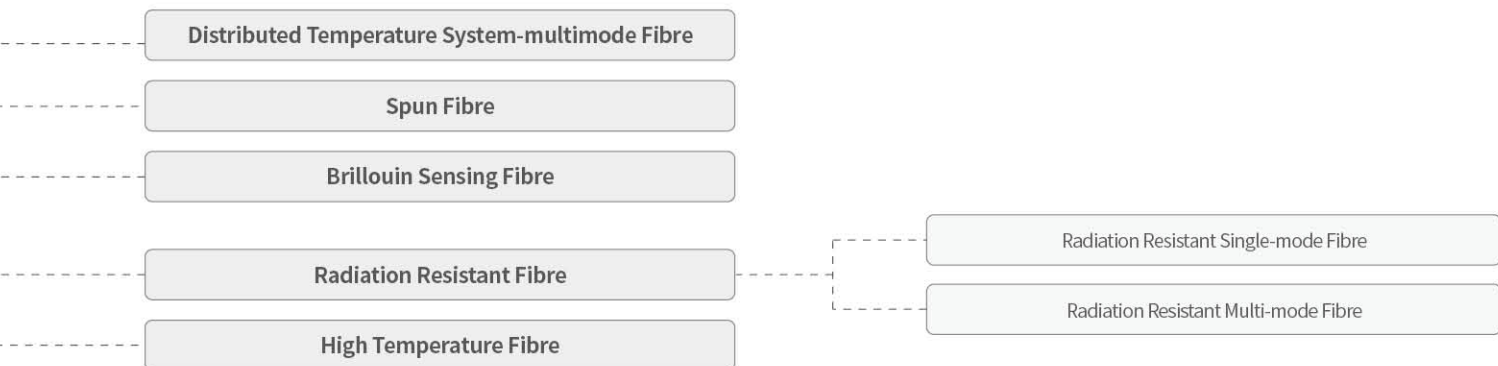
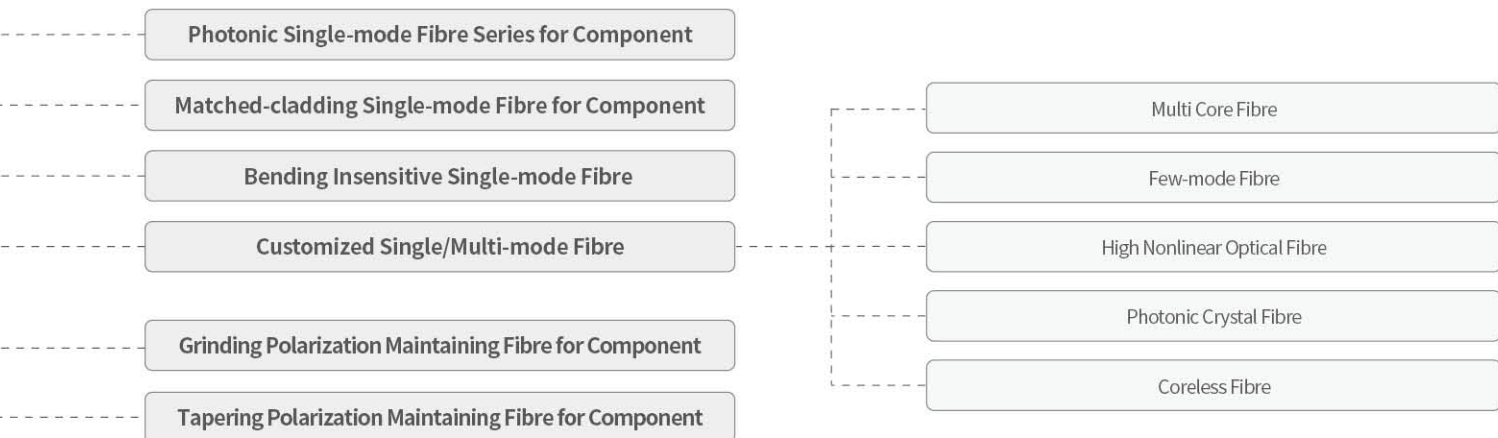
YOFC mainly produces and sells different types of optical fibre preforms, optical fibres and optical fibre cables that are widely applied in telecommunications industry, customized optical modules, specialty optical fibres, active optical cables, submarine cables, RF coaxial cables and accessories, etc. YOFC is also equipped with some solutions and services such as system integration and communication engineering design. Providing a variety of different products and solutions for world's telecommunications industry and other industries (e.g. Public utility, Transportation, Oil & Chemistry and Medication etc.), YOFC has offered its products and services to over 90 countries and regions around the world.

Through introduction, digestion, absorption and re-innovation since its establishment, YOFC has carried out a way to successfully revitalize national industry. YOFC has mastered 3 types of optical fibre preform manufacturing technology (PCVD/VAD/OVD), and honored many awards & reputations such as National Enterprise Technical Center, the 9th place in the 2020 Top 100 Intelligent Manufacturing Enterprises in China, the Second Class National Science and Technology Progress Award (3 times), the China Quality Award, the European Quality Award, etc. In addition, YOFC has obtained over 900 invention patents at home and abroad, and was nominated the support organization for State Key Laboratory in optical fibre and optical fibre cable manufacturing technology. It's also one of the significant members in ITU-T and IEC in setting international standards.

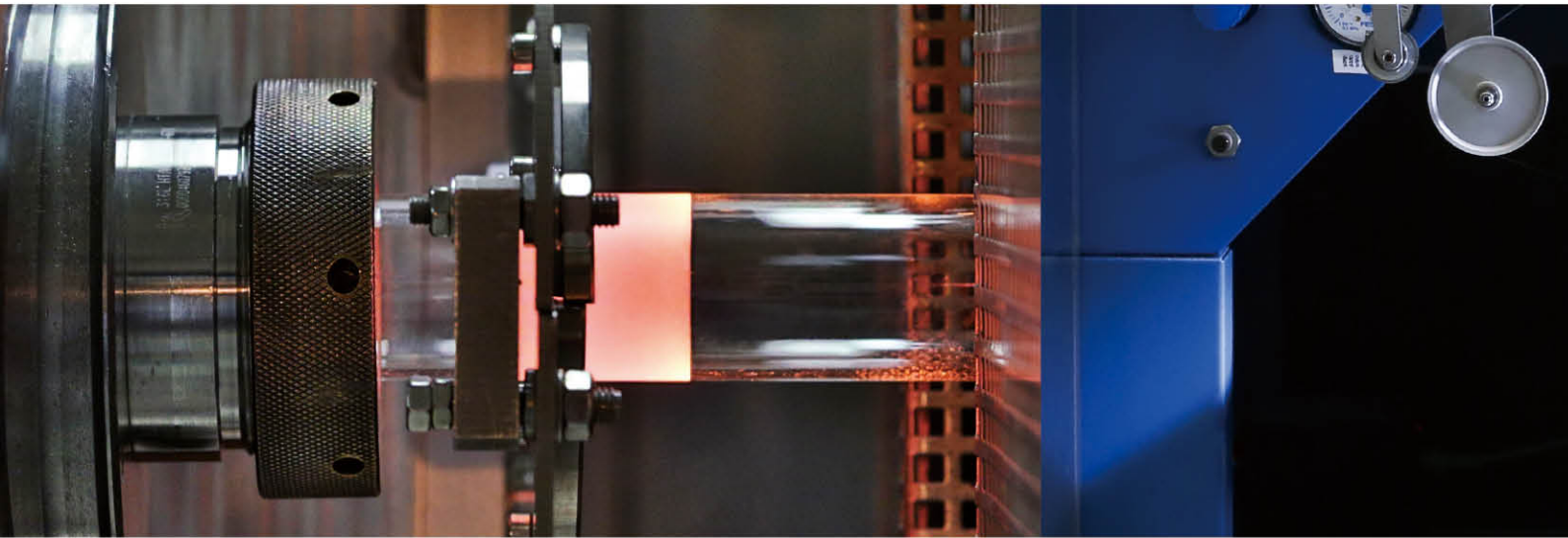
Adhering to the mission of 'Smart Link Better Life', YOFC devotes itself to becoming the leader in information transmission and smart links through its core value 'Client Focus Accountability Innovation Stakeholder Benefits', and builds its strategies in the following 5 aspects: Overall business growth; Internationalization; Diversification; Technological innovation & digital transformation; Synergy growth of capital operation.

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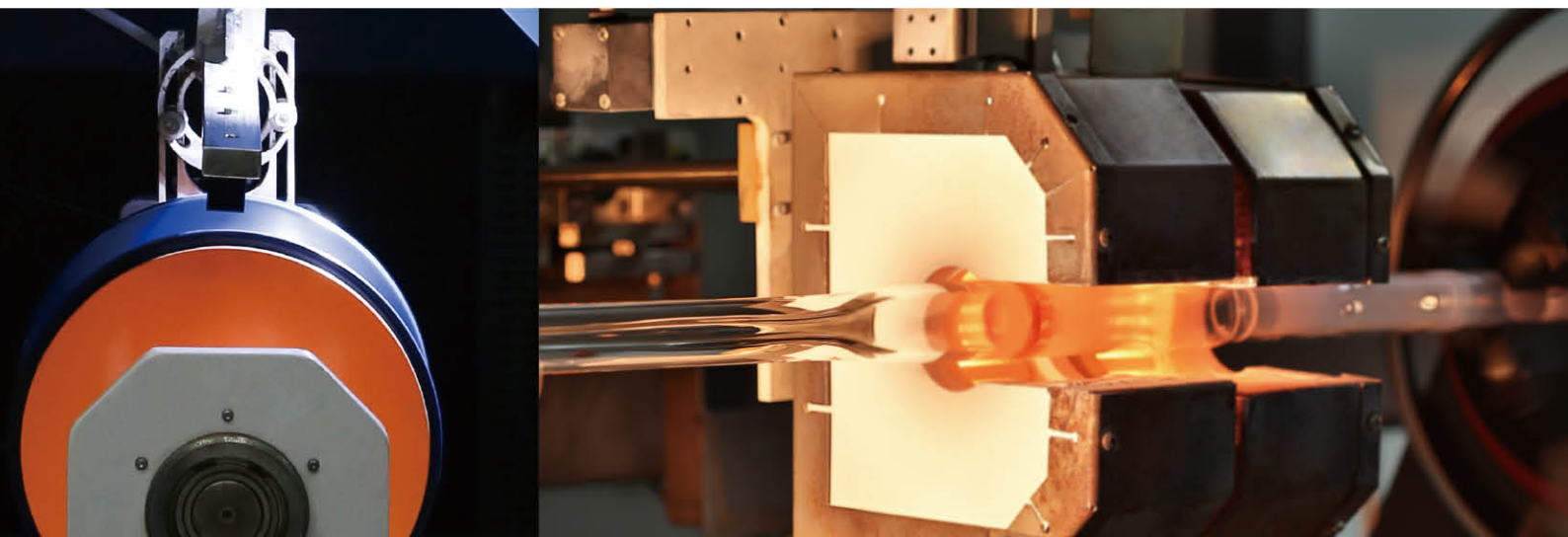
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# Dispersion Compensating Fibre (DCF)

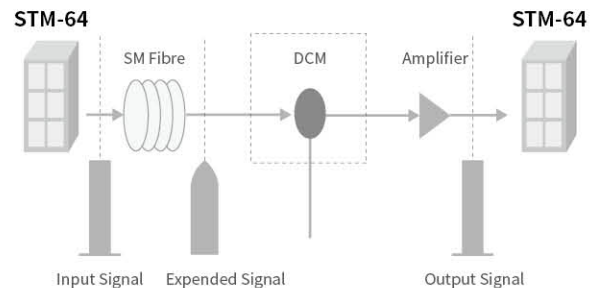


YOFC dispersion compensating fibre is specially developed through proprietary PCVD-based technology. Taking advantages of PCVD process, YOFC is able to manufacture complex index-profile shapes accurately, therefore, to get the optimized products with the best compromise between insertion loss and residual dispersion over the compensated operating wavelength. Customized fibres with special center wavelength and dispersion are available.



## Characteristics

- Broad band dispersion compensating of DWDM network and extremely low residual dispersion
- 80% - 120% slope compensation in C/L band
- Low insertion loss and high negative dispersion coefficient
- High figure of merit (FOM)
- Low PMD
- Customized encapsulation type, dimension, connector type and jumper length
- Excellent splicing characteristics, spliced by one time discharge



## Applications

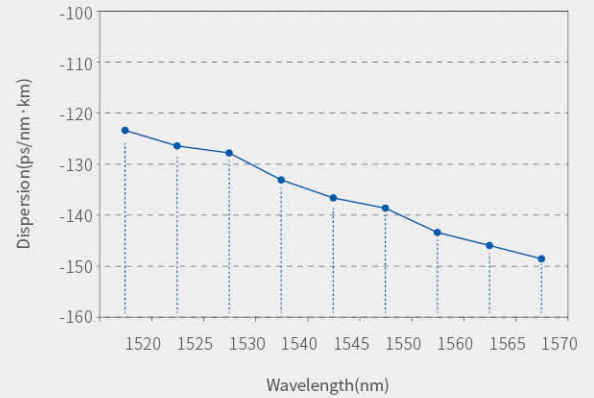
- Single mode fibre backbone and metropolitan area networks based on recommendation G.652
- DWDM networks
- SDH network
- CATV
- Dispersion adjustment

## Products

### Standard Products:

- DCF for G.652 C band (Part NO. DM1012-A)
- DCF for G.652 C band (Part NO. DM1010-E)
- DCF for G.655 C band (Part NO. DM1011-A)
- DCF for CATV and high FOM (Part No.DM1013-A)

G.652 DCF Dispersion Curve



## Specifications

Fibre Type	TDCF-G.652C/170	BD NDCF-G.652C/250	BD SNDCF-G.652C/170	DCF-G.655C/250	SDCF-G.652C/170LD
Part No.	-	DM1012-A	DM1012-D	DM1011-A	DM1013-A
<b>Optical Properties</b>					
Operating Wavelength (nm)	1525 - 1565	1525 - 1565	1525 - 1565	1525 - 1565	1525 - 1565
MFD (μm)	5.0±1.0@1550nm	5.0 ± 1.0@1550nm	5.0 ± 1.0@1550nm	4.5 ± 1.0@1550nm	5.0 ± 1.0@1550nm
1525~1565nm Attenuation (dB/km)	≤0.62	≤0.62	≤ 0.62	≤ 1.4	≤ 0.6
1545nm Dispersion Coefficient (ps/nm·km)	-100 to -250	-100 to -200	-100 to -200	-160 to -360	≤ -160
1545nm Relative Dispersion Slope (nm <sup>-1</sup> )	0.00309 - 0.00410	0.00309 - 0.00410	0.00309 - 0.00410	0.0176 - 0.0264	0.00309-0.00410
<b>Geometrical Properties</b>					
Cladding Diameter (μm)	87.0 ± 4.0	120.0 ± 10.0	120.0 ± 10.0	110.0 ± 10.0	120.0 ± 10.0
Coating Diameter (μm)	170.0 ± 10.0	245.0 ± 10.0	175.0 ± 15.0	245.0 ± 10.0	175.0 ± 15.0
Cladding Non-circularity (%)	≤1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate

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# Specialty Fibre for Component

## Photonic Single-mode Fibre Series for Component (PH-SMF)

YOFC photonic single-mode fibres are specially developed for optical components with strict requirement for bending resistance properties. The fibres are manufactured by PCVD process with Ge/F co-doped material system and special waveguide structure. The fibres have tight geometric and optical specifications. They are compatible with G.652 fibre and has excellent macro-bending performance which makes it very appropriate for the mini components. The fibres meet the standards of ITU-T G.657.A1/G.657.A2/G.657.B3 and suits full range applications from 1260nm to 1625nm.

The Ge/F co-doped material system, design provides excellent macro-bending attenuation and good fused-taper performance. The macro-bending performance of PH1011-C and PH1012-A has been significantly improved with special "trench" waveguide structure and meets the requirements of G.657.A2 and G.657.B3 standards. PH1012-A is specially developed for very small bending radius and compact components and modules in C band with excellent bending resistance.

