

Eye Safe 25P/250 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 higher absorption and extraordinary efficiency. 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. While the high Tm concentration of –M version is optimal for operation at higher wavelengths in the 2 μm gain spectrum, the –LC fiber features a lower Tm-concentration best suited for operation in the shorter wavelength region. Both fibers feature a 25 μm core and 250 μm clad diameter allowing for a large mode field diameter and short device lengths thereby minimizing non-linear effects such as SBS and SRS. Precision matched 25/250 passive fibers are available for use in components and beam delivery.

Typical Applications

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

Features & Benefits

- NuCOATTM fluoroacrylate coating — Greater fiber durability in extreme environmental operating & storage conditions
- 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 window
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability when coiling

Optical Specifications

Operating Wavelength
Core NA
First Cladding NA (5%)
Cladding Attenuation
Cladding Absorption

LMA-TDF-25P/250-M

1900 – 2100 nm
0.090 ± 0.010
≥ 0.460
≤ 15 dB/km @ 860 nm
2.10 ± 0.30 dB/m at 1180 nm
11.40 dB/m at 793 nm

LMA-TDF-25P/250-LC

1900 – 2100 nm
0.090
≥ 0.460
≤ 15 dB/km @ 860 nm
1.00 ± 0.20 dB/m at 1180 nm
3.00 dB/m at 793 nm

Geometrical & Mechanical Specifications

Cladding Diameter
Core Diameter
Coating Diameter
Core/Clad Offset
Coating Material
Proof-test Level

250.0 ± 5.0 μm
24.0 ± 1.5 μm
395.0 ± 15.0 μm
≤ 2.00 μm
Low Index Acrylate
≥ 100 kpsi (0.7 GN/m²)

250.0 ± 5.0 μm
25.0 ± 2.0 μm
395.0 ± 15.0 μm
N/A
Low Index Acrylate
≥ 100 kpsi (0.7 GN/m²)



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.



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.