Ytterbium-Doped Single-Mode Single Clad Fiber

Coherent single-mode Yb-doped fibers are designed to support low power fiber lasers and amplifiers based on single-mode diode pump technology, rather than the multimode pumps used in high-power applications. For applications where high efficiency and very short device lengths are critical, these single-mode fibers are compatible with standard "telecom" fiber technology ensuring low splice loss to numerous fiber pigtailed components. The PM variety is designed with the PANDA-style stress structure which delivers linearly polarized light suitable for frequency conversion. These fibers make the ideal gain medium for low average power femtosecond fiber lasers and pre-amplifiers for higher power double-clad amplifiers. These High Performance (-HP) versions provide tighter optical and geometric tolerances, improving device performance, system compatibility and manufacturing process control.

Typical Applications

- Low power CW and pulsed fiber lasers
- Femtosecond fiber lasers
- Pre-amps for high-power, double-clad devices

Features & Benefits

- Single-mode output — Compatiable with standard telecom 980/1060 nm fiber-based components with low splice loss
- PANDA-style stress structure — Linearly polarized output for frequency conversion
- High Ytterbium concentration — Short fiber lengths to reduce detrimental non-linear effects
- High slope efficiency (typically 75%) — Efficient utilization of pump power
- Higher Prooftest Yields — Critical for long-term reliability in tight bend applications

Optical Specifications	**PM-YSF-HI-HP**	**SM-YSF-HI-HP**	**PM-YSF-LO-HP**	**SM-YSF-LO-HP**
Operating Wavelength	1015 – 1115 nm	1015 – 1115 nm	1015 – 1115 nm	1015 – 1115 nm
Core NA	0.110	0.110	0.130	0.130
Mode Field Diameter	7.5 ± 0.7 µm @ 1060 nm	7.5 ± 0.7 µm @ 1060 nm	6.5 ± 0.7 µm @ 1060 nm	6.5 ± 0.7 µm @ 1060 nm
Cutoff	860 ± 50 nm	860 ± 50 nm	860 ± 50 nm	860 ± 50 nm
Core Attenuation	≤ 10.0 dB/km @ 1200 nm	≤ 10.0 dB/km @ 1200 nm	≤ 10.0 dB/km @ 1200 nm	≤ 10.0 dB/km @ 1200 nm
Core Absorption	85.0 ± 10.0 dB/m at 915 nm 250.0 dB/m at 975 nm	85.0 ± 10.0 dB/m at 915 nm 250.0 dB/m at 975 nm	26.0 ± 4.0 dB/m at 915 nm 80.0 dB/m at 975 nm	26.0 ± 4.0 dB/m at 915 nm 80.0 dB/m at 975 nm
Birefringence	$> 2.8 \times 10^{-4}$	N/A	$> 2.8 \times 10^{-4}$	N/A
Geometrical & Mechanical Specifications				
Cladding Diameter	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm
Core Diameter	6.0 µm	6.0 µm	5.0 µm	5.0 µm
Coating Diameter	245.0 ± 10.0 µm	245.0 ± 10.0 µm	245.0 ± 10.0 µm	245.0 ± 10.0 µm
Coating Concentricity	< 5.0 µm	< 5.0 µm	< 5.0 µm	< 5.0 µm
Core/Clad Offset	≤ 0.50 µm	≤ 0.50 µm	≤ 0.50 µm	≤ 0.50 µm
Coating Material	Acrylate	Acrylate	Acrylate	Acrylate
Operating Temperature Range	-55 to 85 °C	-55 to 85 °C	-55 to 85 °C	-55 to 85 °C
Prooftest Level	≥ 200 kpsi (1.4 GN/m²)	≥ 200 kpsi (1.4 GN/m²)	≥ 200 kpsi (1.4 GN/m²)	≥ 200 kpsi (1.4 GN/m²)

The passive version of each fiber is also available (1060-XP, PM980-XP, and photosensitive PS1060, PS-PM980)
Estimated 915 nm absorpion based on measured absorption curve @ 950 nm and 1010 nm for fibers PM-YSF-HI-HP and SM-YSF-HI-HP

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