

# Ultra-High NA Single-Mode Fibers

Nufern Ultra-High NA fibers are part of the NuBRIDGE™ fiber family and are excellent bridge fibers between high NA waveguides and low NA transmission fiber. Ultra-High NA fibers provide excellent coupling efficiencies to high NA waveguides. In addition, the composition of Ultra-High NA fibers are tailored to thermally expand the core during splicing thus achieving lower splice loss to transmission fiber.



## Typical Applications

- Fluoride and other non-silica fibers
- Planar Waveguides
- Silicon photonics devices
- Fiber tails for high NA sources
- Bridge fiber

## Features & Benefits

- High numerical aperture — Bend insensitive fiber for miniature packages
- Thermally expandable core — Low splice loss to transmission fiber
- Small Mode Field Diameter — High coupling efficiency with Planar Waveguides

## Optical Specifications

	UHNA1	UHNA3	UHNA4	UHNA7
Operating Wavelength	1100 – 1600 nm	960 – 1600 nm	1100 – 1600 nm	1500 – 2000 nm
Core NA	0.280	0.350	0.350	0.410
Mode Field Diameter	4.0 ± 0.3 μm @ 1310 nm 4.8 ± 0.3 μm @ 1550 nm 3.3 ± 0.3 μm @ 1100 nm	3.3 ± 0.3 μm @ 1310 nm 4.1 ± 0.3 μm @ 1550 nm 2.6 ± 0.3 μm @ 1100 nm	3.3 ± 0.3 μm @ 1310 nm 4.0 ± 0.3 μm @ 1550 nm 2.6 ± 0.3 μm @ 1100 nm	3.2 ± 0.3 μm @ 1550 nm
Cutoff	1000 ± 50 nm	900 ± 50 nm	1050 ± 50 nm	1450 ± 50 nm

## Geometrical & Mechanical Specifications

	UHNA1	UHNA3	UHNA4	UHNA7
Cladding Diameter	125.0 ± 1.0 μm			
Core Diameter	2.5 μm	1.8 μm	2.2 μm	2.4 μm
Coating Diameter	250.0 ± 20.0 μm			
Coating Concentricity	< 5.0 μm	< 5.0 μm	< 5.0 μm	< 5.0 μm
Core/Clad Offset	≤ 0.50 μm	≤ 0.50 μm	≤ 0.50 μm	≤ 0.50 μm
Coating Material	UV Cured, Dual Acrylate			
Operating Temperature Range	-55 to 85 °C			
Short Term Bend Radius	≥ 12 mm	≥ 12 mm	≥ 12 mm	≥ 12 mm
Long Term Bend Radius	≥ 25 mm	≥ 25 mm	≥ 25 mm	≥ 25 mm
Proof-test Level	≥ 100 kpsi (0.7 GN/m <sup>2</sup> )			



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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 Nufern can assist with your requirements.