

Eye Safe Thulium-Doped Large-Mode Area Fiber

The first true LMA fiber featuring a unique low NA (0.1) high concentration Tm-doped core design. It is fully optimized for high slope efficiency (composition has demonstrated >130% quantum efficiency) when pumped at 793nm. This extraordinary efficiency is due to composition enabled cross relaxation of Thulium ions in the core. The high Tm-concentration allows short device lengths and high pump conversion efficiency while the low NA (few moded) core design is ideal for applications where robust single-mode beam quality is critical. The high NA (0.46) 250µm pump cladding waveguide allows for efficient coupling of high pump powers. The large core diameter (25µm) maintains a large mode field diameter and short device length thereby minimizing non-linear effects such as SBS and SRS.

Typical Applications

- Eye Safe (~2µm) lasers and amplifiers
- Military and commercial lidar
- ~2µm output TEM₀₀ fiber lasers for pumping solid state crystal lasers
- High peak power pulsed fiber amplifiers

Features and Benefits

- Unique low NA Tm-doped core design — Robust single-mode beam quality
- Optimized composition for 793nm pumping — Very high conversion efficiency
- High pump absorption — Short fiber length, efficient lasing in the ~2µm λ window

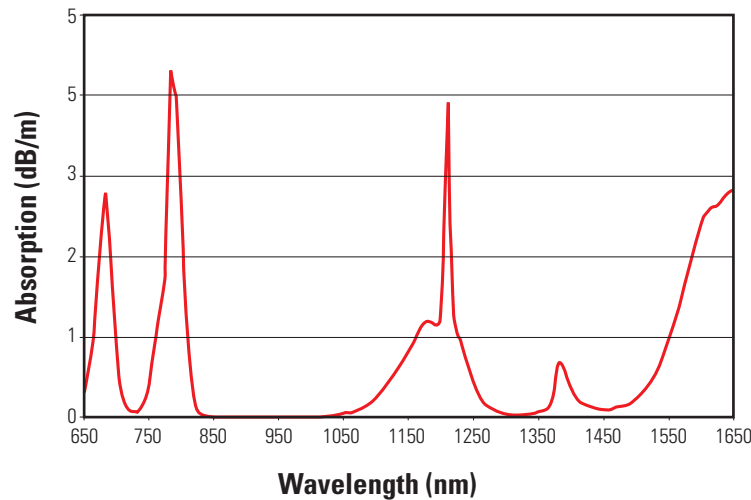
Optical Specifications

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|---------------------------------------|--------------------------|
| Operating Wavelength (nominal) | 2000 nm |
| Cladding Absorption (nominal) | 5 dB/m @ 793 nm |
| Cladding Absorption | 1.0 ± 0.2 dB/m @ 1180 nm |
| Core Numerical Aperture (nominal) | 0.10 |
| Cladding Numerical Aperture (nominal) | 0.46 |

Geometrical & Mechanical Specifications

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|---------------------------------------|-----------------------------------|
| Core Diameter | 25 ± 3 µm |
| Clad Diameter | 250 ± 10 µm |
| Coating Diameter | 400 ± 25 µm |
| Outer Cladding Material | Low Index Polymer |
| Proof Test Level (Radius Bend Method) | 100 kpsi (0.7 GN/m ²) |

LMA-TDF-25/250



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Standard specifications and design parameters are listed above. Specifications are subject to change without notice. Other configurations such as alternative form factors, optimized cut-off and UV cured color coating may be available. Let us know how Nufern can assist with your requirements.