### Characteristics

- Tighter geometric and optic specifications
- Excellent splicing performance
- Excellent compatibility with the G.652 fibre
- Excellent macrobending resistance
- Excellent microbending resistance
- High reliability enhanced by 200kpsi

### Applications

- Bending sensitive condition/mini component
- Pigtails/Patch cords
- Connectors
- Couplers
- Miniaturized integrated erbium-doped fibre amplifier (EDFA)
- DWDM Components

## Standards

- YOFC PH-SMF meet or exceed the ITU-T G.657 and IEC60973-2-50

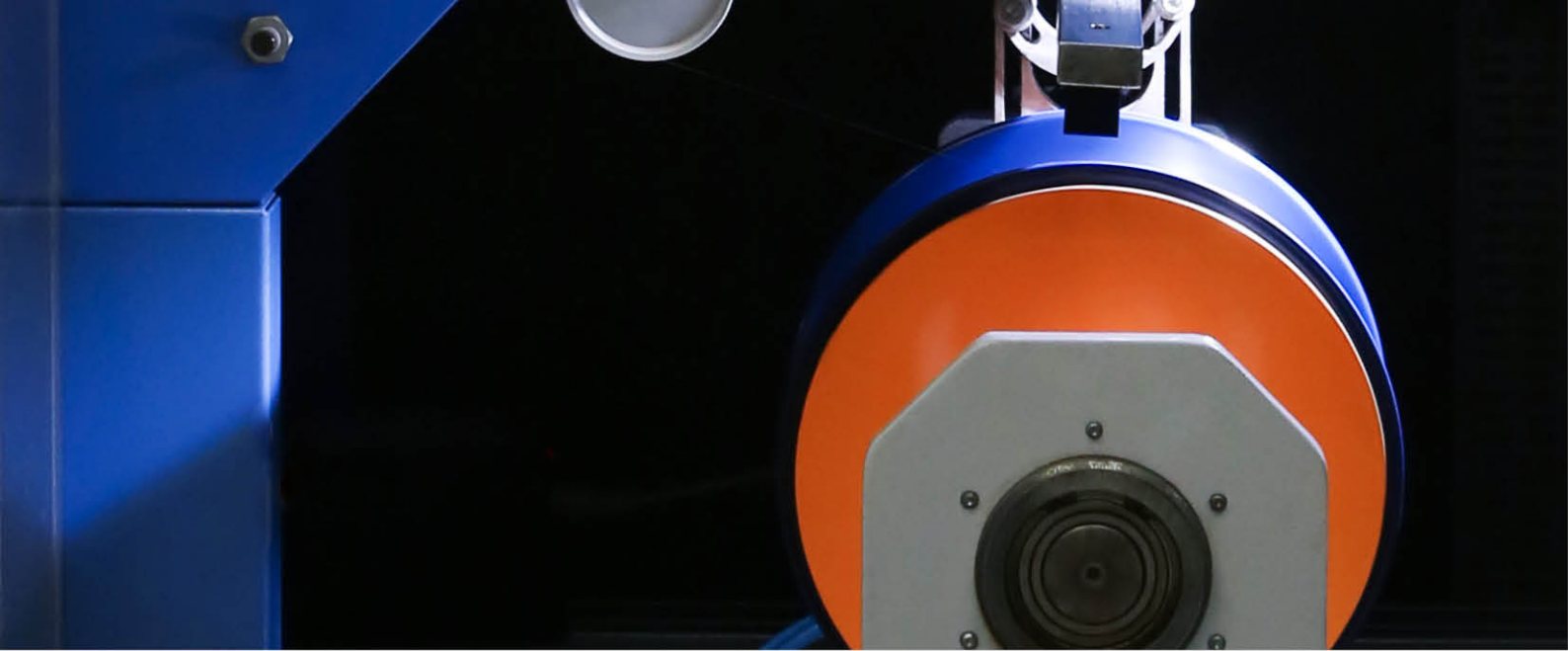
## Specifications

Fibre Type	PH 9/125-13/250A	PH 9/125-13/250C	PH 9/125-13/200	PH 9/125-14/250	PH 9/125-14/250+	PH 9/125-14/200+	PH 8/125-14/250	PH 8/125-14/250B	PH 8/80-12/165		
Part No.	PH1010-A	PH1010-C	PH1010-D	PH1011-A	PH1011-C	PH1011-D	PH1012-A	PH1012-B	PH1012-C		
Ref. Standards	G.652.D	G.657.A1	G.652.D	G.657.A1	G.657.A2	G.657.A2	G.657.B3	G.657.B3	G.657.B3		
Optical Properties											
Attenuation	@1310 (dB/km)	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.40	
	@1383 (dB/km)	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	≤0.35	-	
	@1550 (dB/km)	≤0.20	≤0.20	≤0.20	≤0.20	≤0.21	≤0.21	≤0.22	≤0.22	≤0.30	
	@1625 (dB/km)	≤0.24	≤0.24	≤0.24	≤0.24	≤0.24	≤0.24	≤0.24	≤0.24	-	
Fibre Cut-off Wavelength (nm)	≤1310	≤1310	≤1260	≤1310	≤1310	≤1310	≤1460	≤1310	≤1430		
Mode-field Diameter	@1310 nm (μm)	8.7 - 9.5	8.4 - 9.2	8.7 - 9.5	8.4 - 9.2	8.4 - 9.2	8.4 - 9.2	8.2 - 9.0	8.2 - 9.0	8.2 - 9.0	
	@1550 nm (μm)	9.9 - 10.9	9.3 - 10.3	9.9 - 10.9	9.3 - 10.3	9.3 - 10.3	9.3 - 10.3	9.1 - 10.1	9.1 - 10.1	9.1 - 10.1	
Geometrical Properties											
Clad Diameter (μm)	124.7±0.5	124.7±0.5	125.0±0.7	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	80.0±1.0	
Non-circularity of Cladding (%)	≤0.5	≤0.5	≤0.7	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.7	
Coating Diameter (μm)	240.0±5.0	240.0±5.0	200.0±5.0	240.0±5.0	240.0±5.0	240.0±5.0	195.0±5.0	240.0±5.0	240.0±5.0	165.0±7.0	
Core/Cladding Concentricity (μm)	≤0.3	≤0.3	≤0.5	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.5	
Coating/Cladding Concentricity (μm)	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤8	≤12	
Curl (Radius)(m)	≥4	≥2	≥2	≥4	≥4	≥4	≥4	≥4	≥4	≥2	
Macrobend Properties											
Radius	Turns	Wavelength (nm)	Induced Loss(dB)								
10 mm	1	1550	-	≤0.5	-	≤0.5	≤0.1	≤0.1	-	≤0.03	≤0.03
10 mm	1	1625	-	≤1.5	-	≤1.5	≤0.2	≤0.2	-	≤0.10	≤0.10
7.5 mm	1	1550	-	-	-	-	≤0.2	≤0.2	≤0.03	≤0.08	≤0.08
7.5 mm	1	1625	-	-	-	-	≤0.5	≤0.5	≤0.15	≤0.25	≤0.25
5 mm	1	1550	-	-	-	-	-	-	≤0.05	≤0.15	≤0.15
5 mm	1	1625	-	-	-	-	-	-	≤0.15	≤0.45	≤0.45
Mechanical Properties											
Proof Test(kpsi)	Off-line	100/200	100/200	100/200	100/200	100/200	100/200	100/200	100/200	100/200	
Environmental Properties											
Test Item	Condition	1310nm, 1550nm and 1625nm Additional Attenuation (dB/km)									
Temperature Cycle (°C)	-60 to +85	≤ 0.05									

\*200μm outer diameter fibre is available

\*The measurement of fibre cut-off wavelength is testing 2.0 ± 2.0m length fibre by the multi-mode reference method specified in IEC 60793-1-44

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## Matched-cladding Single-mode Fibre for Component(CSF)

YOFC matched-cladding single-mode fibre is particularly developed for optical components. The fibre offers excellent geometric and optic specifications by PCVD process. The fibre adopts special matched-cladding structure and Ge/F co-doped material system to achieve material matching, which makes the fibre can be used for taper couplers.

CS1012-A and CS1013-A are suitable for light source coupled single mode output in 580-850 nm visible band. CS1015-A and other 980/1060 nm fibres have excellent tapering performance. CS1011-A and CS1011-B are specially developed for tapered components in 1310 nm. CS1018-A and CS1018-B are specialty developed for tapered components in 1550 nm. And the macro-bending performance of CS1018-A is better than G.657A2.

### Characteristics

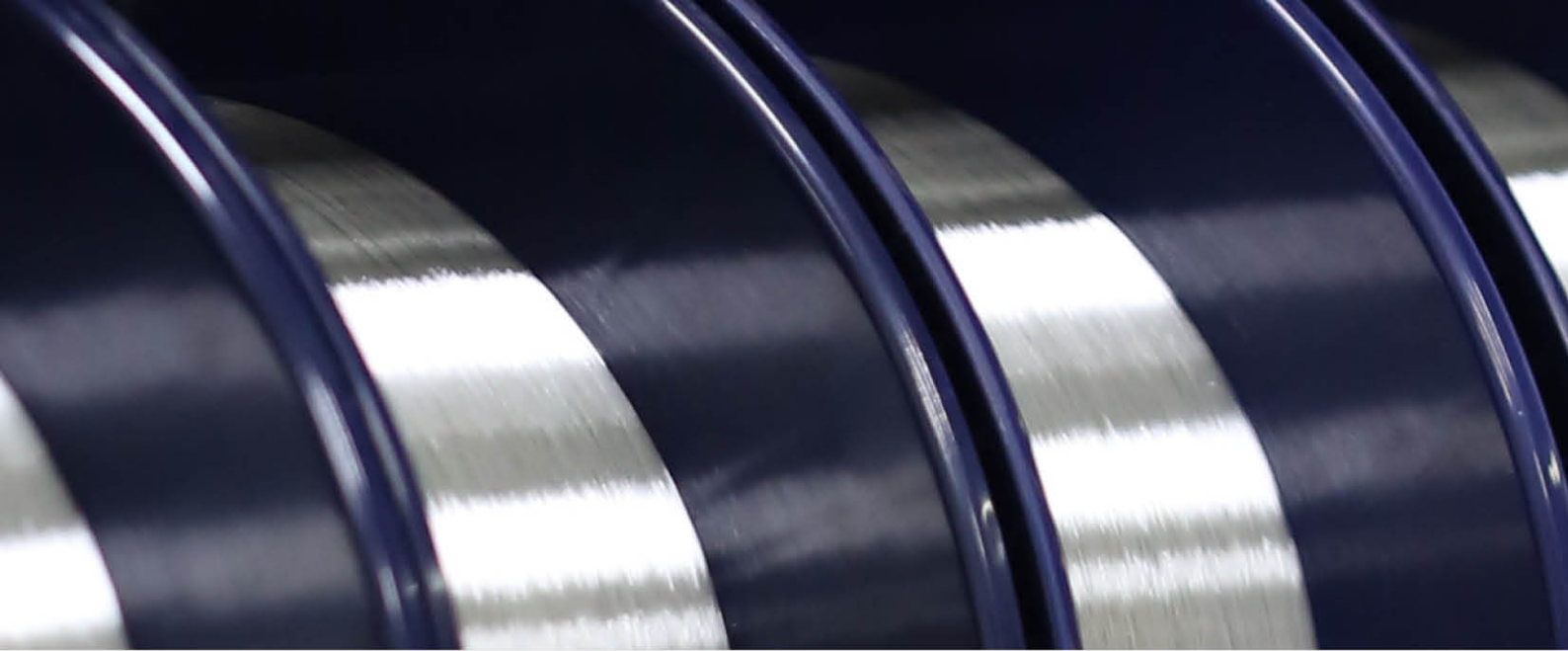
- Tight geometric control
- Superior mechanical protection by dual acrylate coating system
- Ultra-low bending loss
- Low insertion loss
- Low splice loss
- Excellent consistency and reliability

### Applications

- Optical fibre couplers, splitters and combiners
- Optical fibre lasers, EDFAs and DWDM system
- Pump laser pigtails
- Gratings
- Fibre sensors and gyroscope
- Low-loss fused optical devices for C/L band applications

Fibre Type	CS980-80-16/165	CS980-80-20/165	CS1060-80-14/165	CS1310-80-16/165	CS1550-80-18/165	
Part No.	CS1015-F	CS1015-D	CS1016-C	CS1011-B	CS1018-B	
<b>Optical Properties</b>						
Operating Wavelength (nm)	980/1550	980/1550	980/1060/1550	1310/1550	1550	
Fibre Cutoff Wavelength (nm)	930±40	930±40	930±40	1240±50	1450±50	
Mode-field Diameter (µm)	5.0±0.5@980nm	4.0±0.5@980nm	5.9±0.5@980nm	6.4±0.5@1310nm	6.3±0.5@1550nm	
	7.5±0.5@1550nm	6.5±0.5@1550nm	6.2±0.5@1060nm	7.2±0.5@1550nm		
Attenuation (dB/km)	≤2.5@980nm	≤2.5@980nm	≤2.1@980nm	≤0.75@1310nm	≤0.5@1550nm	
	≤1.0@1550nm	≤1.0@1550nm	≤1.5@1060nm	≤0.5@1550nm		
<b>Geometrical Properties</b>						
Cladding Diameter (µm)	80.0±1.0	80.0±1.0	80.0±1.0	80.0±1.0	80.0±1.0	
Coating Diameter (µm)	165.0±5.0	165.0±5.0	165.0±5.0	165.0±5.0	165.0±5.0	
Cladding Non-circularity (%)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	
Core/Cladding Concentricity (µm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	
<b>Macro-bending Induced Loss</b>						
φ20mm-Itum(dB)	980nm	-	≤0.02	-	-	-
	1310nm	-	-	-	≤0.01	-
	1550nm	-	≤0.05	-	≤0.01	≤0.01
φ30mm-Itum(dB)	980nm	≤0.01	-	-	-	-
	1550nm	≤0.08	-	-	-	-
<b>Mechanical Properties</b>						
Proof Test (kpsi)	100 or 200	100 or 200	100 or 200	100 or 200	100 or 200	
<b>Environmental Properties</b>						
Operating Temperature (°C)	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85	

Fibre Type	CS630-125-13/250	CS780-125-14/250	CS980-125-16/250	CS980-125-20/250	CS1060-125-14/250	CS1310-125-16/250	CS1550-125-13/250
Part No.	CS1012-A	CS1013-A	CS1015-A	CS1015-B	CS1016-A	CS1011-A	CS1018-A
<b>Optical Properties</b>							
Operating Wavelength (nm)	580/630	780/850	980/1550	980/1550	980/1060/1550	1310/1550	1550
Fibre Cutoff Wavelength (nm)	580±40	730±40	930±40	930±40	930±40	1240±50	1400±50
Mode-field Diameter (µm)	4.0±0.4@630nm	4.5±0.4@780nm	5.0±0.5@980nm	4.0±0.5@980nm	5.9±0.5@980nm	6.4±0.5@1310nm	9.1±0.5@1550nm
			7.5±0.5@1550nm	6.5±0.5@1550nm	6.2±0.5@1060nm	7.2±0.5@1550nm	
Attenuation (dB/km)	≤12.0@630nm	≤4.3@780nm	≤2.5@980nm	≤2.5@980nm	≤2.1@980nm	≤0.75@1310nm	≤0.3@1550nm
			≤1.0@1550nm	≤1.0@1550nm	≤1.5@1060nm	≤0.5@1550nm	
<b>Geometrical Properties</b>							
Cladding Diameter (µm)	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5	124.7±0.5
Coating Diameter (µm)	240.0±5.0	240.0±5.0	240.0±5.0	240.0±5.0	240.0±5.0	240.0±5.0	240.0±5.0
Cladding Non-circularity (%)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
Core/Cladding Concentricity (µm)	≤0.5	≤0.5	≤0.3	≤0.3	≤0.3	≤0.3	≤0.5
<b>Macro-bending Induced Loss</b>							
φ15mm-Itum(dB)	1550nm	-	-	-	-	-	≤0.20
	1625nm	-	-	-	-	-	≤0.50
φ20mm-Itum(dB)	980nm	-	-	≤0.02	-	-	-
	1310nm	-	-	-	-	≤0.01	-
	1550nm	-	-	-	≤0.05	≤0.01	≤0.05
φ30mm-Itum(dB)	980nm	-	-	≤0.01	-	-	-
	1550nm	-	-	≤0.08	-	-	-
<b>Mechanical Properties</b>							
Proof Test (kpsi)	100 or 200	100 or 200	100 or 200	100 or 200	100 or 200	100 or 200	100 or 200
<b>Environmental Properties</b>							
Operating Temperature (°C)	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85



## Bending Insensitive Single-mode Fibre (BI-SMF)

YOFC bending insensitive single-mode fibre are particularly developed for applications with very small bending radius. The fibre has excellent bending resistance by the special design of waveguide structure, and the minimum bending radius can reach 5mm. By strictly controlling of preform raw materials and drawing process, the fibre has excellent mechanical properties and can meet high proof test level and long spool length requirements.

