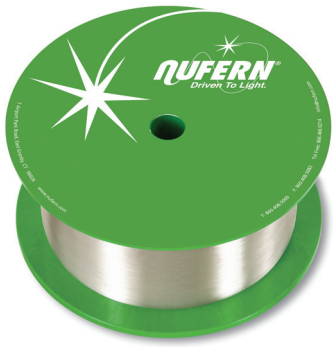

Visible Wavelength Select Cutoff Single-Mode Fibers

Nufern visible wavelength fibers are optimized for use from 400 up to 900 nm. The high-performance fibers were developed for applications such as RGB components requiring generation of couplers, diode pigtails and unique delivery needs. These fibers feature greater proof test levels and a tigher second mode cutoff tolerance than standard fibers, resulting in higher strength, increased component reliability, better production yields and reduced costs for component manufacturers.

Typical Applications

- Diode Pigtails
- Compact UV sources
- RGB components
- Couplers

Features & Benefits

- Superior fiber geometrical tolerances — Improved connectorization and coupling performance
- Extremely tight second mode cutoff tolerance — Enhanced component reproducibility
- Higher proof test level — Greater reliability for tight bend applications

Optical Specifications	**405-HP**	**460-HP**	**630-HP**
Operating Wavelength (nominal)	400– 550 nm	450 – 600 nm	600 - 770 nm
Mode Field Diameter ($1/e^2$ fit - near field)	3.5 ± 0.5 µm @ 515 nm	3.5 ± 0.5 µm @ 515 nm	4.0 ± 0.5 µm @ 630 nm
Second Mode Cutoff	370 ± 20 nm	430 ± 20 nm	570 ± 30 nm
Attenuation	30 dB/km @ 515 nm (nominal)	30 dB/km @ 515 nm (nominal)	≤12 dB/km @ 630 nm
Numerical Aperture (nominal)	0.13	0.13	0.13
Bend Loss for 100 turns @ LTBR (nominal)	<0.001 dB @ 405 nm	<0.001 dB @ 460 nm	<0.001 dB @ 630 nm
Bend Radius for 0.05 dB per 100 turns (nominal)	Much less than LTBR @ 405 nm	Much less than LTBR @ 460 nm	Much less than LTBR @ 630 nm
Geometrical & Mechanical Specifications			
Clad Diameter	125 ± 1 µm	125.0 ± 1.5 µm	125.0 ± 1.5 µm
Coating Diameter	245 ± 15 µm	245 ± 15 µm	245 ± 15 µm
Core-Clad Concentricity	< 0.5 µm	< 0.5 µm	< 0.5 µm
Coating/Clad Offset	≤ 5 µm	≤ 5 µm	≤ 5 µm
Coating Material	UV Cured, Dual Acrylate	UV Cured, Dual Acrylate	UV Cured, Dual Acrylate
Operating Temperature	- 55 to + 85°C	- 55 to + 85°C	- 55 to + 85°C
Short-Term Bend Radius	≥ 6 mm	≥ 6 mm	≥ 6 mm
Long-Term Bend Radius	≥ 13 mm	≥ 13 mm	≥ 13 mm
Proof Test Level	≥ 200 kpsi (1.4 GN/m²)	≥ 200 kpsi (1.4 GN/m²)	≥ 200 kpsi (1.4 GN/m²)

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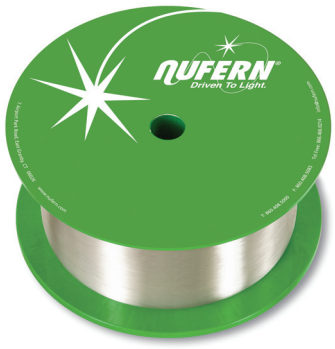


Nufern 780 nm Select Cut-Off Single-Mode Fiber

Nufern's 780-HP high-performance select cut-off single-mode fiber is optimized at near IR wavelengths. This application-specific fiber was developed for applications requiring coupler generation, diode pigtails and unique delivery needs for the near IR continuum. Compared to the best fibers available today, 780-HP fiber features higher proof test levels and tighter second mode cut-off tolerance. These features result in higher strength, increased component reliability, improved production yields and reduced costs for component manufacturers.

