

# NuSENSOR 50/125 Graded Index Pure Silica Core Multimode Fibers



Coherent's NuSENSOR pure silica core multimode fiber is immune to the damaging effects of hydrogen ingress, enabling Raman based distributed temperature sensing in harsh environments. This 0.20 NA fiber features a graded refractive index profile with a 50  $\mu\text{m}$  core diameter and a 125  $\mu\text{m}$  clad diameter. The fibers are available with a polyimide or mid-temperature acrylate coating and also available in combination with a hermetic carbon coating. NuSENSOR multimode fiber is manufactured in-house, and every process step is monitored and controlled providing high bandwidth and low attenuation. As with all Coherent fibers, this multimode fiber provides tight tolerance optical and geometrical specifications measured at the application critical wavelengths. For high  $\text{H}_2$  partial pressure and elevated temperature up to 300°C (150°C for MTA) you will find no measurable induced loss for typical sensing applications.

## Typical Applications

- Enhanced oil recovery processes
- Hydrothermal well temperature measurements
- Oil reservoir optimization
- Raman distributed temperature sensing

## Features & Benefits

- Resistant to  $\text{H}_2$  ingress — Low cost, long life deployment
- Exceptional uniformity — Consistent and repeatable performance
- Long unattended deployments or short cycle in-out applications
- Low loss over the wavelengths range critical to DTS
- Available with hermetic carbon coating

## Optical Specifications

Operating Wavelength  
Core NA  
Bandwidth  
Core Attenuation

### GR-S50/125-20P

850 – 1300 nm  
0.200  
 $\geq 300$  MHz-km @ 850 nm  
 $\geq 300$  MHz-km @ 1300 nm  
 $\leq 1.00$  dB/km @ 1300 nm  
 $\leq 1.80$  dB/km @ 1060 nm  
 $\leq 2.70$  dB/km @ 850 nm

### GR-S50/125-20CP

850 – 1300 nm  
0.200  
 $\geq 300$  MHz-km @ 850 nm  
 $\geq 300$  MHz-km @ 1300 nm  
 $\leq 1.00$  dB/km @ 1300 nm  
 $\leq 1.80$  dB/km @ 1060 nm  
 $\leq 2.70$  dB/km @ 850 nm

### GR-S50/125-20MTA

850 – 1300 nm  
0.200  
 $\geq 300$  MHz-km @ 850 nm  
 $\geq 300$  MHz-km @ 1300 nm  
 $\leq 1.00$  dB/km @ 1300 nm  
 $\leq 1.80$  dB/km @ 1060 nm  
 $\leq 2.70$  dB/km @ 850 nm

### GR-S50/125-20CMTA

850 – 1300 nm  
0.200  
 $\geq 300$  MHz-km @ 850 nm  
 $\geq 300$  MHz-km @ 1300 nm  
 $\leq 1.00$  dB/km @ 1300 nm  
 $\leq 1.80$  dB/km @ 1060 nm  
 $\leq 2.70$  dB/km @ 850 nm

## Geometrical & Mechanical Specifications

Cladding Diameter  
Core Diameter  
Coating Diameter  
Coating Concentricity  
Core/Clad Offset  
Core Non-Circularity  
Clad Non-Circularity  
Core Index Profile  
Coating Material  
Operating Temperature Range  
Proof-test Level

125.0  $\pm$  1.0  $\mu\text{m}$

50.0  $\pm$  2.5  $\mu\text{m}$

150.0  $\pm$  5.0  $\mu\text{m}$

< 1.5  $\mu\text{m}$

$\leq 1.50$   $\mu\text{m}$

$\leq 5\%$

$\leq 1.0\%$

Graded Index

Polyimide

-65 to 300 °C

$\geq 100$  kpsi (0.7 GN/m<sup>2</sup>)

125.0  $\pm$  1.0  $\mu\text{m}$

50.0  $\pm$  2.5  $\mu\text{m}$

150.0  $\pm$  5.0  $\mu\text{m}$

< 1.5  $\mu\text{m}$

$\leq 1.50$   $\mu\text{m}$

$\leq 5\%$

$\leq 1.0\%$

Graded Index

Polyimide

-65 to 300 °C

$\geq 100$  kpsi (0.7 GN/m<sup>2</sup>)

125.0  $\pm$  1.0  $\mu\text{m}$

50.0  $\pm$  2.5  $\mu\text{m}$

245.0  $\pm$  5.0  $\mu\text{m}$

< 5.0  $\mu\text{m}$

$\leq 1.50$   $\mu\text{m}$

$\leq 5\%$

$\leq 1.0\%$

Graded Index

Mid Temperature Acrylate

-40 to 150 °C

$\geq 100$  kpsi (0.7 GN/m<sup>2</sup>)

125.0  $\pm$  1.0  $\mu\text{m}$

50.0  $\pm$  2.5  $\mu\text{m}$

245.0  $\pm$  5.0  $\mu\text{m}$

< 5.0  $\mu\text{m}$

$\leq 1.50$   $\mu\text{m}$

$\leq 5\%$

$\leq 1.0\%$

Graded Index

Mid Temperature Acrylate

-40 to 150 °C

$\geq 100$  kpsi (0.7 GN/m<sup>2</sup>)



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.



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.