In this fibre series, BI1011-A is suitable for optical fibre guidance, and BI1015-A and BI1015-B are suitable for fibre hydrophone. BI1015-B is a small-diameter fibre with a cladding diameter of 80 $\mu$ m, serving the application of compact components.

### Characteristics

- Low macro-bending loss including L-band
- Low micro-bending induced loss
- Superior geometry
- Excellent mechanical properties, proof test level can reach 200 kpsi
- The cladding diameter is 80  $\mu$ m, realizing the miniaturization of optical fibre

### Applications

- Small-sized optical component
- Optical-fibre guidance
- Hydrophone

## Specifications

Fibre Type	BI 6/125-18/250 <sup>①</sup>	BI 6/100-18/200	BI 7/125-18/250	BI 7/80-18/170 <sup>②</sup>	BI 7/80-19/170	BI 8/125-14/250
Part No.	BI1011-A	BI1011-C	BI1015-A	BI1015-B	BI1015-F	BI1016-A
<b>Optical Properties</b>						
Fibre Cutoff Wavelength (nm)	≤1260	≤1260	1350 - 1500	1350 - 1500	1350 - 1500	≤1260
Zero Dispersion Wavelength (nm)	≤1420	≤1420	-	-	-	1300 - 1324
Mode-field Diameter@1310nm (μm)	6.5±0.4	6.5±0.4	-	-	-	8.6±0.4
Mode-field Diameter@1550nm (μm)	7.4±0.5	7.4±0.5	7.5±0.4	7.0±0.4	6.6±0.4	9.6±0.5
Attenuation@1310 (dB/km)	≤0.39	≤0.42	-	-	-	≤0.35
Attenuation@1383 (dB/km)	-	-	-	-	-	≤0.35
Attenuation@1490 (dB/km)	≤0.26	≤0.32	-	-	-	-
Attenuation@1550 (dB/km)	≤0.24	≤0.30	≤0.26	≤0.28	≤0.28	≤0.21
Attenuation@1625 (dB/km)	≤0.25	≤0.31	≤0.27	≤0.29	≤0.29	≤0.23
<b>Geometrical Properties</b>						
Cladding Diameter (μm)	124.7±0.5	100.0±1.0	124.7±0.5	80.0±1.0	80.0±1.0	124.4±0.4
Coating Diameter (μm)	240.0±5.0	198.0±5.0	240.0±5.0	170.0±5.0	170.0±5.0	240.0±5.0
Cladding Non-circularity (%)	≤1.0	≤1.0	≤0.7	≤0.7	≤0.7	≤0.7
Core/Cladding Concentricity (μm)	≤0.6	≤0.6	≤0.6	≤0.6	≤0.6	≤0.6
<b>Macro-bending Induced Loss</b>						
φ10mm-1turn (dB)	1550nm	-	≤0.05	-	-	≤0.15
	1625nm	-	≤0.15	-	-	≤0.45
φ15mm-1turn (dB)	1550nm	≤0.05	-	-	-	≤0.05
	1625nm	≤0.10	-	-	-	≤0.25
φ20mm-1turn (dB)	1550nm	≤0.02	-	-	-	≤0.03
	1625nm	≤0.05	-	-	-	≤0.10
φ10mm-25turns (dB)	1550nm	-	-	≤0.02	≤0.02	≤0.02
φ30mm-10turns (dB)	1550nm	≤0.01	-	-	-	-
	1625nm	≤0.02	-	-	-	-
<b>Mechanical Properties</b>						
Proof Test (kpsi)	150	150	150	200	200	100
<b>Environmental Properties</b>						
Operating Temperature (°C)	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85	-60 to +85

\*①200μm outer diameter fibre is available

\*②135μm outer diameter fibre is available

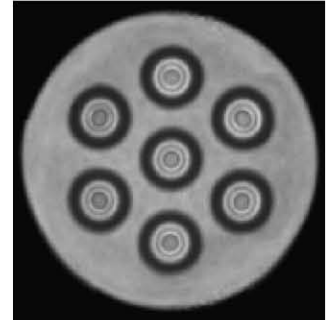
\*③Reducing-cladding diameter fibre such as 60μm, 100μm, and other non-standard size fibre are available

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# Customized Single/Multi-mode Fibre

## Multi Core Fibre (MCF)

Multi core fibre(MCF) is a new kind of fibre with several separate fibre cores co-existed in the same cladding. YOFC MCF can achieve low inter-crosstalk in long SDM optical transmission by adopting the seven-core structure and F-doped cladding, which has a typical promising future in optical transmission field. Based on the concept of space division multiplexing (SDM), multi-core fibre can realize transmitting several light signals through different channels and is expected as a breakthrough technology against capacity crunch of optical transmission system over a single-mode fibre. With the development of SDM and multi-core fibre sensor technology, multi-core fibre would be a vital branch of fibre development. The level of crosstalk and fibre coating of MCF can also be customization to fulfill your use in transmission, sensor, industry, medical equipment fields and so on.



### Characteristics

- Single fibre with spatial superchannels
- Ultra-low cross talk between cores
- Excellent fibre geometric consistency
- Low fibre loss

### Applications

- Extremely large capacity transmission system
- Large-capacity multi-task access
- Distributed fibre sensors
- Medical equipments

### Specifications

Fibre Type	MCF 7-42/150/250(SM)	
Part No.	MC1010-A	
Type Description	Low Crosstalk Seven Core MCF	
Optical Properties	Value	Typical
Cross Talk (Adjacent Core) (dB/100km)	< -45	-50
Attenuation@ 1310nm (dB/km)	< 0.45	0.4
Attenuation@ 1550nm (dB/km)	< 0.30	0.25
Zero Dispersion Wavelength (nm)	1290 - 1320	1308
Dispersion@ 1550nm (ps/nm · km)	17.0 ± 1.0	17.1
PMD (ps/km <sup>1/2</sup> )	< 2	< 1.5
Cable Cut off Wavelength λ <sub>cc</sub> (nm)	< 1300	1250
Mode Field Diameter @1310nm (μm)	8.5 ± 0.5	8.4
Mode Field Diameter @1550nm (μm)	9.5 ± 0.5	9.5
Geometrical Properties		
Core Diameter (μm)	8.0 ± 0.5	7.9
Core-to-core (adjacent) Distance (μm)	41.5 ± 1.5	-
Cladding Diameter (μm)	150.0 ± 2.0	-
Coating Diameter (μm)	245.0 ± 10.0	-
Coating Description		
Coating Type	UV-acrylate	High temperature coating is available.
Operating Temperature Range (°C)	-40 to +70	-
Mechanical Properties		
Short Term Bend Radius (mm)	≥ 7.5	-
Long Term Bend Radius (mm)	≥ 15	-
Proof Test (kpsi)	≥ 50	-

## Multi-core Fibre Fan-in & Fan-out Module

Multi-core fibre fan-in and fan-out module is a module to realize the high coupling efficiency between the multi-core fibre and single-mode fibres, to realize the channel space division multiplexing and demultiplexing function in the applications. The optical fibre tapering technology is used to realize the optical power coupling between multi-core fibre and single mode fibres with low insertion loss, low core crosstalk and high return loss. YOFC multi-core fibre fan-in and fan-out module adopts seven channel structure, with YOFC's multi-core fibre(MCF), a complete communication and sensor system can be built, which means a broad application prospect.



### Characteristics

- Encapsulated in metal tube
- Low and consistent insertion loss
- Ultra low crosstalk
- FC/PC, FC/APC or bare fibre

### Specifications

Module Type	FAN-7-42	
Type Description	Seven Cores Fibre Fan-in & Fan-out Module	
Optical Properties	Value	Typical
Average Insertion Loss@1550nm (dB)	< 1.5	1.0
Max.Insertion Loss@1550nm (dB)	< 2.0	1.5
Return Loss (dB)	> 45	50
Crosstalk Index-Adjacent Core (dB)	< -50	-55
Geometrical Properties		
Multi-core Pigtail Length (m)	> 1.0	1.5
Single-mode Pigtail Length (Bare Fibre) (m)	> 1.0	2.0
Single-mode Pigtail Length (Patch-cord) (m)	> 0.5	1.0
Encapsulation Box Description		
Box Size (mm)	Φ4×180	
Operating Temperature (°C)	-40 to +70	



## Few-mode Fibre (FMF)

The MDM transmission system uses the limited orthogonal modes in few mode fibre (FMF) as the independent channels to carry out information transmission in order to multiply the transmission capacity of the system. The few mode optical fibre uses different modes in the fibre as a new degree of freedom, the spectrum efficiency of the system can be improved successfully by FMF. As FMF has large mode field areas, its nonlinear tolerance is always better than that of SMF. It not only improves the capacity of optical transmission system, but also avoid the nonlinear effects. The MDM system based on FMF can solve the future single mode fibre bandwidth crisis.

YOFC FMFs taking advantages of PCVD process which is able to manufacture complex index-profile accurately, can get various types of core layer structure, such as Step-Index, Graded-Index etc. According to different design, 2-mode, 4-mode, 6-mode, 9-mode FMFs and even Ultra-low-loss (ULL) FMFs can be realized.

### Characteristics

- Strictly controlled optical and geometrical parameters
- Customized waveguide is available
- Low macro-bending loss
- Low DMD for graded index fibre
- Low crosstalk for step index fibre

### Applications

- Mode division multiplexing (MDM)
- Communication
- Sensing

## Specifications

### Two Mode Fibre (Graded-Index)

Fibre Type		FM GI-2	
Part No.		FM2010-A	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$20.0 \pm 0.3$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 0.5$	-
Cladding Non-circularity (%)		$< 0.7$	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion ( $\text{ps}/(\text{nm} \cdot \text{km})$ )	LP01	$\leq 23$	21.2
	LP11	$\leq 23$	20.5
Dispersion Slope ( $\text{ps}/(\text{nm}^2 \cdot \text{km})$ )	LP01	$\leq 0.11$	0.098
	LP11	$\leq 0.11$	0.096
Effective Area ( $\mu\text{m}^2$ )	LP01	$\geq 100$	112
	LP11	$\geq 140$	152
Attenuation (dB/km)	LP01	$\leq 0.21$	0.19
	LP11	$\leq 0.21$	0.20
Differential Group Delay (ps/m)	LP11-LP01	- 0.3 to 0.3	-0.14

## Two Mode Fibre (Step-Index)

Fibre Type		FM SI-2	
Part No.		FM2010-B	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$14.0 \pm 0.5$	-
Core Refractive Index @1550nm		1.4485	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 0.7$	-
Cladding Non-circularity (%)		< 0.7	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion (ps/(nm·km))	LP01	< 22	21
	LP11	< 21	19.5
Dispersion Slope (ps/(nm <sup>2</sup> ·km))	LP01	< 0.1	0.08
	LP11	< 0.1	0.07
Effective Area ( $\mu\text{m}^2$ )	LP01	> 100	130
	LP11	> 200	220
Attenuation (dB/km)	LP01	< 0.21	0.19
	LP11	< 0.21	0.19
Differential Group Delay (ps/m)		LP11-LP01	< 2.1

## ULL-Two Mode Fibre (Step-Index)

Fibre Type		FM SI-2-ULL	
Part No.		FM2010-C	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$16.0 \pm 0.2$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 1.0$	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion (ps/(nm·km))	LP01	21.0 - 23.0	22.53
	LP11	21.0 - 23.0	22.82
Dispersion Slope (ps/(nm <sup>2</sup> ·km))	LP01	0.08 - 0.11	0.1012
	LP11	0.08 - 0.11	0.1011
Effective Area ( $\mu\text{m}^2$ )	LP01	150 - 200	169
	LP11	150 - 200	167
Attenuation (dB/km)	LP01	$\leq 0.17$	0.161
	LP11	$\leq 0.17$	0.161
Differential Group Delay (ps/m)		LP11-LP01	$\leq 5$

## Four Mode Fibre (Graded-Index)

Fibre Type		FM GI-4	
Part No.		FM2011-A	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$23.0 \pm 0.3$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 0.5$	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion (ps/(nm·km))	LP01	$\leq 23.0$	21.4
	LP11	$\leq 23.0$	21.5
	LP21	$\leq 23.0$	21.6
	LP02	$\leq 23.0$	22.0

### Four Mode Fibre (Graded-Index)

Fibre Type		FM GI-4	
Part No.		FM2011-A	
Optical Characteristics@1550nm		Range	Typical Value
Dispersion Slope (ps/(nm <sup>2</sup> · km))	LP01	≤ 0.11	0.099
	LP11	≤ 0.11	0.100
	LP21	≤ 0.11	0.099
	LP02	≤ 0.11	0.100
Effective Area (μm <sup>2</sup> )	LP01	≥ 100	118
	LP11	≥ 140	155
	LP21	≥ 200	204
	LP02	≥ 200	217
Attenuation (dB/km)	LP01	≤ 0.21	0.194
	LP11	≤ 0.21	0.191
	LP21	≤ 0.21	0.194
	LP02	≤ 0.21	0.194
Differential Group Delay (ps/m)	LP11-LP01	≤ 0.5	0.17
	LP21-LP01	≤ 0.5	0.30
	LP02-LP01	≤ 0.5	0.31

### Four Mode Fibre (Step-Index)

Fibre Type		FM SI-4	
Part No.		FM2011-B	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter (μm)		18.5 ± 0.3	-
Cladding Diameter (μm)		125 ± 0.5	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter (μm)		245.0 ± 10.0	-
Dispersion (ps/(nm · km))	LP01	≤ 23	21.9
	LP11	≤ 23	22.5
	LP21	≤ 23	22.0
	LP02	≤ 23	21.8
Dispersion Slope (ps/(nm <sup>2</sup> · km))	LP01	≤ 0.11	0.102
	LP11	≤ 0.11	0.104
	LP21	≤ 0.11	0.100
	LP02	≤ 0.11	0.095
Effective Area (μm <sup>2</sup> )	LP01	≥ 160	190
	LP11	≥ 160	181
	LP21	≥ 160	200
	LP02	≥ 160	182
Attenuation (dB/km)	LP01	≤ 0.21	0.191
	LP11	≤ 0.21	0.189
	LP21	≤ 0.21	0.189
	LP02	≤ 0.21	0.189
Differential Group Delay (ps/m)	LP11-LP01	≤ 5	1.70
	LP21-LP01	≤ 5	3.61
	LP02-LP01	≤ 5	3.65

## ULL-Four Mode Fibre (Step-Index)

Fibre Type		FM SI-4-ULL	
Part No.		FM2011-C	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$22.0 \pm 0.2$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 1.0$	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion ( $\text{ps}/(\text{nm} \cdot \text{km})$ )	LP01	21.0 - 25.0	22.51
	LP11	21.0 - 25.0	23.90
	LP21	21.0 - 25.0	24.74
	LP02	21.0 - 25.0	23.14
Dispersion Slope ( $\text{ps}/(\text{nm}^2 \cdot \text{km})$ )	LP01	0.08 - 0.11	0.1015
	LP11	0.08 - 0.11	0.1046
	LP21	0.08 - 0.11	0.1033
	LP02	0.08 - 0.11	0.1014
Effective Area ( $\mu\text{m}^2$ )	LP01	200 - 300	269
	LP11	200 - 300	254
	LP21	200 - 300	277
	LP02	200 - 300	244
Attenuation (dB/km)	LP01	$\leq 0.17$	0.161
	LP11	$\leq 0.17$	0.161
	LP21	$\leq 0.17$	0.163
	LP02	$\leq 0.17$	0.168
Differential Group Delay ( $\text{ps}/\text{m}$ )	LP11-LP01	$\leq 5$	2.08
	LP21-LP01	$\leq 5$	4.43
	LP02-LP01	$\leq 5$	4.63

## Six Mode Fibre (Graded-Index)

Fibre Type		FM GI-6	
Part No.		FM2012-A	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$25.6 \pm 0.3$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 1.0$	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion ( $\text{ps}/(\text{nm} \cdot \text{km})$ )	LP01	20.0 - 22.0	21.31
	LP11	20.0 - 22.0	21.40
	LP21	20.0 - 22.0	21.28
	LP02	20.0 - 22.0	21.18
	LP31	20.0 - 22.0	21.32
	LP12	20.0 - 22.0	21.68
Dispersion Slope ( $\text{ps}/(\text{nm}^2 \cdot \text{km})$ )	LP01	0.09 - 0.11	0.0988
	LP11	0.09 - 0.11	0.0987
	LP21	0.09 - 0.11	0.0990
	LP02	0.09 - 0.11	0.0981
	LP31	0.09 - 0.11	0.1011
	LP12	0.09 - 0.11	0.0960
Effective Area ( $\mu\text{m}^2$ )	LP01	100 - 240	123
	LP11	100 - 240	162
	LP21	100 - 240	217
	LP02	100 - 240	203
	LP31	100 - 240	225
	LP12	100 - 240	235

