20/400 Ytterbium-Doped LMA Double Clad Fiber

Coherent's Large Mode Area (LMA) Ytterbium-doped double clad fiber is ideal for high power fiber lasers and amplifiers used in military, industrial, and medical applications. These fibers enable efficient, compact, diode pumped lasers that directly compete with traditional solid-state lasers. The fiber features a 20 micron diameter core and 400 micron diameter clad size with a low NA (0.06) core. With > 75% slope efficiency and compatibility with operating at > 1kW of CW output power, this fiber is ideal for use in high power single-mode industrial fiber lasers.

Typical Applications

- High power fiber lasers
- CW and pulsed amplifiers
- Military, industrial and medical

Features & Benefits

- NuCOAT™ fluoroacrylate coating — Greater fiber durability in extreme environmental operating & storage conditions
- LMA core design — Useful for generating high CW powers
- "Few" moded core design — Easy to maintain single mode LP01 beam through fiber & components
- PANDA-style stress structure for increased birefringence — Superior optical performance and uniformity
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability when coiling

Optical Specifications	**PLMA-YDF-20/400-VIII**	**LMA-YDF-20/400-VIII**
Operating Wavelength	1060 – 1115 nm	1060 – 1115 nm
Core NA	0.060 ± 0.010	0.060 ± 0.010
First Cladding NA (5%)	≥ 0.46	≥ 0.46
Cladding Absorption	0.50 ± 0.05 dB/m at 915 nm 1.50 dB/m near 975 nm	0.40 ± 0.05 dB/m at 915 nm 1.20 dB/m near 975 nm
Birefringence	nominal 3.5×10^{-4}	N/A
Geometrical & Mechanical Specifications		
Cladding Diameter	400.0 ± 15.0 µm	N/A
Cladding Diameter (flat-to-flat)	N/A	400.0 ± 15.0 µm
Core Diameter	20.0 ± 2.0 µm	20.0 ± 1.5 µm
Coating Diameter	550.0 ± 20.0 µm	550.0 ± 20.0 µm
Coating Material	Low Index Acrylate	Low Index Acrylate
Prooftest Level	≥ 100 kpsi (0.7 GN/m²)	≥ 100 kpsi (0.7 GN/m²)

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The passive version of each fiber is also available.
Precision matched fiber sets are also available - see PLMA-YDF-20/400-M; LMA-YDF-20/400-M; PLMA-GDF-20/400-M and LMA-GDF-20/400-M

Nufern • 7 Airport Park Road, East Granby, CT 06026 • 860.408.5000 • Toll-free 866.466.0214 • Fax 860.844.0210 • Email: tech.sales@coherent.com
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20/400 Precision Matched Passive LMA Double Clad Fibers

Coherent's Large Mode Area (LMA) and Polarization Maintaining LMA (PLMA) passive double clad fiber are ideal for high power fiber lasers and amplifiers used in military, industrial, and medical applications. These fibers feature a 20 micron diameter core and 400 micron diameter clad size with a low NA (0.065) core. They are precision matched to their active Yb-doped 20/400 LMA and PLMA matched counterparts to ensure excellent splice compatability and low loss. As with all Coherent standard Large Mode Area (LMA) fibers, these fibers are proof-tested to 100 kpsi, an industry requirement for long term reliability. They utilize NuCOAT-FA coating technology to ensure excellent preservation of beam quality and extended operating life at the high power levels demanded by today's industrial fiber laser applications. These precision matched fibers are available in both non-PM and PANDA-style PM fibers.

Typical Applications

- High power fiber lasers
- CW and pulsed amplifiers
- Military, industrial and medical

Features & Benefits

- NuCOAT™ fluoroacrylate coating — Greater fiber durability in extreme environmental operating & storage conditions
- LMA core design — Useful for transmitting high CW powers
- "Few" moded core design — Easy to maintain single mode LP01 beam through fiber & components
- PANDA-style stress structure for increased birefringence — Superior optical performance and uniformity
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability when coiling

Optical Specifications	**PLMA-GDF-20/400-M**	**LMA-GDF-20/400-M**
Operating Wavelength	1015 – 1115 nm	1015 – 1115 nm
Core NA	0.065 ± 0.005	0.065 ± 0.005
First Cladding NA (5%)	≥ 0.46	≥ 0.46
Core Attenuation	≤ 50.0 dB/km @ 1300 nm ≤ 25.0 dB/km @ 1200 nm	≤ 12.0 dB/km @ 1300 nm ≤ 8.0 dB/km @ 1200 nm
Cladding Attenuation	≤ 15.0 dB/km @ 1095 nm	≤ 15.0 dB/km @ 1095 nm
Birefringence	nominal 4×10^{-4}	N/A
Geometrical & Mechanical Specifications		
Cladding Diameter	395.0 ± 10.0 µm	395.0 ± 5.0 µm
Core Diameter	20.0 ± 1.5 µm	20.0 ± 1.5 µm
Coating Diameter	550.0 ± 15.0 µm	550.0 ± 15.0 µm
Core/Clad Offset	≤ 2.00 µm	≤ 2.00 µm
Clad Non-Circularity	N/A	≤ 0.50 %
Prooftest Level	≥ 100 kpsi (0.7 GN/m²)	≥ 100 kpsi (0.7 GN/m²)

These precision matched fibers are included in our precision matched sets - see PLMA-YDF-20/400-M and LMA-YDF-20/400-M

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