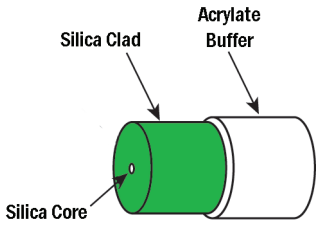
Typical Applications

- Couplers
- Diode pigtails

Features & Benefits

- Superior fiber geometrical tolerances — Improved connectorization and coupling performance
- Extremely tight second mode cutoff tolerance — Enhanced component reproducibility
- Higher proof test level — Greater reliability for tight bend applications

Optical Specifications	780-HP
Operating Wavelength (nominal)	780 - 970 nm
Mode Field Diameter ($1/e^2$ fit - near field)	5.0 ± 0.5 µm @ 850 nm
Second Mode Cut-Off	730 ± 30 nm
Attenuation (nominal)	4 dB/km @ 780 nm
Attenuation	< 3.5 dB/km @850 nm
Numerical Aperture (nominal)	0.13
Bend Loss for 100 turns @ 13 mm radius	< 0.001 dB @ 780 nm
Bend Radius for 0.05 dB per 100 turns	Less than LTBR @ 780 nm
Geometrical & Mechanical Specifications	
Clad Diameter	125.0 ± 1.5 µm
Coating Diameter	245 ± 15 µm
Core-Clad Concentricity	< 0.5 µm
Coating/Clad Offset	≤ 5 µm
Coating Material	UV Curable, Dual Acrylate
Operating Temperature	-55 to +85° C
Short-Term Bend Radius	≥ 6 mm
Long-Term Bend Radius	≥ 13 mm
Proof Test Level	≥ 200 kpsi (1.4 GN/m²)



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Pure Silica Core Visible Wavelength Fibers

Nufern's pure silica core fibers are optimized for use at visible wavelengths from 400 up to 700 nm. These high-performance fibers were developed for applications such as RGB components requiring couplers, diode pigtails and unique delivery needs. The pure silica core fibers were designed for more demanding applications that require lower attenuation and higher resistance to radiation and color center formation compared to germanium-doped fibers.

Typical Applications
- Diode Pigtails
- Compact UV sources
- RGB components

Features & Benefits
- Tight specifications — Highly deterministic results, highest product yield
- High proof test — Low risk of mechanical damage and failure
- High fatigue failure resistance — Longest service life
- Pure silica core — Resistance to radiation-induced damage and color center formation

Optical Specifications	S405-HP	S460-HP	S630-HP
Operating Wavelength (nominal)	400 – 550 nm	460 – 600 nm	630 – 860 nm
Mode Field Diameter ($1/e^2$ fit - near field)	2.9 µm @ 405 nm* 3.2 ± 0.5 µm @ 460 nm	3.4 ± 0.5 µm @ 460 nm	4.2 ± 0.5 µm @ 630 nm
Second Mode Cutoff	370 ± 20 nm	425 ± 25 nm	590 ± 30 nm
Attenuation	≤ 30 dB/km @ 460 nm	≤30 dB/km @ 460 nm	≤10 dB/km @ 630 nm
Numerical Aperture (nominal)	0.12	0.12	0.12
Geometrical & Mechanical Specifications			
Clad Diameter	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm
Coating Diameter	245 ± 15 µm	245 ± 15 µm	245 ± 15 µm
Core-Clad Concentricity	< 0.5 µm	< 0.5 µm	< 0.5 µm
Coating/Clad Offset	≤ 5 µm	≤ 5 µm	≤ 5 µm
Core Type	Pure Silica Core	Pure Silica Core	Pure Silica Core
Coating Material	UV Cured, Dual Acrylate	UV Cured, Dual Acrylate	UV Cured, Dual Acrylate
Operating Temperature	- 55 to + 85ºC	- 55 to + 85ºC	- 55 to + 85ºC
Short-Term Bend Radius	≥ 6 mm	≥ 6 mm	≥ 6 mm
Long-Term Bend Radius	≥ 13 mm	≥ 13 mm	≥ 13 mm
Proof Test Level	≥ 200 kpsi (1.4 GN/m^2)	≥ 200 kpsi (1.4 GN/m^2)	≥ 200 kpsi (1.4 GN/m^2)

*Nominal value

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