## Six Mode Fibre (Graded-Index)

Fibre Type		FM GI-6	
Part No.		FM2012-A	
Optical Characteristics@1550nm		Range	Typical Value
Attenuation (dB/km)	LP01	≤ 0.22	0.207
	LP11	≤ 0.22	0.206
	LP21	≤ 0.22	0.208
	LP02	≤ 0.22	0.208
	LP31	≤ 0.22	0.21
	LP12	≤ 0.22	0.21
Differential Group Delay (ps/m)	LPmn-LP01	-0.2 to 0.2	0.13

## Six Mode Fibre (Step-Index)

Fibre Type		FM SI-6	
Part No.		FM2012-B	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter (μm)		16.0 ± 0.2	-
Cladding Diameter (μm)		125.0 ± 1.0	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter (μm)		245.0 ± 10.0	-
Dispersion (ps/(nm · km))	LP01	21 - 24	21.85
	LP11	21 - 24	22.63
	LP21	21 - 24	22.83
	LP02	21 - 24	23.71
	LP31	21 - 24	22.71
	LP12	21 - 24	22.89
Dispersion Slope (ps/(nm <sup>2</sup> · km))	LP01	0.08 - 0.11	0.1046
	LP11	0.08 - 0.11	0.1038
	LP21	0.08 - 0.11	0.0983
	LP02	0.08 - 0.11	0.09
	LP31	0.08 - 0.11	0.0821
	LP12	0.08 - 0.11	0.0911
Effective Area (μm <sup>2</sup> )	LP01	130 - 140	134
	LP11	120 - 130	125
	LP21	130 - 140	135
	LP02	110 - 120	119
	LP31	140 - 150	145
	LP12	150 - 160	153
Attenuation (dB/km)	LP01	≤ 0.22	0.201
	LP11	≤ 0.22	0.205
	LP21	≤ 0.22	0.21
	LP02	≤ 0.22	0.21
	LP31	≤ 0.22	0.215
	LP12	≤ 0.22	0.215
Differential Group Delay (ps/m)	LP11-LP01	≤ 5	4.4
	LP21-LP01	≤ 10	9.5
	LP02-LP01	≤ 10	9.52
	LP31-LP01	≤ 15	14
	LP12-LP01	≤ 12	10.04

## Nine Mode Fibre (Graded-Index)

Fibre Type		FM GI-9	
Part No.		FM2013-A	
Optical Characteristics@1550nm		Range	Typical Value
Core Diameter ( $\mu\text{m}$ )		$33.0 \pm 0.3$	-
Cladding Diameter ( $\mu\text{m}$ )		$125.0 \pm 1.0$	-
Cladding Non-circularity (%)		< 0.7	-
Wavelength (nm)		1450 - 1700	-
Coating Diameter ( $\mu\text{m}$ )		$245.0 \pm 10.0$	-
Dispersion ( $\text{ps}/(\text{nm} \cdot \text{km})$ )	LP01	21.0 - 24.0	21.33
	LP11	21.0 - 24.0	21.39
	LP21	21.0 - 24.0	21.55
	LP02	21.0 - 24.0	21.31
	LP31	21.0 - 24.0	20.79
	LP12	21.0 - 24.0	21.05
	LP41	21.0 - 24.0	20.35
	LP22	21.0 - 24.0	22.40
Dispersion Slope ( $\text{ps}/(\text{nm}^2 \cdot \text{km})$ )	LP01	0.08 - 0.11	0.0989
	LP11	0.08 - 0.11	0.0989
	LP21	0.08 - 0.11	0.1011
	LP02	0.08 - 0.11	0.0988
	LP31	0.08 - 0.11	0.0966
	LP12	0.08 - 0.11	0.0984
	LP41	0.08 - 0.11	0.0925
	LP22	0.08 - 0.11	0.1010
Effective Area ( $\mu\text{m}^2$ )	LP01	110 - 400	149
	LP11	110 - 400	196
	LP21	110 - 400	240
	LP02	110 - 400	254
	LP31	110 - 400	290
	LP12	110 - 400	302
	LP41	110 - 400	331
	LP22	110 - 400	392
Attenuation (dB/km)	LP01	$\leq 0.22$	0.201
	LP11	$\leq 0.22$	0.201
	LP21	$\leq 0.22$	0.203
	LP02	$\leq 0.22$	0.202
	LP31	$\leq 0.22$	0.203
	LP12	$\leq 0.22$	0.204
	LP41	$\leq 0.22$	0.204
	LP22	$\leq 0.22$	0.204
Differential Group Delay ( $\text{ps}/\text{m}$ )	LP03	$\leq 0.22$	0.204
	LPmn-LP01	-0.5 to 0.5	0.05

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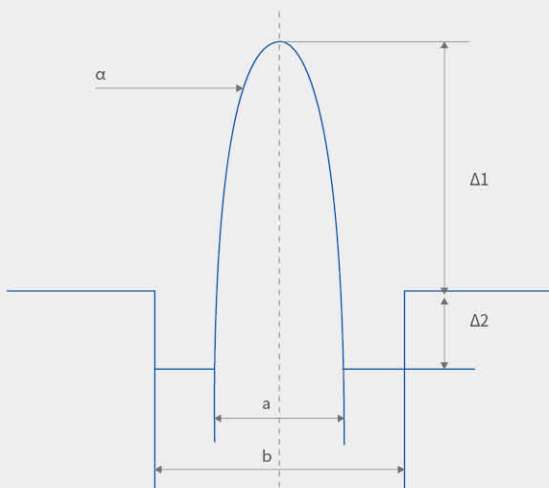
## High Nonlinear Optical Fibre (HNLf)

The nonlinear effect of optical fibre, such as stimulated Raman scattering (SRS), stimulated Brillouin scattering and optical Kerr effect, has many applications in the field of communications and optical signal processing. In the Kerr effect, refractive index of optical dielectric materials changes with luminous power, which will lead to a series of secondary effects, such as the self-phase modulation (SPM), cross phase modulation (XPM), four wave mixing (FWM), and the unsteady modulation. Optical Kerr effect can be used in optical parametric amplification, frequency conversion, phase coupling, pulse compression and generation, optical soliton transmission, etc.

The design of the high nonlinear optical fibre on several aspects need to be taken into account. Firstly, optical fibre should have high nonlinear coefficient to obtain effective nonlinear interaction. Secondly, optical fibre must have a lower loss in order to increase the effective length.

Moreover, the dispersion of optical fibre should match various applications. Finally, the nonlinear optical fibre must have low polarization mode dispersion. For silica-based high nonlinear optical fibre, the design of the refractive index profile plays an important role to meet the above requirement. Small core effective area, low dispersion slope and cutoff wavelength which is much smaller than the operating wavelength must be implemented at the same time in the design of high nonlinear optical fibre.

YOFC HNLf's not only have high nonlinear coefficient and very low dispersion slope at the same time. YOFC uses W type to design profile which is flexible, and the cladding in low refractive index is introduced around the core step refractive index.



The refractive index profile sketch

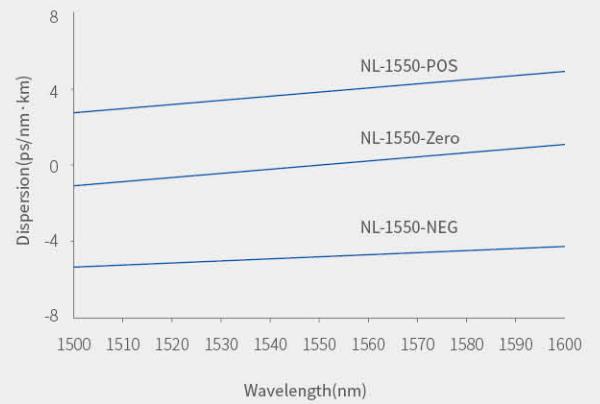
### Characteristics

- High nonlinear coefficient
- Zero-dispersion wavelength is adjustable in the S, C, L wavelength
- Low loss and low dispersion slope
- Easy to be spliced to single-mode fibre with low additional loss

## Applications

- Parametric amplification
- Wavelength conversion
- Pulse compression
- Super-continuum source
- Light regenerator
- Discrete type (or lumped type) Raman amplifier

## Three types of HNLFF typical dispersion test curves



## Specifications

Fibre Type	NL 1550-POS	NL 1550-Zero	NL 1550-NEG
Part No.	NL1016-A	NL1016-B	NL1016-C
<b>Optical Properties</b>			
Operating Window	C wavelength	C wavelength	C wavelength
Dispersion Slope@ 1550nm (ps/nm <sup>2</sup> ·km)	< 0.035	< 0.030	< 0.030
Dispersion@ 1550nm (ps/nm·km)	> 1	0.0 ± 1	< -1
Nonlinear Coefficient@ 1550nm (W <sup>-1</sup> ·km <sup>-1</sup> )	≥ 10	≥ 10	≥ 10
Attenuation Coefficient@ 1550nm (dB/km)	≤ 1.5	≤ 1.5	≤ 1.5
Cut-off Wavelength (nm)	< 1480	< 1480	< 1480
Numerical Aperture (typical value)	0.35	0.35	0.35
<b>Geometry Properties</b>			
Cladding Diameter (μm)	125.0 ± 5.0	125.0 ± 5.0	125.0 ± 5.0
Cladding Non-circularity (%)	≤ 1	≤ 1	≤ 1
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5
Coating Diameter (μm)	245.0 ± 10.0	245.0 ± 10.0	245.0 ± 10.0

• Optical fibre splice service is available

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## Photonic Crystal Fibre (PCF)

Photonic crystal fibre, also known as microstructure fibre or holey fibre, normally consists of a regular pattern of air holes or doped materials inside pure silica background along the transverse direction. According to the mechanism of light guided in fibre, PCF is classified as TIR and PBG. Stacking and drawing technique are used for the preparation of our PCFs to realize special characteristics such as endless single mode, extremely large mode area, wave-guide in hollow core, high nonlinear effects and birefringence etc.

YOFC has developed a series of PCFs for all kinds of applications based on our synthetic material, PCVD process, stacking/drawing technique and theoretical simulation.

## Characteristics

- Low loss
- Long delivery length
- Fine microstructure, excellent characteristics performance of specific fibre type
- Single material composition, namely high purity SiO<sub>2</sub> (except all solid photonic band gap fibre)



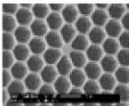
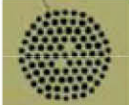

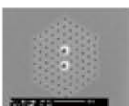


## Applications

- Super-continuum sources
- Optical fibre laser and amplifier
- High power transmission
- Optical fibre grating and sensors
- All optical signal processing

## Standard Products

- Endless single-mode PCF
- Polarization maintaining PCF
- High nonlinearity PCF
- All solid PBG
- Dual core PCF

## Specifications

Main Classes	Subclasses	Fibre Type	Part No.	Attributes	Fibre Structure	Application Examples
Total internal reflection (TIR)	Endless single-mode PCF	PC SM	PC1010-A	Pure silica core; Attenuation can be as low as 1 dB/km		Wide single-mode transmission Energy delivery
	High nonlinearity PCF	PC HNL	PC1011-A	950-1100nm ZDW		Supercontinuum generation by 1µm pulse laser or CW laser
				700-900nm ZDW		Supercontinuum generation by 0.8µm fs pulse laser Nonlinearity optics Nonlinearity fibre laser
	Multi-core PCF	PC DC	PC1012-A	Dual core		Senor Directional coupling components
		PC 7C	PC1012-B	Seven-core		Supercontinuum generation Nonlinearity optics
	Polarization maintaining PCF	PC PM	PC1013-A	Excellent radiation resistance, temperature insensitive, low mac- ro-bending induced attenuation		Gyro; Interferometer
Passive double cladding PCF	PC PDC	PC1015-A	Pure silicon core, large mode field		Single mode pulsed laser transmission; Spectroscopy research	
Photonic bandgap (PBG)	All solid PBG	PC ASPBG	PC1014-A	Tailored bandgap spectrum		Filtering Special rare earth doped fibre Special dispersion and operating wavelength fiber

- 010008 Rev 202211

# Coreless Fibre (CLF)

YOFC coreless fibre, which is coreless, only includes a solid silica cladding surrounded by a transparent coating material, acrylate. Coreless fibres with  $\Phi 125\mu\text{m}$  or  $\Phi 250\mu\text{m}$  silica cladding are our standard products. Besides, customized fibres with special requirements are available.

## Characteristics

- High geometrical precision
- Using F300 glass material as cladding material
- Attributed to adopting the commonly used UV curing dual-layer acrylate as coating material, the coating is easy to be stripped off
- Excellent mechanical properties

## Applications

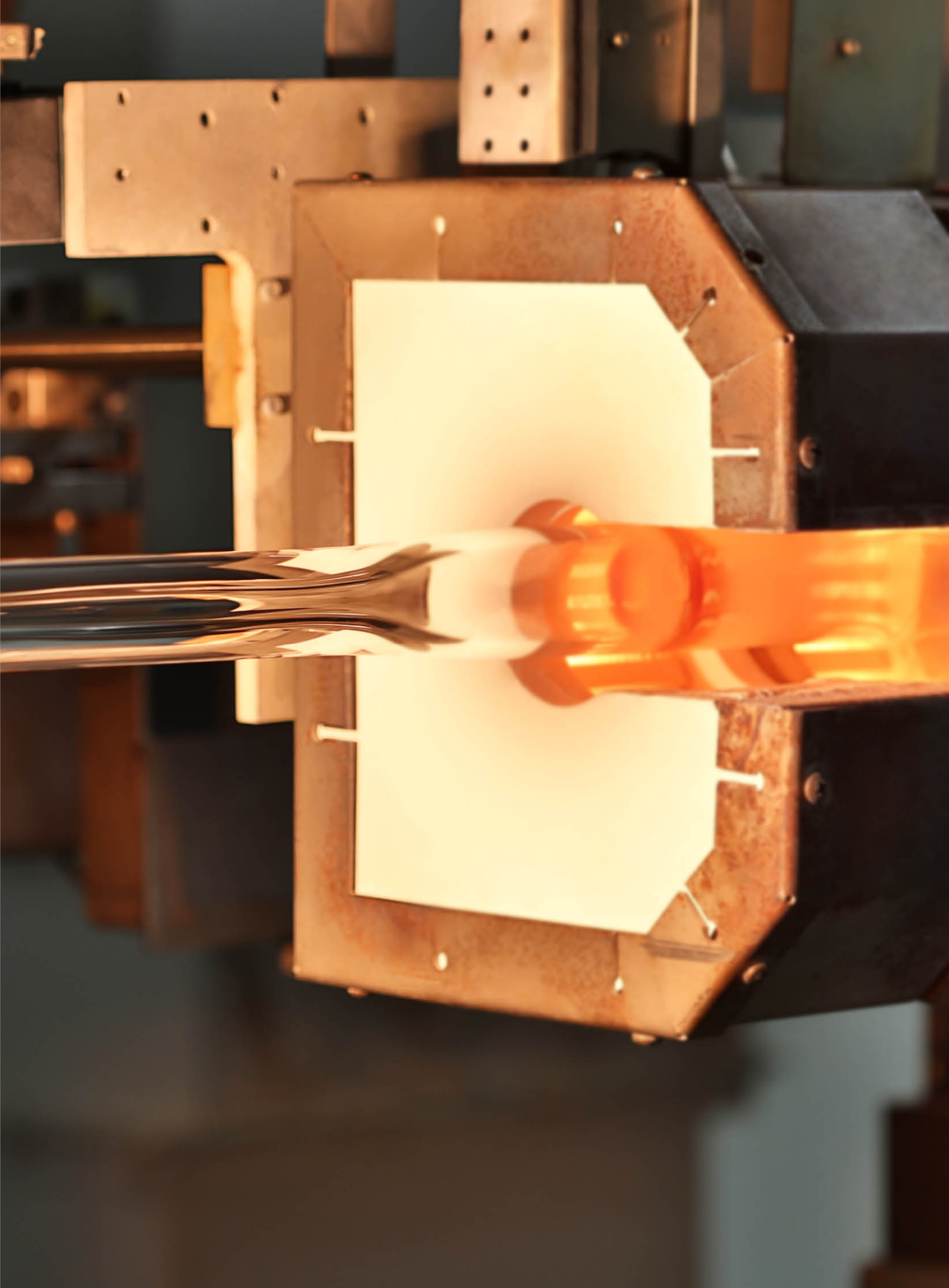
- Spliced with unused branches of fibre components to minimize back reflections
- Used as fibre end caps to prevent laser-induced fibre damage



