

Polyimide coated high temperature resistant single mode optical fiber SM9/125/155PI



● **Product Description**

Polyimide is a polymer material with good high and low temperature resistance, good mechanical strength, and excellent comprehensive performance. It can greatly improve the heat resistance of the optical fiber coating layer, extend the service life of the optical fiber in a high temperature environment, and at the same time maintain good mechanical properties in a low temperature environment without brittle cracking. Polyimide is a self-extinguishing polymer with a low smoke rate and a



thermal expansion coefficient close to that of quartz. It has certain self-lubricating properties, is resistant to aging, and is resistant to high-voltage electrical breakdown. It has very little outgassing under high vacuum. Polyimide has high radiation resistance and mechanical properties, and can still maintain high strength under irradiation. It has high tensile, bending, and compression strengths, and outstanding creep resistance and dimensional stability. Polyimide is non-toxic, stable, and biocompatible, and can be used to prepare tableware and some medical consumables replacement supplies. At the same time, polyimide is resistant to almost all organic solvents, some inorganic acids, and hydrolysis

- **Product features**

High-temperature resistance、Durability、Special coating design、Long-term stability

- **Part Number**

MP-HTF-9/125/155-PI-HS

- **Application area**

Aerospace | Industrial Process | Scientific Research Equipment

● Core parameters

Numerical aperture	Core material
0.13-0.15	High purity quartz

● General Parameters

Feature

High-quality coating, no deformation at 300°C, and adjustable coating thickness;

Our company adopts a specially designed vertical online thermal curing process, which has a wide adjustable coating thickness range, good concentricity of the optical fiber coating, smooth coating surface, no stress concentration points, and significantly improved screening strength; At the same time, the curing is uniform to reduce glue residue. During our 300°C high-temperature thermal shock test, it does not bend or deform, and still maintains good bending and tensile strength after long-term high temperature;

High-speed preparation of low-loss optical fiber;

Polyimide is different from the photocuring method of acrylate, and requires a thermal curing process. The curing time of this process is long, which makes the fiber drawing speed much slower than the conventional acrylate drawing speed, and it is easy to increase the loss of the optical fiber in a long drawing process;

Based on the longer fiber travel and specially modulated PI coating in the online continuous thermoplasticization/thermal curing process, our process can achieve excellent coating quality at a higher drawing speed, significantly improve the preparation efficiency of high-temperature resistant optical fiber, and improve the consistency of optical fiber geometric parameters. Based on multi-level and multi-parameter PI material coating, we have achieved a thicker PI coating layer and lower single-mode fiber loss by adjusting the different physical and chemical properties of the inner layer material, middle layer material, and outer layer material;

Applications

Medical industry;

Mining industry, oil and gas industry; Aerospace industry, nuclear industry;

Chemical industry;

Optical communication industry; Power industry; High temperature, high pressure and low temperature environment; Electromagnetic radiation environment;

Underwater use, hydrolysis resistance;

Medical interventional treatment, biocompatible; ETO and radiation sterilization (pure silicon core);



Single mode fiber parameters

Product code:	MP-HTF-9/125/155-PI-GS	MP-HTF-9/125/155-PI-HS
Numerical aperture (NA):	0.12 - 0.14	0.13-0.15
Mode field diameter (MFD):	@ 1310nm $9.2 \pm 0.4 \mu\text{m}$	
	@ 1550nm $10.4 \pm 0.8 \mu\text{m}$	@ 1550nm $9.3 \pm 0.8 \mu\text{m}$
Attenuation coefficient (dB/km):	@ 1310nm <0.7dB/km	@ 1310nm <0.8dB/km
	@ 1550nm <0.7dB/km	@ 1550nm <0.8dB/km
Core material:	Germanium-doped quartz	High purity quartz
Cladding diameter:	$125 \pm 1 \mu\text{m}$	
Delivery length:	$\leq 30 \text{ km}$	
Coating diameter:	$155 \pm 5 \mu\text{m}$	
Core cladding concentricity:	$\leq 0.6 \mu\text{m}$	
Cladding non-circularity (%):	≤ 0.1	
Coating material:	Polyimide	
Long-term use temperature:	$-65 \sim 300 \text{ }^\circ\text{C}$	
Short-term tolerance temperature:	$400 \text{ }^\circ\text{C}$	



Screening strength:

100 kpsi

Idealphotic Technology Co., Ltd. provides customized services such as designing and producing optical fiber size, coating materials, and coating thickness according to customer needs.

