# EyeSafe 25 Micron Core Thulium-Doped LMA Double Clad Fibers


Coherent thulium-doped double clad fibers utilize glass compositions specifically optimized for a high degree of cross-relaxations between Tm ions, enabling efficient conversion of 793 nm pump photons into signal photons at 2 µm. The precision matched –M fiber version offers even higher absorption and efficiency compared to the –HE version. In addition, the waveguide design in –M version is specifically tailored to suppress higher order modes for improved beam quality and enabling highly reliable splicing to precision matched passive fibers. The fiber features a 25 µm core and 400 µm clad diameter allowing for a large mode field diameter and power scaling while minimizing non-linear effects such as SBS and SRS. A polarization maintaining Tm doped 25/400 is also available. In addition, precision matched 25/400 passive fibers are available for use in components and beam delivery.

**Typical Applications**

- High power 2 µm CW and pulsed EyeSafe lasers & amplifiers
- EyeSafe industrial & medical lasers
- Military and commercial LIDAR
- 2 µm fiber lasers for pumping Ho lasers

**Features & Benefits**

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

| **Optical Specifications** | **LMA-TDF-25P/400-M** | **PLMA-TDF-25P/400-HE** |
|---|---|---|
| Operating Wavelength | 1900 – 2100 nm | 1900 – 2100 nm |
| Core NA | 0.090 ± 0.010 | 0.090 |
| First Cladding NA (5%) | ≥ 0.460 | ≥ 0.460 |
| Cladding Attenuation | ≤ 15.0 dB/km @ 860 nm | ≤ 15.0 dB/km @ 860 nm |
| Cladding Absorption | 0.65 ± 0.15 dB/m at 1180 nm | 0.80 ± 0.10 dB/m at 1180 nm |
| | 4.20 dB/m at 793 nm | 4.80 dB/m at 793 nm |
| Birefringence | N/A | nominal $2.5 \times 10^{-4}$ |
| **Geometrical & Mechanical Specifications** | | |
| Cladding Diameter | 400.0 ± 10.0 µm | 400.0 ± 15.0 µm |
| Core Diameter | 24.0 ± 1.5 µm | 25.0 ± 2.5 µm |
| Coating Diameter | 550.0 ± 15.0 µm | 550.0 ± 20.0 µm |
| Core/Clad Offset | ≤ 2.00 µm | N/A |
| Coating Material | Low Index Acrylate | Low Index Acrylate |
| Prooftest Level | ≥ 100 kpsi (0.7 GN/m²) | ≥ 100 kpsi (0.7 GN/m²) |

COHERENT

The passive version of each fiber is also available.

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www.coherent.com ; www.shop.coherent.com • Coherent products are manufactured under an ISO 9001:2008 certified quality management system.

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