## Specifications

Fibre Type	CL 0/125-0/250	CL 0/250-0/500	CL 0/62.5-0/165
Part No.	CL1010-A	CL1010-B	CL1010-C
Cladding Diameter ( $\mu\text{m}$ )	125.0 $\pm$ 1.0	250.0 $\pm$ 5.0	62.5 $\pm$ 1.0
Reflection Index@1550nm	1.444	1.444	1.444
Coating Diameter ( $\mu\text{m}$ )	245.0 $\pm$ 10.0	500.0 $\pm$ 15.0	165.0 $\pm$ 5.0
Proof Test (kpsi)	100	100	100

- 010016      Rev 202211



# Polarization Maintaining Fibre for Component

## Grinding Polarization Maintaining Fibre for Component

### Characteristics

- Excellent grinding properties
- Tight geometric tolerances
- High environmental stability and reliability
- Excellent polarization maintaining properties

### Applications

- High performance transmission laser pigtailed
- Polarization-sensitive components
- Polarization maintaining device pigtailed

### Specifications-1

Fibre Type	PM 780_125-12/250	PM 850_125-12/250	PM 980_125-12/250	PM 980_125-12/400	PM 1310_125-13/250	PM 1310_125-13/400
Part No.	PM1013-A	PM1012-A	PM1015-A	PM1025-A	PM1016-C	PM1026-C
<b>Optical Properties</b>						
Operating Wavelength (nm)	780	850	980	980	1310	1310
Cut-off Wavelength (nm)	600 ~ 750	650 ~ 800	800 - 970	800 - 970	1100 - 1290	1100 - 1290
Mode Field Diameter (μm)	5.0±0.5@780nm	5.5±0.5@850nm	6.5 ± 0.5@980nm	6.5 ± 0.5@980nm	9.0 ± 0.5@1310nm	9.0 ± 0.5@1310nm
Attenuation (dB/km)	≤ 4.0	≤ 3.0	≤ 2.5	≤ 2.5	≤ 0.5	≤ 0.5
Beat Length (mm)	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	≤ 4.0	≤ 4.0
Typical Cross Talk at 4m (dB)	≤ -40@780nm	≤ -40@850nm	≤ -40@980nm	≤ -40@980nm	≤ -40@1310nm	≤ -40@1310nm
Cross Talk at 100m (dB)	≤ -30@780nm	≤ -30@850nm	≤ -30@980nm	≤ -30@980nm	≤ -30@1310nm	≤ -30@1310nm
<b>Geometrical Properties</b>						
Cladding Diameter (μm)	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0
Coating Diameter (μm)	245.0 ± 5.0	245.0 ± 5.0	245.0 ± 5.0	400.0 ± 15.0	245.0 ± 5.0	400.0 ± 15.0
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate
<b>Mechanical Properties</b>						
Operating Temperature (°C)	-45 to +85	-45 to +85	-45 to +85	-45 to +85	-45 to +85	-45 to +85
Proof Test (kpsi)	100	100	100	100	100	100

## Specifications-2

Fibre Type	PM 14xx_ 125-13/250	PM 1550_ 125-13/250	PM 1550_ 125-13/400	PM 1550_ 125-13/250_BI
Part No.	PM1018-A	PM1017-C	PM1027-C	PM 1017-K
<b>Optical Properties</b>				
Operating Wavelength (nm)	1400 - 1490	1550	1550	1550
Cut-off Wavelength (nm)	1200 - 1380	1290 - 1520	1290 - 1520	1290 - 1520
Mode Field Diameter (μm)	9.8 ± 0.5@1450nm	10.5 ± 0.5@1550nm	10.5 ± 0.5@1550nm	9.0 ± 0.5@1550nm
Attenuation (dB/km)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Beat Length (mm)	≤ 4.5	≤ 5.0	≤ 5.0	≤ 5.0
Typical Cross Talk at 4m (dB)	≤ -40@14xx	≤ -40@1550nm	≤ -40@1550nm	≤ -40@1550nm
Cross Talk at 100m (dB)	≤ -30@14xx	≤ -30@1550nm	≤ -30@1550nm	≤ -30@1550nm
Macro-bend Loss (dB)	-	-	-	≤ 1.0@1550nm (dia. 15mm, 10turns)
<b>Geometrical Properties</b>				
Cladding Diameter (μm)	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0
Coating Diameter (μm)	245.0 ± 5.0	245.0 ± 5.0	400.0 ± 15.0	245.0 ± 5.0
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate
<b>Mechanical Properties</b>				
Operating Temperature (°C)	-45 to +85	-45 to +85	-45 to +85	-45 to +85
Proof Test (kpsi)	100	100	100	100

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# Tapering Polarization Maintaining Fibre for Component

## Characteristics

- Excellent grinding properties
- Tight geometric tolerances
- High environmental stability and reliability

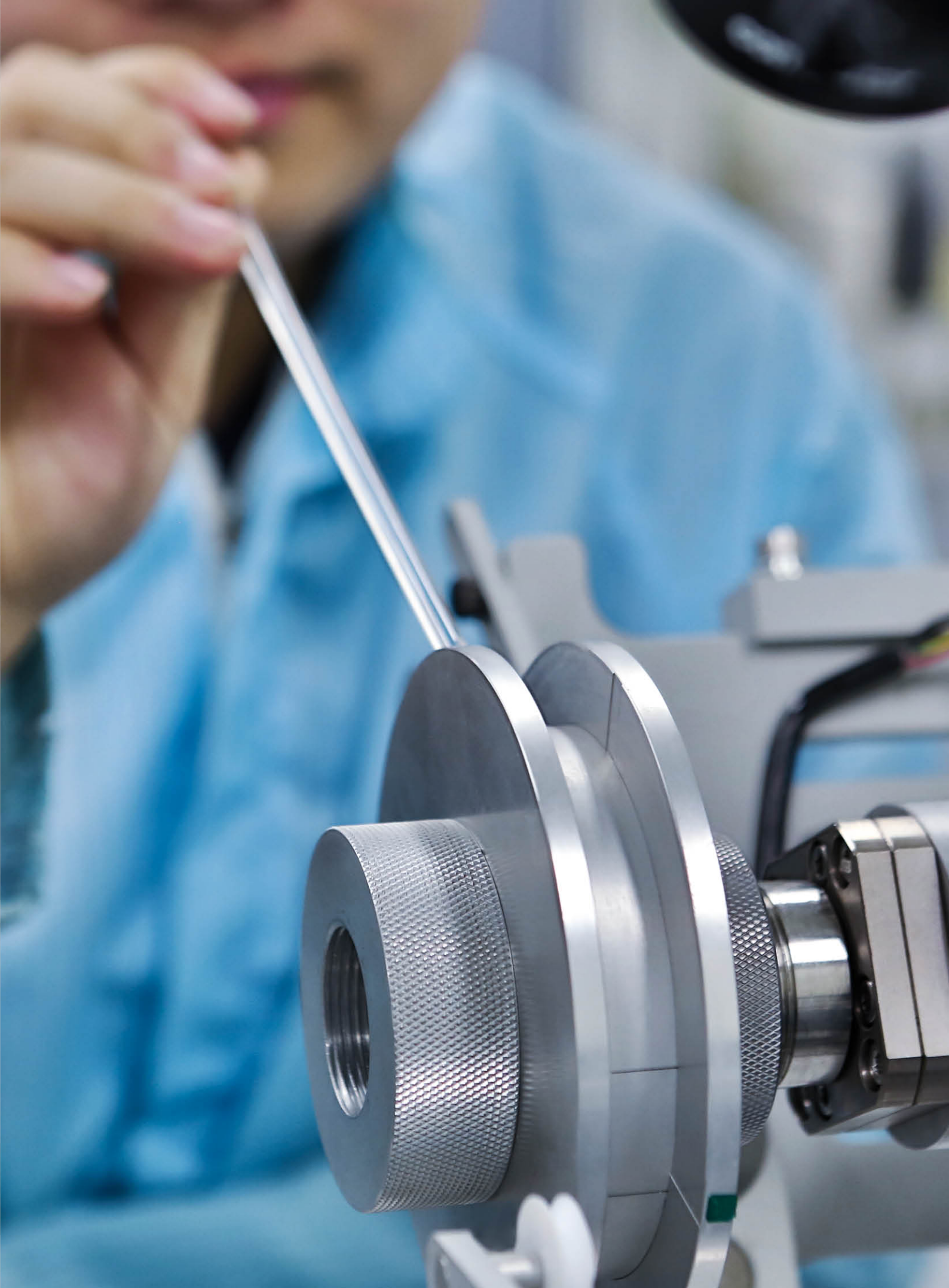
## Applications

- Polarization maintaining fused-fibre couplers
- Polarization-sensitive components
- Polarization maintaining device pigtails

## Specifications

Fibre Type	PM 980_ 125-12/250_C	PM 1310_ 125-13/250_C	PM 14xx_ 125-13/250_C	PM 1550_ 125-13/250_C
Part No.	PM1015-A+	PM1016-C+	PM1018-A+	PM1017-C+
<b>Optical Properties</b>				
Operating Wavelength (nm)	980	1310	1400 - 1490	1550
Cut-off Wavelength (nm)	800 - 970	1100 - 1290	1200 - 1380	1290 - 1520
Mode Field Diameter (μm)	6.5 ± 0.5@980nm	9.0 ± 0.5@1310nm	9.8 ± 0.5@1450nm	10.5 ± 0.5@1550nm
Attenuation (dB/km)	≤ 2.5	≤ 0.5	≤ 0.5	≤ 0.5
Beat Length (mm)	3.0 - 5.0	3.5 - 6.5	4.0 - 7.5	4.5 - 8.0
Typical Cross Talk at 4m (dB)	≤ -30@980nm	≤ -30@1310nm	≤ -30@14xx	≤ -30@1550nm
Cross Talk at 100m (dB)	≤ -25@980nm	≤ -25@1310nm	≤ -25@14xx	≤ -25@1550nm
<b>Geometrical Properties</b>				
Cladding Diameter (μm)	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0	124.5 ± 1.0
Coating Diameter (μm)	245.0 ± 5.0	245.0 ± 5.0	245.0 ± 5.0	245.0 ± 5.0
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate
<b>Mechanical Properties</b>				
Operating Temperature (°C)	-45 to +85	-45 to +85	-45 to +85	-45 to +85
Proof Test (kpsi)	100	100	100	100

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# Erbium Doped Fibre (EDF)

YOFC offers full series of erbium doped fibres, which could meet the most stringent amplifier requirements both for C-band and L-band. Through 1480nm or 980nm pump technology, YOFC erbium doped fibre can realize 35nm amplification bandwidth, and maintain flat gain as well as ideal power conversion efficiency. YOFC erbium doped fibres is specially designed for high performance, low noise requirements amplifier, for example, optical preamplifier, booster and in-line amplifier in the WDM communication system. YOFC erbium doped fibre has been optimized through erbium and aluminum codoping technology to ensure the high performance.

## Characteristics

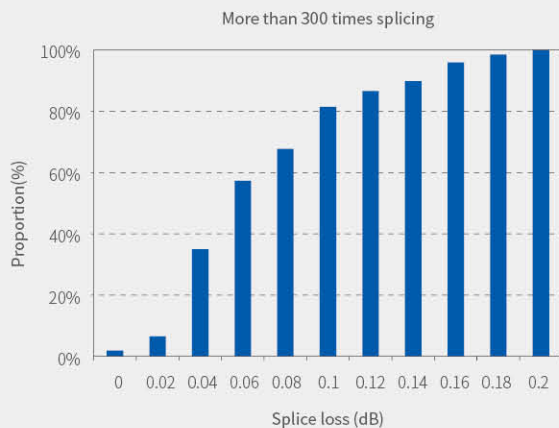
- Excellent spectral uniformity
- High power conversion efficiency and low noise design
- Industry leading fibre geometry
- Low PMD
- DLPC9 dual-layer coating to ensure excellent mechanical properties
- Excellent performance of hydrogen resistance
- Lower splice loss

## Applications

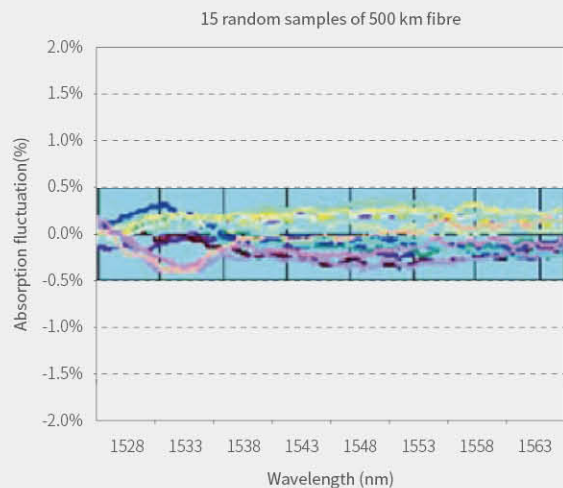
### For the Telecommunication Industry

- DWDM amplifiers
- CATV amplifiers
- 980nm or 1480nm pump
- Terrestrial and submarine telecommunications
- Aerospace

### Excellent Splicing Performance



### Absorption Reproducibility ( $\pm 0.3\%$ in the C Band)



## Specifications

Fibre Type	EDF3/6/125-23	EDF7/6/125-23	EDF13/6/125-23	EDF22/6/125-23	EDF36/6/125-23
<b>Part No.</b>	ED1011-A	ED1012-A	ED1013-A	ED1015-A	ED1016-A
<b>Application</b>	C Band	C Band	C & L Band	C & L Band	C & L Band
<b>Optical Properties</b>					
Absorption Peak 1529nm (Max.[1528 - 1532nm]) Specified Value (dB/m)* <sup>①</sup>	3.0 - 4.0	6.0 - 9.0	10.0 - 15.0	20.0 - 24.0	33.0 - 39.0
Absorption Peak 1529nm (Max.[1528 - 1532nm]) Typical (dB/m)* <sup>①</sup>	3.5	7.0	13.0	20.0	36.0
Absorption Reproducibility (%)(250m)	≤ 2.5	≤ 2.5	≤ 3.0	≤ 3.0	≤ 3.0
Background Attenuation (Min.[1100 - 1300 nm])(dB/km)	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Macro-bend Induced Attenuation (dB) (2 m, 15 mm diameter, λ< 1625 nm)(dB)	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1
Cutoff Wavelength (nm)* <sup>②</sup>	≤ 980	≤ 1300	≤ 1300	≤ 1300	≤ 1300
MFD 1550 nm (μm)* <sup>③</sup>	5.4 - 6.0	4.7 - 6.1	5.2 - 6.0	5.1 - 5.9	5.1 - 5.9
NA	0.21 - 0.25	0.21 - 0.25	0.21 - 0.25	0.21 - 0.25	0.21 - 0.25
Splicing Loss (with G.652 at 1300 & 1700 nm)(dB)	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
PMD (fs/m)	≤ 15	≤ 15	≤ 15	≤ 15	≤ 15
<b>Geometrical Properties</b>					
Cladding Diameter (μm)	125.0 ± 2.0	125.0 ± 2.0	125.0 ± 2.0	125.0 ± 2.0	125.0 ± 2.0
Coating Diameter (μm)	250.0 ± 15.0	250.0 ± 15.0	250.0 ± 15.0	250.0 ± 15.0	250.0 ± 15.0
Core/Cladding Concentricity (μm)	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6
Cladding/Coating Concentricity (μm)	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5	≤ 12.5
<b>Mechanical Properties</b>					
Proof Test (kpsi)	150	150	150	150	150
Delivery Length (± 5 m)(m)	250, 500, 1000	250, 500, 1000	250, 500, 1000	250, 500, 1000	250, 500, 1000
<b>Environmental Properties</b>					
Storage Temperature (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Operating Temperature Range (°C)	-5 to +75	-5 to +75	-5 to +75	-5 to +75	-5 to +75
Storage Humidity (Non Condensing)(%)	5 - 95	5 - 95	5 - 95	5 - 95	5 - 95
Operating Humidity (Non Condensing)(%)	5 - 95	5 - 95	5 - 95	5 - 95	5 - 95

