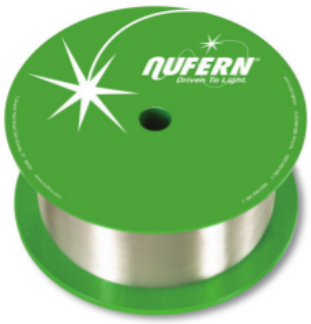
# Ytterbium-Doped Single-Mode Single Clad Fiber




Nufern 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<br>250.0 dB/m at 975 nm | 85.0 ± 10.0 dB/m at 915 nm<br>250.0 dB/m at 975 nm | 26.0 ± 4.0 dB/m at 915 nm<br>80.0 dB/m at 975 nm | 26.0 ± 4.0 dB/m at 915 nm<br>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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