

# 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  $\mu$ m. 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  $\mu$ m core and 400  $\mu$ m 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  $\mu$ m CW and pulsed EyeSafe lasers & amplifiers
- EyeSafe industrial & medical lasers
- Military and commercial LIDAR
- 2  $\mu$ m 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  $\mu$ m 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 $\pm$ 0.010	0.090
First Cladding NA (5%)	$\geq$ 0.460	$\geq$ 0.460
Cladding Attenuation	$\leq$ 15.0 dB/km @ 860 nm	$\leq$ 15.0 dB/km @ 860 nm
Cladding Absorption	0.65 $\pm$ 0.15 dB/m at 1180 nm	0.80 $\pm$ 0.10 dB/m at 1180 nm
Birefringence	2.00 dB/m at 793 nm N/A	2.40 dB/m at 793 nm nominal $2.5 \times 10^{-4}$

## Geometrical & Mechanical Specifications

Cladding Diameter	400.0 $\pm$ 10.0 $\mu$ m	400.0 $\pm$ 15.0 $\mu$ m
Core Diameter	24.0 $\pm$ 1.5 $\mu$ m	25.0 $\pm$ 2.5 $\mu$ m
Coating Diameter	550.0 $\pm$ 15.0 $\mu$ m	550.0 $\pm$ 20.0 $\mu$ m
Core/Clad Offset	$\leq$ 2.00 $\mu$ m	N/A
Coating Material	Low Index Acrylate	Low Index Acrylate
Proofstress Level	$\geq$ 100 kpsi (0.7 GN/m <sup>2</sup> )	$\geq$ 100 kpsi (0.7 GN/m <sup>2</sup> )

The passive version of each fiber is also available.



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Custom developed fiber (FUD) 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 Coherent can assist with your requirements.