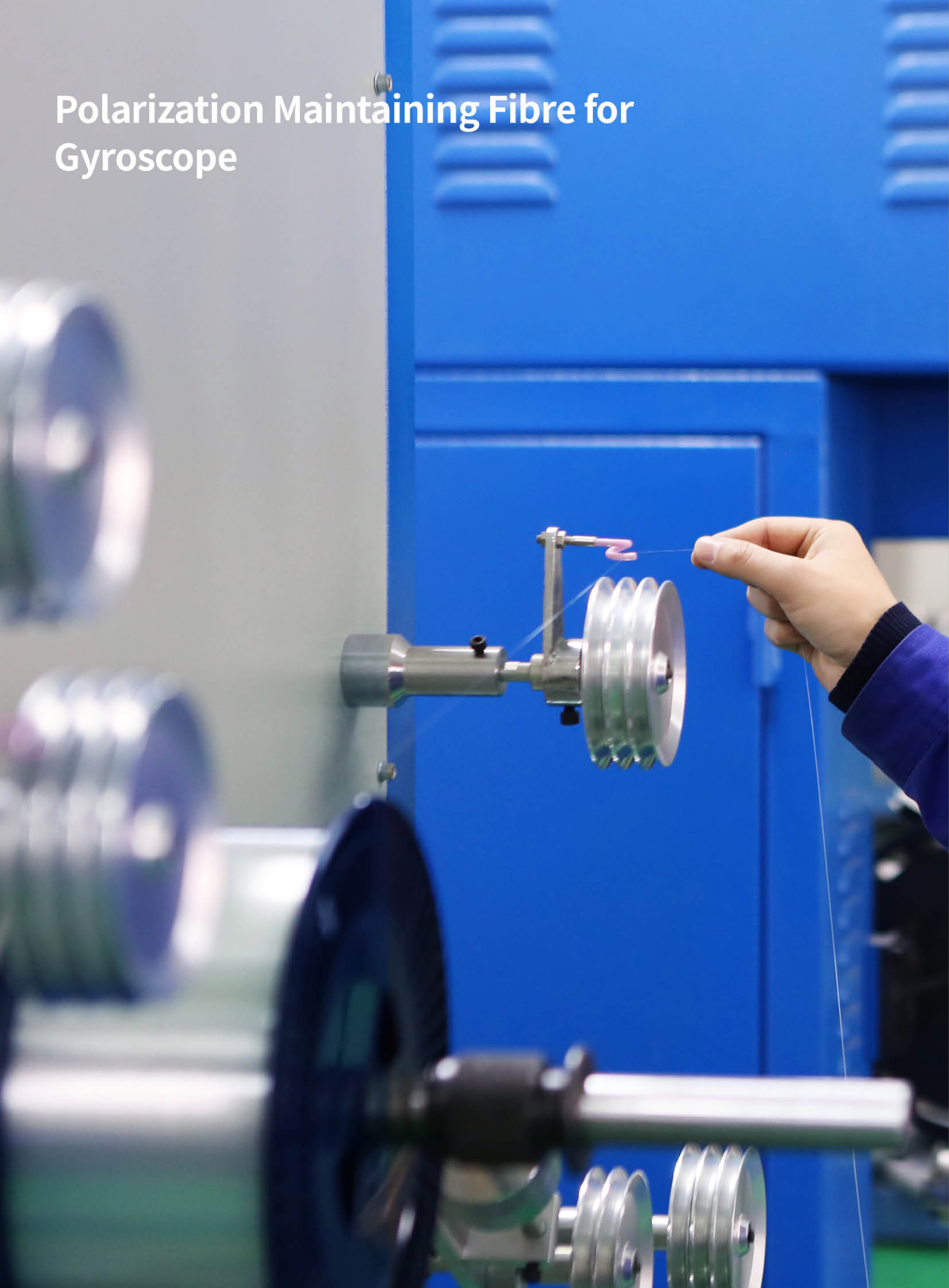
<sup>①</sup>Other values available on request

<sup>②</sup>Cutoff wavelength below 980 nm on request

<sup>③</sup>Larger MFD about ED1012-A on request

• 010010 Rev 202211

# Polarization Maintaining Fibre for Gyroscope



# Polarization Maintaining Fibre for Fibre Coil

## Characteristics

- Short beat length
- Extremely high birefringence
- Excellent polarization maintaining properties
- Tight geometric tolerances and very low attenuation
- Low bending-induced attenuation
- Tight tolerance, dual-layer, and UV-acrylate coating
- High environmental stability and reliability

## Applications

- Fibre optic gyroscopes (FOGs)
- Polarization maintaining fused-fibre couplers
- Polarization-sensitive components
- High performance transmission laser pigtails
- Polarization-based sensors

## Specifications

Fibre Type	PM 1310_ 125-16/250	PM 1310_ 80-16/165	PM 1310_ 80-16/135	PM 1310/ 60-16/100	PM 1550_ 125-18/250	PM 1550_ 80-18/165	PM 1550_ 80-18/135	PM 1550_ 60-18/100
Part No.	PM1016-A	PM1016-B	PM1016-G	PM1016-M	PM1017-A	PM1017-B	PM1017-G	PM1017-M
<b>Optical Properties</b>								
Operating Wavelength (nm)	1310	1310	1310	1310	1550	1550	1550	1550
Cut-off Wavelength (nm)	1100 - 1290	1100 - 1290	1100 - 1290	1100 - 1290	1290 - 1520	1290 - 1520	1290 - 1520	1290 - 1520
Mode Field Diameter (μm)	6.0 ± 0.5 @1310nm	6.0 ± 0.5 @1310nm	6.0 ± 0.5 @1310nm	6.0 ± 0.5 @1310nm	6.5 ± 0.5 @1550nm	6.5 ± 0.5 @1550nm	6.5 ± 0.5 @1550nm	6.5 ± 0.5 @1550nm
Attenuation (dB/km)	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Beat Length (mm)	≤ 3.0	≤ 3.0	≤ 2.5	≤ 3.0	≤ 3.5	≤ 3.5	≤ 3.0	≤ 3.5
Cross Talk at 1000m (dB)	≤ -30 @1310nm	≤ -30 @1310nm	≤ -25 @1310nm	≤ -25 @1310nm	≤ -30 @1550nm	≤ -30 @1550nm	≤ -25 @1550nm	≤ -30 @1550nm
<b>Geometrical Properties</b>								
Cladding Diameter (μm)	125.0 ± 1.0	80.0 ± 1.0	80.0 ± 1.0	60.0 ± 1.0	125.0 ± 1.0	80.0 ± 1.0	80.0 ± 1.0	60.0 ± 1.0
Coating Diameter (μm)	245.0 ± 5.0	165.0 ± 5.0	135.0 ± 5.0	100.0 ± 5.0	245.0 ± 5.0	165.0 ± 5.0	135.0 ± 5.0	100.0 ± 5.0
Cladding Non-Circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate
<b>Mechanical Properties</b>								
Operating Temperature (°C)	-45 to +85	-45 to +85	-45 to +85	-55 to +95	-45 to +85	-45 to +85	-45 to +85	-55 to +95
Proof Test (kpsi)	100	100	100	100	100	100	100	100

- 010011 Rev 202211

# Polarization Maintaining Fibre for Waveguide

## Characteristics

- Excellent grinding properties
- Tight geometric tolerances
- High environmental stability and reliability

## Applications

- Pigtail to LiNbO3 FOG chip (IOC)
- Polarization-based sensors

## Specifications

Fibre Type	PM 1310_ 125-16/250_Y	PM 1310_ 80-16/165_Y	PM 1550_ 125-18/250_Y	PM 1550_ 80-18/165_Y
Part No.	PM1016-E	PM1016-F	PM1017-E	PM1017-F
<b>Optical Properties</b>				
Operating Wavelength (nm)	1310	1310	1550	1550
Cut-off Wavelength (nm)	1100 - 1290	1100 - 1290	1290 - 1520	1290 - 1520
Mode Field Diameter (μm)	6.0 ± 0.5@1310nm	6.0 ± 0.5@1310nm	6.5 ± 0.5@1550nm	6.5 ± 0.5@1550nm
Attenuation (dB/km)	≤ 0.6	≤ 0.6	≤ 0.6	≤ 1.0
Beat Length (mm)	2.5 - 4.0	2.5 - 4.0	2.8 - 5.0	2.8 - 5.0
Typical Cross Talk at 4m (dB)	≤ -30@1310nm	≤ -30@1310nm	≤ -30@1550nm	≤ -30@1550nm
Cross Talk at 100m (dB)	≤ -30@1310nm	≤ -30@1310nm	≤ -30@1550nm	≤ -30@1550nm
<b>Geometrical Properties</b>				
Cladding Diameter (μm)	125.0 ± 1.0	80.0 ± 1.0	125.0 ± 1.0	80.0 ± 1.0
Coating Diameter (μm)	245.0 ± 5.0	165.0 ± 5.0	245.0 ± 5.0	165.0 ± 5.0
Cladding Non-Circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Coating Type	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate	Dual-layer UV-acrylate
<b>Mechanical Properties</b>				
Operating Temperature (°C)	-45 to +85	-45 to +85	-45 to +85	-45 to +85
Proof Test (kpsi)	100	100	100	100

- 010012 Rev 202211

# Polarization Maintaining Fibre for Tapering

## Characteristics

- Tight geometric tolerances
- High environmental stability and reliability

## Applications

- Polarization maintaining fused-fibre couplers
- Polarization-based sensors

## Specifications

Fibre Type	PM 1310_125-16/250_C
Part No.	PM1016-D
<b>Optical Properties</b>	
Operating Wavelength (nm)	1310
Cut-off Wavelength (nm)	1100 - 1290
Mode Field Diameter ( $\mu\text{m}$ )	$6.5 \pm 0.5@1310\text{nm}$
Attenuation (dB/km)	$\leq 1.0$
Beat Length (mm)	4.0 - 6.0
Typical Cross Talk at 4m (dB)	$\leq -30@1310\text{nm}$
Cross Talk at 100m (dB)	$\leq -25@1310\text{nm}$
<b>Geometrical Properties</b>	
Cladding Diameter ( $\mu\text{m}$ )	$124.5 \pm 1.0$
Coating Diameter ( $\mu\text{m}$ )	$245.0 \pm 5.0$
Cladding Non-Circularity (%)	$\leq 1.5$
Core/Cladding Concentricity ( $\mu\text{m}$ )	$\leq 0.5$
Coating Type	Dual-layer UV-acrylate
<b>Mechanical Properties</b>	
Operating Temperature ( $^{\circ}\text{C}$ )	-45 to +85
Proof Test (kpsi)	100

- 010013 Rev 202211

# Multi-mode Fibre for Industrial Control

## Hard Polymer Cladding Optical Fibre (HPCF)

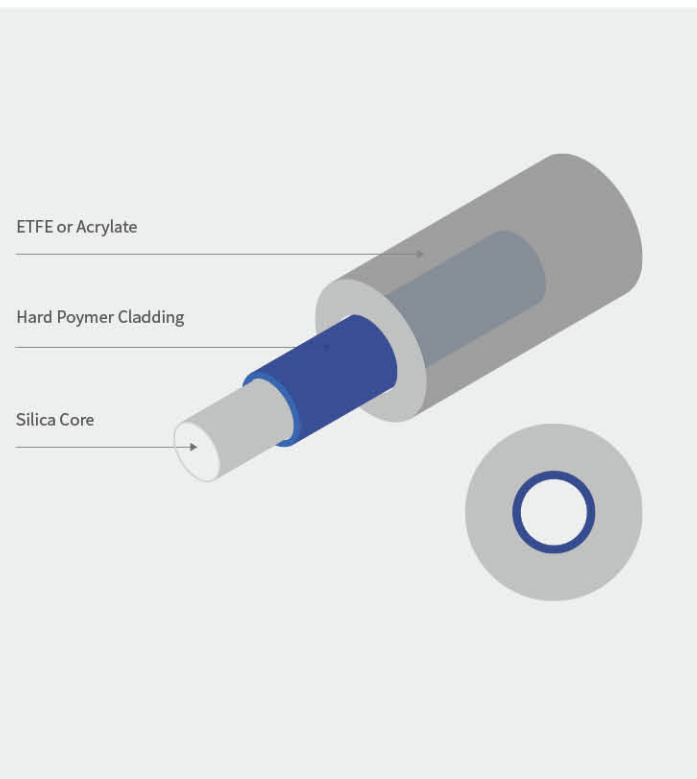
YOFC large core fibre with low OH is suited for 650nm and 850nm apparatus and systems. The hard polymer cladding provides higher tensile strength and greater resistance to moisture. These characteristics determine the HPCF widely used in fields of telecommunication, industry and near-IR spectroscopy environment.

Hard polymer (HP) cladding, made up of "fluoroacrylate", plays an important role in protecting glass core. In the process of installation or terminal use, HPCF is hard to break, even under the tightly bend or other rough conditions.

Large core with 200  $\mu\text{m}$ -1000  $\mu\text{m}$  diameter provides an excellent coupling efficiency for data transmission and connectors. Systems with large core fibre have lower cost due to the loose tolerance characteristics of the components. HPCF shows the best performance applied to short distance medium transmission and data transmission.

### Applications

- High energy laser transmission
- Short-to-medium distance telecommunication
- Electric signal transmission
- Locomotive traction control
- Medical sensor
- Factory automation control
- Laser therapy and operation
- Near-IR spectroscopy applications
- Optical pyrometry
- Nuclear radiation monitoring
- Optical fibre lighting



### Characteristics

- Higher coupling efficiency provided than LED and laser source
- Tolerant of wide fluctuations in temperature and humidity
- More effective connection mode
- Excellent fatigue resistance performance
- Excellent radiation resistance performance
- Compatible with a variety of light sources

## Specifications-1

Fibre Type	HP 200/230-37/500E	HP 200/230-40/500	HP200/230-46/500	HP 300/330-37/650E	HP 400/430-37/730E
Part No.	HP2140-A	HP2111-A	HP2112-A	HP2140-B	HP2140-C
<b>Optical Properties</b>					
Numerical Aperture	0.37 ± 0.02	0.40 ± 0.02	0.46 ± 0.02	0.37 ± 0.02	0.37 ± 0.02
Attenuation@850nm (dB/km)	≤ 8.0	≤ 5.0	≤ 8.0	≤ 8.0	≤ 8.0
OH Content	Low OH	Low OH	Low OH	Low OH	Low OH
Refractive Index Profile	Step index	Graded index	Step index	Step index	Step index
<b>Geometrical Properties</b>					
Core Diameter (µm)	200.0 ± 3.0	200.0±3.0	200.0±3.0	300.0±6.0	400.0±8.0
Cladding Diameter (µm)	230.0 + 0/-8	230.0 + 0/-8	230.0 + 5/-10	330.0 + 5/-10	430.0 + 5/-10
Coating Diameter (µm)	500.0 ± 25.0	500.0 ± 25.0	500.0 ± 20.0	650.0 ± 30.0	730.0 ± 30.0
Core/Cladding Concentricity (µm)	≤ 5.0	≤ 5.0	≤ 5.0	≤ 6.0	≤ 8.0
<b>Material Composition</b>					
Core Material	Pure Silica Glass	Doped Silica Glass	Pure Silica Glass	Pure Silica Glass	Pure Silica Glass
Cladding Material	Fluoroacrylate	Fluoroacrylate	Fluoroacrylate	Fluoroacrylate	Fluoroacrylate
Coating Material	ETFE	Acrylate	Acrylate	ETFE	ETFE
<b>Mechanical Properties</b>					
Short Term Bend Radius (mm)	≥ 10	≥ 10	≥ 10	≥ 16	≥ 29
Long Term Bend Radius (mm)	≥ 16	≥ 16	≥ 16	≥ 24	≥ 47
Operating Temperature (°C)	-65 to +85	-65 to +85	-65 to +85	-65 to +85	-65 to +85
Proof Test (kpsi)	100	100	75	100	75

## Specifications-2

Fibre Type	HP 600/630-37/1040E	HP 600/630-37/750E	HP 1000/1100-37/1400E
Part No.	HP2140-D	HP2140-E	HP2142-A
<b>Optical Properties</b>			
Numerical Aperture	0.37 ± 0.02	0.37 ± 0.02	0.37 ± 0.02
Attenuation@850 nm (dB/km)	≤ 8.0	≤ 8.0	≤ 8.0
OH Content	Low OH	Low OH	Low OH
Refractive Index Profile	Step index	Step index	Step index
<b>Geometrical Properties</b>			
Core Diameter (µm)	600.0 ± 10.0	600.0 ± 10.0	1000.0 ± 20.0
Cladding Diameter (µm)	630.0 + 5/-10	630.0 + 5/-10	1100.0 + 10/-30
Coating Diameter (µm)	1040.0 ± 30.0	750.0 ± 30.0	1400.0 ± 50.0
Core/Cladding Concentricity (µm)	≤ 8.0	≤ 8.0	≤ 10.0
<b>Material Composition</b>			
Core Material	Pure Silica Glass	Pure Silica Glass	Pure Silica Glass
Cladding Material	Fluoroacrylate	Fluoroacrylate	Fluoroacrylate
Coating Material	ETFE	ETFE	ETFE
<b>Mechanical Properties</b>			
Short Term Bend Radius (mm)	≥ 58.0	≥ 58.0	≥ 73.0
Long Term Bend Radius (mm)	≥ 94.0	≥ 94.0	≥ 118.0
Operating Temperature (°C)	-65 to +85	-65 to +85	-65 to +85
Proof Test (kpsi)	75	75	85

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# Glass Cladding Multi-mode Fibre

## Graded Index Multi-mode Fibre (GIMM)

YOFC silica-cladding multimode fibres with graded index profile are comprehensively optimized at both 850nm and 1300nm operating wavelengths. At both wavelengths, extremely low attenuation and high bandwidth could be achieved. To satisfy the demand of client to the most extent, a series of silica-cladding graded index multimode fibres can be customized with different fibre designs, including core diameter, cladding diameter, fibre diameter and NA.

