Coherent NuUF Ultrafast Fibers

Coherent NuUF fibers offer customers an opportunity to scale up power while avoiding the costs and risks associated with solid state designs. Our fibers provide a path to a seamless transition to a higher powered system with significantly reduced $/W.

Our PM, large mode area (PLMA) Ytterbium doped active fibers (YDF) and passive matched Germanium doped Fibers (GDF) are tailored to meet key requirements for ultrafast laser designs. These specialty fibers feature polarization maintenance, dispersion control, high beam quality, low photodarkening, and highest absorption.

These fibers are also highly suitable for other applications that are sensitive to nonlinear effects including narrow linewidth amplification, second harmonic generation, frequency doubling, and short pulse amplification.

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Typical Applications

- Ultrafast Fiber Lasers for Material Processing
  - Chirped Pulse Amplification
  - Second Harmonic Generation
  - Frequency Doubling
  - Single Frequency & Narrow Linewidth Amplifiers

Features & Benefits

- Lowest Photodarkening – increased reliability and enables power scaling of pulsed amplifiers
- Highest Absorption – 2-3x absorption reduces cavity length and minimizes nonlinear effects
- Maintains highest beam quality
- Enables power scaling and mass production
- Reduces $/w
- Designed for extended service life in challenging deployment conditions

Optical Specifications	**PLMA-YDF-14/125-UF**	**PLMA-YDF-25/250-UF**	**PLMA-YDF-30/250-UF**
Operating Wavelength	1015 – 1115 nm	1015 – 1115 nm	1015 – 1115 nm
Core NA	0.07 ± 0.005	0.07 ± 0.005	0.07 ± 0.005
First Cladding NA (5%)	≥ 0.46	≥ 0.46	≥ 0.46
Core Attenuation	≤ 25.0 dB/km @ 1200 nm	≤ 25.0 dB/km @ 1200 nm	≤ 25.0 dB/km @ 1200 nm
Cladding Attenuation	≤ 15.0 dB/km @ 1095 nm	≤ 15.0 dB/km @ 1095 nm	≤ 15.0 dB/km @ 1095 nm
Cladding Absorption	3.9 ± 0.5 dB/m at 915 nm 16.6 dB/m near 976 nm	2.8 ± 0.3 dB/m at 915 nm 11.9 dB/m near 976 nm	4 ± 0.6 dB/m at 915 nm 17 dB/m near 976 nm
Birefringence	nominal 2×10^{-4}	nominal 2×10^{-4}	nominal 2×10^{-4}
Geometrical & Mechanical Specifications			
Cladding Diameter	125.0 ± 1.0 µm	255.0 ± 5.0 µm	255.0 ± 5.0 µm
Cladding Diameter (flat-to-flat)	N/A	N/A	N/A
Core Diameter	14.0 ± 1.0 µm	25.0 ± 1.5 µm	30.0 ± 2.5 µm
Coating Diameter	245.0 ± 10.0 µm	395.0 ± 15.0 µm	395.0 ± 15.0 µm
Core/Clad Offset	≤ 1.00 µm	≤ 2.00 µm	≤ 2.00 µm
Prooftest Level	≥ 100 kpsi (0.7 GN/m²)	≥ 100 kpsi (0.7 GN/m²)	≥ 100 kpsi (0.7 GN/m²)

Precision matched NuUF passive fibers are also available - PLMA-GDF-14/125-UF; PLMA-GDF-25/250-UF; PLMA-GDF-30/250-UF

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

RoHS compliant

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.

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PLMA-GDF-14/125-UF, PM Passive Double Clad Optical Fiber

www.nufern.com

Parameters	Min	Max	Nom	Unit	Compliance
Core Attenuation at 1200 nm	0	25		dB/km	Measured
Cladding Attenuation at 1095 nm	0	15		dB/km	Measured
Core NA	0.065	0.075	0.07		Measured
Cladding NA (5%)	0.46				Design
Birefringence			0.0002		Design
Mode Field Diameter at 1060 nm	13	15	14	µm	Calculated
Core Diameter			14	µm	Design
Clad Diameter	124	126	125	µm	Measured
Core/Clad Offset	0	1		µm	Measured
Coating Diameter	235	255	245	µm	Measured
Prooftest Level	100	120		kpsi	Measured
Operating Wavelength	1015	1115		nm	Design

Comments

Coating Requirements: Low index polymer coating NuCOAT-FA-HP.

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PLMA-GDF-25/250-UF, PM Passive Double Clad Optical Fiber

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Parameters	Min	Max	Nom	Unit	Compliance
Core Attenuation at 1200 nm	0	25		dB/km	Measured
Cladding Attenuation at 1095 nm	0	15		dB/km	Measured
Core NA	0.065	0.075	0.07		Measured
Cladding NA (5%)	0.46				Design
Birefringence			0.0002		Design
Mode Field Diameter at 1060 nm	20.5	22.5	21.5	µm	Calculated
Core Diameter			25	µm	Design
Clad Diameter	242	252	247	µm	Measured
Core/Clad Offset	0	2		µm	Measured
Coating Diameter	380	410	395	µm	Measured
Prooftest Level	100	120		kpsi	Measured
Operating Wavelength	1015	1115		nm	Design

Comments

Coating Requirements: Low index polymer coating NuCOAT-FA-HP.

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1437945

PLMA-GDF-30/250-UF, PM Passive Double Clad Optical Fiber

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Parameters	Min	Max	Nom	Unit	Compliance
Core Attenuation at 1200 nm	0	25		dB/km	Measured
Cladding Attenuation at 1095 nm	0	15		dB/km	Measured
Core NA	0.065	0.075	0.07		Measured
Cladding NA (5%)	0.46				Design
Mode Field Diameter at 1060 nm	23	26	24.5	µm	Calculated
Birefringence			0.0002		Design
Core Diameter			30	µm	Design
Clad Diameter	242	252	247	µm	Measured
Core/Clad Offset	0	2		µm	Measured
Coating Diameter	380	410	395	µm	Measured
Prooftest Level	100	120		kpsi	Measured
Operating Wavelength	1015	1115		nm	Design

Comments

Coating Requirements: Low index polymer coating NuCOAT-FA-HP.

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