

Endlessly Single Mode Fibers

The IXF-ESM family are microstructured photonic crystal fibers that display an endlessly single mode behavior and do not exhibit a high order mode cut off. They are therefore ideally suited for excellent broadband mode delivery in the visible and NIR wavelength ranges. ESM fibers are available with a Ø5 and Ø10 µm core and in PM and non-PM versions.



IXF-ESM fibers can be connectorized into patchcords or fiber assemblies for easier integration, handling and improved robustness. Bare fiber and patchcords can be hydrogen loaded.

Benefits & Features

- Singlemode over the VIS and NIR wavelength range
- Standard and PM version
- Connectorization into patchcords possible

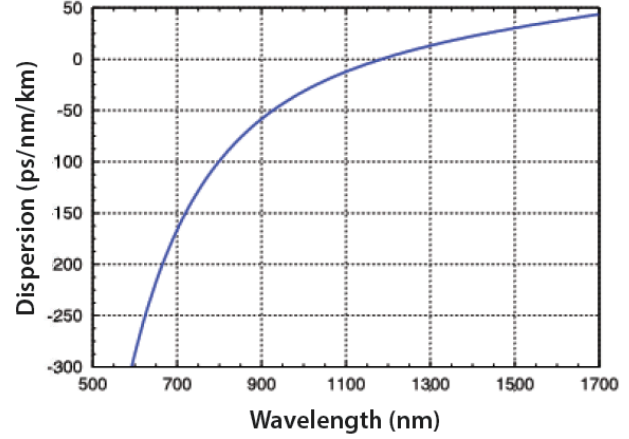
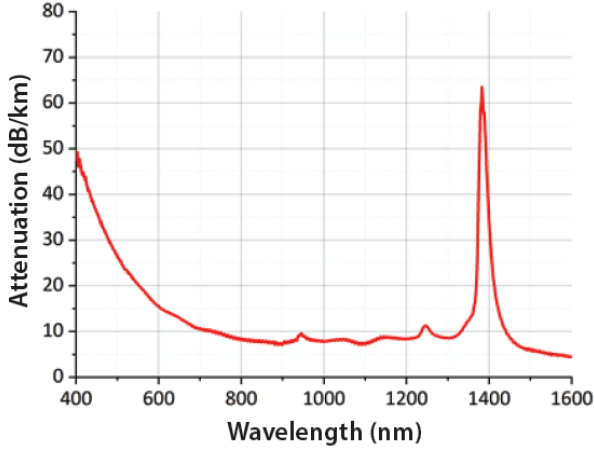
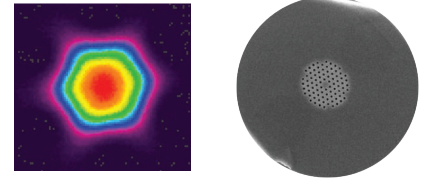
Applications

- Singlemode light delivery
- Solarization resistant UV patchcords

IXF-ESM-	5-125	5-125-PM	10-125	10-225-PM	10-125-VIS
Physical and Material parameters					
Core diameter (µm)	5 ± 0.3	5 ± 0.3	10 ± 0.6	10 ± 0.6	10.5 ± 0.5
Cladding diameter (µm)	125 ± 2	125 ± 3	125 ± 5	225 ± 5	126 ± 3
Cladding non-circularity (%)	< 2	< 7.5	< 2	< 2	< 2
Coating diameter (µm)	245 ± 10	240 ± 10	250 ± 10	355 ± 10	248 ± 5
Core material	Silica	Silica	Silica	Silica	UV grade silica
Coating type	Dual coat high index acrylate				
Optical properties					
LP ₁₁ cutoff wavelength (nm)	None	None	None	None	None
Birefringence	–	2.3 ± 0.5 × 10 ⁻⁴	–	2.0 ± 0.1 × 10 ⁻⁴	–
Numerical aperture					
@780 nm	–	–	–	–	0.11 ± 0.01
@1060 nm	0.20 ± 0.02	0.20 ± 0.02	0.1 ± 0.02	0.1 ± 0.02	–
Attenuation (dB/km)					
@400 nm	–	–	–	–	< 300
@532 nm	< 50	< 38	< 40	< 38	< 35
@780 nm	–	–	–	–	< 35
@1060 nm	< 20	< 20	< 12	< 15	< 20
@1550 nm	< 15	< 30	< 5	< 10	–
Mode field diameter (µm)					
@780 nm	–	–	–	–	7.0 ± 0.5
@1064 nm	4.6 ± 0.3	4.5 ± 0.3	8.8 ± 0.4	8.7 ± 0.4	–
Effective area (µm ²)					
@780 nm	–	–	–	–	35 ± 10
@1064 nm	14 ± 2	16 ± 2	60 ± 6	59 ± 6	–

IXF-ESM Series

ESM fibers exhibit a gaussian profile and endlessly singlemode behavior. They are well suited to transport one or multiple optical signals across the UV-VIS-NIR wavelength range while remaining singlemode, for example for imaging or spectroscopy applications. Their large core size and singlemode behavior make them particularly adapted to transport UV signals.



Typical attenuation and dispersion of IXF-ESM-5-125-PM fiber.

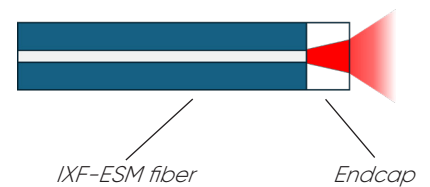
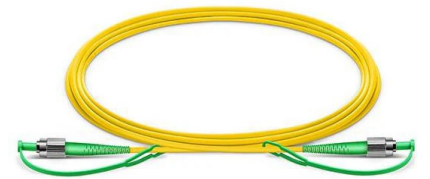
PATCHCORDS & FIBER ASSEMBLIES

ESM fibers can be connectorized into patchcords or pigtails for easier integration, handling and improved robustness. When connectorized, fiber end-faces are terminated with thin endcaps to seal and protect the hollow microstructure while maintaining the optical beam quality. Endcaps also reduce the power density at the glass/air interface which is beneficial for high-power or UV operation.

Patchcords can be hydrogen loaded to make solarization resistant delivery patchcords for UV applications.

Patchcord

Length (m)	Up to 12
Connectors	Non-PM : FC (APC or PC), SC (APC or PC), SMA. PM : FC (APC or PC) Other upon request
Jacket	No jacket (bare fiber) Ø900 µm hytrel Ø3 mm PVC Stainless steel
Endcap length (µm)	< 100, other lengths upon request
Endcap material	Fused silica
Transmission (%) *	> 60
PER (dB) *	> 20
For PM fibers only	
Hydrogen loading	Optional



* Measured at 532 nm or 553 nm

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