YOFC fibres are manufactured with the advanced Plasma Activated Chemical Vapor Deposition (PCVD) process. Due to the inherent advantages of the process, YOFC fibres have extremely precise refractive index profiles (RIPs), which could provide excellent geometrical, optical, environmental and mechanical properties.

## Customization Information

- Flexible numerical aperture (NA): 0.14 - 0.3
- Flexible core-cladding diameter ratio (CCDR): 1.05-2.0
- Core diameter: 50 $\mu$ m-1000 $\mu$ m

## Characteristics

- High coupling efficiency to LED and laser sources
- High power transmission
- Good stripping performance
- Low attenuation and high bandwidth

## Applications

- Fibre sensor and laser transmission
- Data communications, local area networks and CATV
- Medical apparatus
- Optical devices and connectors

## Specifications-1

Fibre Type	GI 50/125-20/250	GI 80/125-30/250	GI 100/125-29/250	GI 100/140-29/250	GI 105/125-30/250	GI 100/125-14/250	
Part No.	GI2012-E	GI2017-C	GI2016-F	GI2016-H	GI2017-A	GI2011-A	
<b>Optical Properties</b>							
Numerical Aperture	0.20 ± 0.015	0.30 ± 0.02	0.29 ± 0.02	0.29 ± 0.02	0.30 ± 0.02	0.14 ± 0.02	
Attenuation	@850nm (dB/km)	≤ 2.45	≤ 3.5	≤ 3.5	≤ 3.2	≤ 4.0	≤ 20.0
	@1300nm (dB/km)	≤ 0.6	≤ 0.7	≤ 0.7	≤ 0.8	≤ 1.2	-
Bandwidth	@850nm (MHz·km)	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	-
	@1300nm (MHz·km)	≥ 200	≥ 200	≥ 200	≥ 200	≥ 200	-
<b>Geometrical Properties</b>							
Core Diameter (µm)	50.0 ± 2.0	80.0 ± 3.0	100.0 ± 3.0	100.0 ± 3.0	105.0 ± 3.0	100.0 ± 3.0	
Cladding Diameter (µm)	125.0 ± 2.0	125.0 ± 2.0	125.0 ± 2.0	140.0 ± 2.0	125.0 ± 2.0	125.0 ± 2.0	
Coating Diameter (µm)	250.0 ± 10.0	250.0 ± 10.0	250.0 ± 10.0	250.0 ± 10.0	250.0 ± 10.0	250.0 ± 10.0	
Core/Cladding Concentricity (µm)	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	
Core Non-circularity (%)	≤ 2.0	≤ 5.0	≤ 2.0	≤ 3.0	≤ 2.0	≤ 3.0	
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	
<b>Material Composition</b>							
Core	Ge/F Doped Silica Glass						
Cladding	Pure Silica Glass						
Coating	Dual-layer UV-acrylate						
<b>Mechanical Properties</b>							
Proof Test (kpsi)	100	100	100	100	100	100	

## Specifications-2

Fibre Type	GI 105/125-24/250	GI 50/80-29/165	GI 300/330-25/500	GI 200/220-22/500	GI 230/250-22/500	
Part No.	GI2014-J	GI2016-C	GI2014-B	GI2013-N	GI2013-P	
<b>Optical Properties</b>						
Numerical Aperture	0.24 ± 0.02	0.29 ± 0.02	0.25 ± 0.02	0.22 ± 0.02	0.22 ± 0.02	
Attenuation	@850nm (dB/km)	≤ 3.5	≤ 4.0	≤ 7.0	≤ 6.0	≤ 5.0
	@1300nm (dB/km)	≤ 1.5	≤ 2.0	-	-	-
Bandwidth	@850nm (MHz·km)	≥ 100	≥ 100	-	-	-
	@1300nm (MHz·km)	≥ 200	≥ 200	-	-	-
<b>Geometrical Properties</b>						
Core Diameter (µm)	105.0 ± 3.0	50.0 ± 3.0	300.0 ± 10.0	200.0 ± 4.0	230.0 ± 5.0	
Cladding Diameter (µm)	125.0 ± 2.0	80.0 ± 2.0	330.0 ± 5.0	220.0 ± 3.0	250.0 ± 5.0	
Coating Diameter (µm)	250.0 ± 10.0	165.0 ± 8.0	500.0 ± 20.0	500.0 ± 20.0	500.0 ± 20.0	
Core/Cladding Concentricity (µm)	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0	
Core Non-circularity (%)	≤ 2.0	≤ 2.0	-	-	-	
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0	-	-	-	
<b>Material Composition</b>						
Core	Ge/F Doped Silica Glass					
Cladding	Pure Silica Glass					
Coating	Dual-layer UV-acrylate					
<b>Mechanical Properties</b>						
Proof Test (kpsi)	100	100	100	100	100	

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# Specialty Fibre for Sensing

## Distributed Temperature System-multimode Fibre (DTS-MMF)

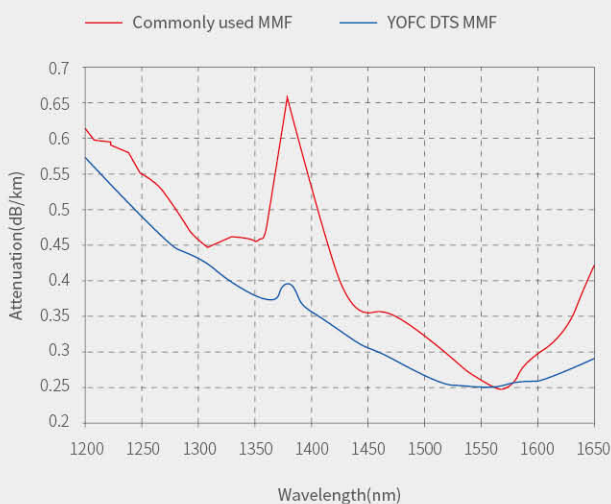
The distributed temperature system-multimode fibre (DTS-MMF), adopts advanced plasma chemical vapor deposition (PCVD) process which can insure precise waveguide design and smooth graded index profile. Because of the above process advantages and optimized preform parameter, the fibre has excellent optical and geometric properties at long wavelength (1300nm, 1550nm). Additionally, the fibre can resist high temperature by using special coating material.

### Characteristics

- Low attenuation at DTS operating wavelength 1450nm, 1550nm and 1650 nm
- High bandwidth at C-band (especially at 1550nm)
- High temperature resistance
- Low splicing loss
- Excellent bending insensitivity

### Applications

- Distributed temperature system



### Compared with communication multimode fibre, the advantages of DTS-MMF are as follows:

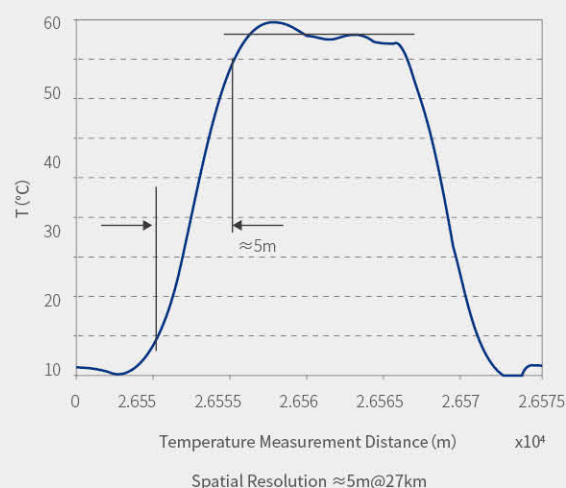
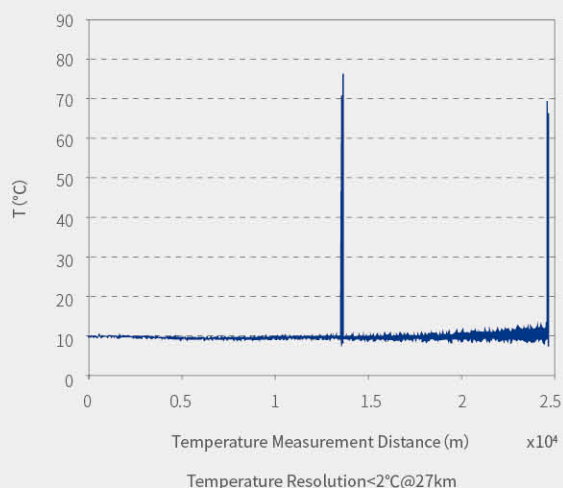
#### 1. Low attenuation at DTS operating wavelength

- The lower attenuation of the DTS-MMF at the wavelength of 1450nm, 1550nm and 1650nm can increase the distance of the distributed temperature measurement system

#### 2. High bandwidth at 1550nm

- According to IEC 60793-1-41-2010 (bandwidth), the actual measured bandwidth at 1550nm of DTS-MMF can exceed more than 1000MHz·km, which effectively improves the spatial resolution of the long-distance distributed temperature measurement system

## DTS Host Measured Result



## Specifications

Fibre Type	GI 62.5/125-27/250DTS	GI 50/125-20/250DTS
Part No.	GI2015-B	GI2012-B
<b>Optical Properties</b>		
Numerical Aperture (NA)	$0.275 \pm 0.020$	$0.195 \pm 0.020$
Loss	@1300nm (dB/km)	$\leq 0.60$
	@1450nm (dB/km)	$\leq 0.50$
	@1550nm (dB/km)	$\leq 0.40$
	@1650nm (dB/km)	$\leq 0.50$
Splicing Loss (dB)	$\leq 0.1$	$\leq 0.1$
Bandwidth	@1300nm (MHz·km)	$\geq 200$
	@1550nm (MHz·km)	$\geq 800$
<b>Geometrical Properties</b>		
Core Radium ( $\mu\text{m}$ )	$62.5 \pm 2.0$	$50.0 \pm 2.0$
Cladding Diameter ( $\mu\text{m}$ )	$125.0 \pm 1.0$	$125.0 \pm 1.0$
Fibre Diameter ( $\mu\text{m}$ )	$245.0 \pm 7.0$	$245.0 \pm 7.0$
Core/Cladding Concentricity ( $\mu\text{m}$ )	$\leq 1.5$	$\leq 1.5$
Core Non-circularity (%)	$\leq 5.0$	$\leq 5.0$
Cladding Non-circularity (%)	$\leq 1.0$	$\leq 1.0$
<b>Mechanical Properties</b>		
Proof Test (kpsi)	$\geq 100$	$\geq 100$
<b>Environmental Properties</b>		
Operating Temperature Range ( $^{\circ}\text{C}$ )	-40 to 85	-40 to 85

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## Spun Fibre (SF)

YOFC's spun fibre is manufactured by spinning a polarization maintaining preform during the fibre drawing process, featuring high mechanical reliability and geometric consistency. The preform is deposited through Plasma Chemical Vapor Deposition (PCVD) process, which enables a precise refractive index profiles and dimensional tolerances of the fibre. Excellent environmental immunity and circular polarization-maintenance performance are obtained by design to meet the requirement of applications, such as fibre optic current transformer (FOCT).

With dual-layer, UV-cured acrylate coating, YOFC spun fibre has high environmental stability performance over the temperature range of  $-45^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ( $-49^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$ ).

### Characteristics

- Excellent and stable optical performance
- Optimized for current sensing
- High environmental stability and reliability
- Low attenuation

### Applications

- Fibre optic current transformer
- DC and AC current sensors
- Polarimetric sensors

## Specifications

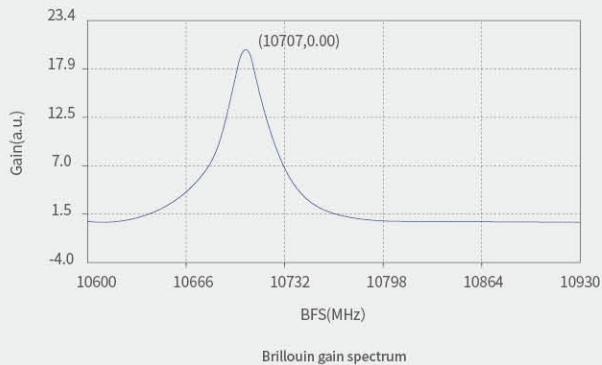
Fibre Type	SH 1310_125-5/250
Part No.	SH1016-A
<b>Optical Properties</b>	
Operating Wavelength (nm)	1310
Fibre Cut-off Wavelength (nm)	1020 - 1260
Mode Field Diameter (μm)	7.0 ± 1.0 @1310nm
Attenuation (dB/km)	≤ 2.0 @1310nm
Beat Length (mm)	9 - 14 @1310nm
<b>Geometrical Properties</b>	
Spin Pitch (mm)	5.0 ± 0.2
Cladding Diameter (μm)	125.0 ± 1.0
Coating Diameter (μm)	245.0 ± 7.0
Cladding Non-circularity (%)	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 1.0
Coating Type	Dual-layer UV-acrylate
<b>Mechanical Properties</b>	
Operating Temperature (°C)	-45 to +85
Proof Test (kpsi)	50 or 100

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## Brillouin Sensing Fibre

Brillouin sensing fibre is manufactured by the advanced plasma chemical vapor deposition(PCVD) process. The fibre shows extremely precise refractive index (RI) profile control, excellent geometrical performance, low attenuation, etc. Brillouin gain spectrum of the optical fibre has good single peak property through process control. Through testing experiment, temperature coefficient and strain coefficient are explicit. The double-layer UV-curable acrylate coating ensures the fibre excellent anti- bending performance.



### Characteristics

- Excellent optical properties and geometrical properties
- Brillouin gain spectrum with single peak property
- Accurate Brillouin center frequency
- Definite temperature coefficient and strain coefficient
- Low attenuation
- Low splicing loss
- Excellent bending insensitivity

### Applications

- Brillouin distributed temperature and strain sensing system

## Specifications

<b>Fibre Type</b>		<b>BR 9/125-14/250</b>
<b>Part No.</b>		<b>BR1010-A</b>
<b>Optical Properties</b>		
Loss (dB/km)	@1310nm	≤ 0.34
	@1383nm	≤ 0.34
	@1550nm	≤ 0.20
	@1625nm	≤ 0.24
Cable Cut-off Wavelength (nm)		≤ 1260
MFD (μm)	@1310nm	8.7 - 9.5
	@1550nm	9.9 - 10.9
Brillouin Ceter Frequency (GHz)	-	10.7 - 10.9(Optional)
<b>Geometrical Properties</b>		
Cladding Diameter (μm)	-	125.0 ± 0.7
Non-circularity of Cladding (%)	-	≤ 1.0
Coating Diameter (μm)	-	245.0 ± 7.0
Coating/Cladding Concentricity (μm)	-	≤ 12.0
Non-circularity of Coating (%)	-	≤ 6.0
Core/Cladding Concentricity (μm)	-	≤ 0.6
<b>Macro Bending Induced Attenuation</b>		
Macrobend Loss (dB)	-	-
1 turn, Radius 16mm	@1550nm	≤ 0.05
100 turns, Radius 25mm	@1310nm	≤ 0.05
	@1550nm	≤ 0.05
<b>Mechanical Properties/Environmental Properties</b>		
Proof Test (kpsi)		≥ 100
Temperature Additional Attenuation (dB/km)	- 60°C to + 85°C	≤ 0.05

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# Specialty Fibre for Special Environment



## Radiation Resistant Fibre

### Radiation Resistant Single-mode Fibre (RRF)

YOFC radiation resistant single-mode fibres are developed by adjusting the composition of optical fibre and improving the process technology to meet the special application requirements of the fibre in the radiation environment. The optical properties of RRF are optimized at 1310nm and 1550nm operating wavelength. Low attenuation and low dispersion can be achieved.

### Process

- YOFC fibre are manufactured with PCVD process. The fibres have excellent radiation resistant properties at 1310nm and 1550nm operating wavelength by special glass components and manufacturing process. Due to the accurate control of refractive index profile by PCVD process, YOFC radiation resistant single-mode fibres have excellent geometrical, attenuation and dispersion properties

### Characteristics

- Low dispersion and low attenuation
- Superior mechanical protection and excellent stripping performance
- Outstanding uniformity and geometry control
- Low radiation loss

### Applications

- Aerospace
- Atomic energy
- Medical
- Oil/gas
- Scientific research

## Specifications

Fibre Type	Wavelength(nm)	Condition	RD 1310-G2 (HT)	RD SM-G3	RD SM-G3(YH)
Part No.	-	-	RD1311-D	RD1012-A	RD1012-B
<b>Optical Properties</b>					
Attenuation (dB/km)	1270	-	-	≤1.0	≤1.0
	1310	-	≤0.5	≤0.4	≤0.4
	1330	-	-	≤0.5	≤0.5
	1550	-	-	≤0.3	≤0.3
Zero Dispersion Wavelength (nm)	-	-	1287 - 1337	1300 - 1324	1300 - 1324
Zero Dispersion Slope (ps/(nm <sup>2</sup> ·km))	-	-	≤0.1	≤0.091	≤0.091
The Maximum Value of a Single Fibre (ps/√km)	-	-	≤0.2	≤0.2	≤0.2
Fibre Chain Value (M=20, Q=0.01%) (ps/√km)	-	-	≤0.2	≤0.2	≤0.2
Cable Cut-off Wavelength ( $\lambda_{co}$ )(nm)	-	-	≤1290	≤1260	≤1260
MFD (μm)	1310	-	7.5 - 9.5	8.6 - 9.6	8.6 - 9.5
	1550	-	8.0-10.0	9.6 - 10.9	9.9 - 10.9
<b>Geometry Properties</b>					
Cladding Diameter (μm)	-	-	125.0±1.0	125.0±1.0	124.5±0.4
Cladding Non-Circularity (%)	-	-	≤0.7	≤1.0	≤1.0
Coating Diameter (μm)	-	-	245.0±10.0	245.0±10.0	250.0±5.0
Coating/Cladding Concentricity (μm)	-	-	≤12.0	≤12.0	≤8.0
Coating Non-Circularity (%)	-	-	≤6.0	≤6.0	≤6.0
Core /Cladding Concentricity (μm)	-	-	≤0.6	≤1.0	≤0.6
Twist Radius (m)	-	-	≥2.0	≥2.0	≥2.0
<b>Environmental Properties</b>					
Temperature-humidity Cycling Induced Attenuation (dB/km)	1310, 1550	-10°C to 85°C, Relative Humidity of 98%	≤0.1	≤0.1	≤0.1
Temperature Induced Attenuation (dB/km)		-65°C to +85°C	≤0.2	≤0.2	≤0.2
Water Induced Attenuation (dB/km)		23°C, 30 Days	≤0.3	≤0.3	≤0.3
Wet Heat (dB/km)		85°C, Relative Humidity of 85%, 30 Days	≤0.2	≤0.2	≤0.2
Dry Heat (dB/km)		85°C, 30 Days	≤0.2	≤0.2	≤0.2
Temperature shock test (dB/km)		-70°C to +125°C ≥40°C/min, 5cycles	-	-	≤0.3
Store temperature test (dB/km)		-70°C, 120h; 125°C 120h	-	-	≤0.3
Temperature Cycling(dB/km)		-70°C to +125°C 2-5°C/min, 5cycles	-	-	≤0.3
<b>Macrobend Properties</b>					
Radius(mm)	-	Turns	-	-	-
30	1310	100	-	≤0.1	≤0.1
	1550		-	≤0.5	≤0.5
<b>Mechanical Properties</b>					
Proof Test (kpsi)	-	Off-line	≥100	≥100	≥100
Strip Force (N)	-	Average Value	1.0 - 5.0	1.0 - 5.0	1.0 - 5.0
	-	Peak Value	1.3 - 8.9	1.3 - 8.9	1.3 - 8.9
n <sub>d</sub>	-	-	≥20	≥20	≥20
<b>Radiation-resistance Characteristics</b>					
According to Standard TIA/EIA 455-64 (dB/100m)	1310	Total dose 50Krad dose rate 0.1rad/s(25°C) induced attenuation	-	≤0.3	≤0.3
	1310, 1550	Total dose 2000Gy dose rate 0.5Gy/s(25°C) induced attenuation	≤0.9	≤0.8	≤0.8
	1310, 1550	Total dose 200000Gy dose rate 0.5Gy/s(25°C) induced attenuation	≤2.5	≤2.0	≤2.0



## Radiation Resistant Multi-mode Fibre (RRF)

To meet the special application requirements of the optical fibre in the radiation environment, the multi-mode fibre with radiation resistance is developed by adjusting the optical fibre components and improving the process technology. This fibre has graded refractive index profile, which fully optimizes the waveguide characteristics of 850nm & 1300nm operating wavelength, and has very low attenuation and high bandwidth. YOFC radiation resistant multi-mode fibres have 50 $\mu$ m core, Besides, YOFC also can make customized tight-buffered radiation resistant multi-mode fibre.

### Process

- The fibre is produced by plasma activated chemical vapor deposition (PCVD) process. the radiation resistant multi-mode fibre fabricated by PCVD process has excellent radiation resistant properties at 850nm & 1300nm based on its special glass components and manufacturing process
- Due to the accurate control of deposition of PCVD process, YOFC radiation resistant multi-mode fibre has perfect waveguide refractive index profile, which guarantees the excellent geometrical, attenuation and bandwidth characteristics

### Characteristics

- Stable transmission property under radiation environment
- High bandwidth and low attenuation @ 850nm & 1300nm
- Excellent stripping and welding properties
- Suitable for various cable structures and favorable for tight/ loose tubes

### Standard

- YOFC radiation resistant fibre complies with or exceeds ITU-T.G651 & IEC 60793-2-10 A1a fibre specification

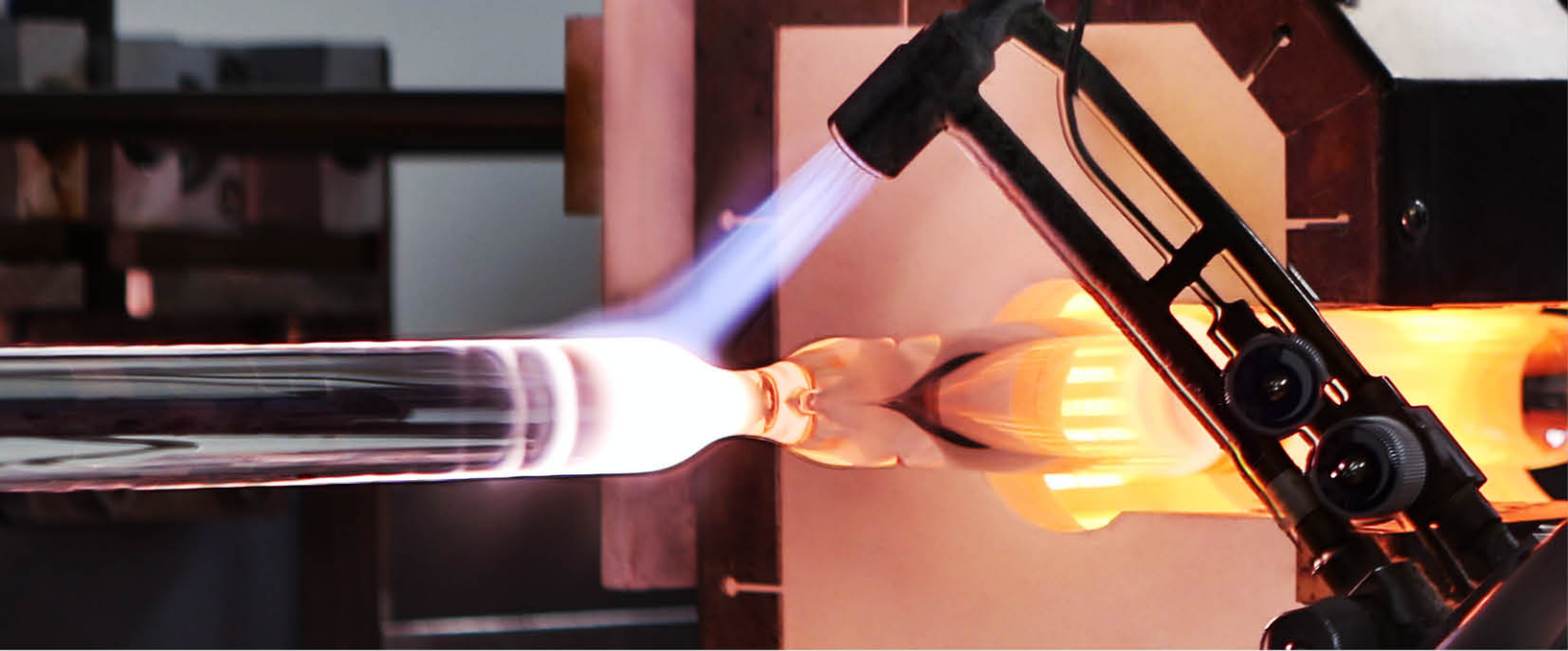
### Applications

- Aerospace / Aircraft
- Atomic energy industry
- Petroleum & Offshore exploration
- Medical equipment
- Basic research

## Specifications

Fibre Type		RDG 50/125	
Part No.		RD2011-A	
<b>Optical Properties</b>			
Attenuation@850/1300nm (dB/km)		2.5/1.0	
Bandwidth@850/1300nm (MHz·km)		300/300	
Numerical Aperture		0.200±0.015	
<b>Geometrical Properties</b>			
Core Diameter (μm)		50.0 ± 2.5	
Cladding Diameter (μm)		125.0 ± 1.0	
Coating Diameter (μm)		245.0 ± 10.0	
Core/Cladding Concentricity (μm)		≤ 1.5	
Core Non-circularity (%)		≤ 6	
Coating/Cladding Concentricity (μm)		≤ 12.0	
Cladding Non-Circularity (%)		≤ 1.0	
Spool Length (km)		1.1 - 8.8	
<b>Material Composition</b>			
Core Material		F Doped Silica Glass	
Cladding Material		F Doped Silica Glass	
Coating Material		Dual-layer UV-acrylate	
<b>Environmental Properties</b>			
Test Item	Wavelength(nm)	Conditions	-
Temperature-humidity Cycling Induced Attenuation (dB/km)	850, 1300	-10°C, "X <sup>1</sup> "% RH to +85°C, 85%-98% RH	≤ 0.2
Temperature Induced Loss (dB/km)		-60°C to +85°C	≤ 0.2
Watersoak Dependence Induced Attenuation (dB/km)		23°C, 30days	≤ 0.2
Damp Heat Dependence Induced Attenuation (dB/km)		85°C, 85%RH, 30 days	≤ 0.2
Dry Heat Aging (dB/km)		85°C, 30 days	≤ 0.2
<b>Mechanical Properties</b>			
Proof Test (kpsi)		Off-line	≥ 75
Strip Force (N)		Average Value	1.0 - 5.0
		Peak Value	1.3 - 8.9
n <sub>d</sub>		-	≥ 20
<b>Radiation-resistance Characteristics</b>			
According to TIA/EIA 455-64(dB/100m)	Wavelength(nm)	Conditions	-
	1300	Total dose 310KGy, dose rate 750Gy/h (25°C), Induced Attenuation	≤ 2.5

1. "X<sup>1</sup>" means uncontrolled when temperature decrease to -10°C



## High Temperature Fibre (HTF)

Data transmission, high power laser delivery and sensors require special reliability at demanding environment conditions. A special challenge is the changing temperature, extreme heat or extreme cold conditions for a fibre when used as fire detector, temperature sensor or for data transmission in certain special industrial applications. YOFC offers HTF for medium and high temperature environment requirements with the temperature up to 300 °C .

### Characteristics

- Excellent high temperature stability
- Excellent optical and geometrical properties
- Customized profile and sizes

### Applications

- Mining industry
- Aerospace
- Oil/gas industry
- Medical

### Typical Products

#### 1. Special Polymer Coated High Temperature Fibre

Operation temperature: long term, -65 °C to +150 °C ;  
intermittent, up to 200 °C

Cladding diameter range from 200µm to 660µm, customized  
NA and coating diameter

- Coating diameter (125µm cladding fibres): 245±10µm
- Coating diameter (200~660µm cladding fibres): NA: Customized

#### 2. Optimized Polyimide Coated High Temperature Fibre

Operation temperature: in long term, -65 °C to +300 °C ;  
intermittent, up to 350 °C

- Coating diameter (125µm cladding fibres): 155±5µm
- Coating diameter ( ≤ 220µm cladding fibres): NA: Customized

## Specifications-1

Fibre Type	HT 9/125-14/250(150)	HT 9/125-14/155(300)
Part No.	HT1210-A	HT1510-B
<b>Optical Properties</b>		
Mode Field Diameter@1310nm (μm)	9.2 ± 0.4	9.2 ± 0.4
Mode Field Diameter@1550nm (μm)	10.4 ± 0.8	10.4 ± 0.8
Fibre Cut-off Wavelength (nm)	≤ 1300	≤ 1300
Attenuation@1310nm (dB/km)	≤ 0.4	≤ 1.0
Attenuation@1550nm (dB/km)	≤ 0.25	≤ 0.8
<b>Geometrical Properties</b>		
Cladding Diameter (μm)	125.0 ± 1.0	125.0 ± 2.0
Coating Diameter (μm)	245.0 ± 10.0	155.0 ± 5.0
Cladding Non-circularity (%)	≤ 1.0	≤ 1.0
Core/Cladding Concentricity (μm)	≤ 0.8	≤ 0.8
Coating/Cladding Concentricity (μm)	≤ 12.0	-
<b>Mechanical Properties</b>		
Proof Test (kpsi)	100	75
Operating Temperature (°C)	-65 to +150 Short Term +200	-65 to +300 Short Term +350
Coating Type	Special Polymer	Polyimide

## Specifications-2

Fibre Type	HTG 50/125-20/250(150)	HTG 62.5/125-27/250(150)	HT 50/125-20/155(300)	HT 62.5/125-27/155(300)
Part No.	HT2312-B	HT2215-A	HT2512-B	HT2515-B
<b>Optical Properties</b>				
*Attenuation@850 nm (dB/km)	≤ 3.0	≤ 3.0	≤ 4.0	≤ 4.0
*Attenuation@1300 nm (dB/km)	≤ 1.0	≤ 1.0	≤ 2.0	≤ 2.0
Bandwidth@850 (MHz·km)	≥ 150	≥ 150	≥ 150	≥ 150
Bandwidth@1300 nm (MHz·km)	≥ 300	≥ 300	≥ 300	≥ 300
NA	0.200 ± 0.015	0.275 ± 0.015	0.200 ± 0.015	0.275 ± 0.015
<b>Geometrical Properties</b>				
Core Diameter (μm)	50.0 ± 2.5	62.5 ± 2.5	50.0 ± 3.0	62.5 ± 3.0
Cladding Diameter (μm)	125.0 ± 1.0	125.0 ± 1.0	125.0 ± 2.0	125.0 ± 2.0
Coating Diameter (μm)	245.0 ± 10.0	245.0 ± 10.0	155.0 ± 5.0	155.0 ± 5.0
Cladding Non-circularity (%)	≤ 1	≤ 1	≤ 1	≤ 1
Core/Cladding Concentricity (μm)	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Cladding/Coating Concentricity (μm)	≤ 12.0	≤ 12.0	-	-
<b>Mechanical Properties</b>				
Proof Test (kpsi)	100	100	75	75
Operating Temperature (°C)	-65 to +150 Short Term +200		-65 to +300 Short Term +350	
Coating Type	Special Polymer		Polyimide	

· For attenuation measurement, the fibre is wound with near zero tension onto a greater than 36cm diameter measurement spool.

· Customized products are available upon customer request, such as different geometrical parameters, bandwidth, NA, higher proof test level, etc.

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**Yangtze Optical Fibre and Cable Joint Stock Limited Company**

**Stock Code:** 601869.SH 06869.HK

**ADD:** No.9 Optics Valley Avenue, Wuhan, Hubei, China(P.C.: 430073)

**Tel:** +86 185-7170-8866    **Email:** sales\_spu@yofc.com

**en.yofc.com**

**Facebook:** Yangtze Optical Fibre and Cable Joint Stock Limited Company

**LinkedIn:** Yangtze Optical Fibre and Cable Joint Stock Limited Company

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