

Specialty Fiber



Issue date: 12/09
Supersedes: 09/09

For data transmission and communication in harsh environments

- Industry
- Marine, Oil and Gas
- Mining
- Distributed Temperature Sensing (DTS)



Value Innovation is a way of looking at the world. How we can help our customers do more, make more, save more, achieve more.

Product Type: 50 / 125 µm Sensor Fiber

Coating Type: Dual Layer Primary Coating Acrylate (DLPC9)

Fiber

This Draka's Graded-Index 50/125 µm Multimode Specialty Fiber has a 50 µm core diameter and a 125 µm cladding diameter. The phosphorous free fiber is designed for use at 850 nm and/or 1300 nm and can be used up to 1625 nm, showing additional low water-peak performance. This fiber is particularly suited for sensor applications such as Distributed Temperature Sensing (DTS).

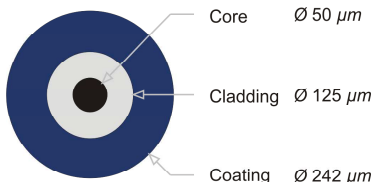
The fiber complies with or exceeds ITU Recommendation G.651.1, IEC 60793-2-10 type A1a.1 Optical Fiber Specification, TIA/EIA-492AAAB detail specification and Telcordia GR-20-CORE specification.

Coating

This DrakaElite™ Multimode Sensor Fiber is coated with a dual layer UV curable Acrylate, type DLPC9. Designed for more stringent tight-buffer cable applications, the fiber also performs perfectly in loose tube buffer constructions and demonstrates a high resistance to micro-bending.

The coating offers an excellent stable coating strip force over a wide range of environmental conditions and coating stripping leaves no residues on the bare glass fiber. In tight buffer applications, the entire coating construction (tight buffer and primary coating) can in general very easily be stripped off.

For higher temperatures other coatings are available (e.g. high temperature Acrylate, up to 150°C).



Features	Benefits
Produced by the PCVD process, the ultimate process for graded-index multimode fiber	PCVD produced multimode fibers show excellent modal bandwidth performance
Low attenuation at 1383 nm	Allowing sensor application in 1310 nm – 1460 nm Window
Phosphorous free production	Improved performance under harsh environments
Coated with the Dual Layer UV Acrylate DLPC9	<ul style="list-style-type: none"> • Optimized performance in tight buffer cable Applications • High resistance to micro-bending • Stable performance over a wide range of environmental conditions • Improved easy stripping of tight buffer coatings
Excellent high temperature resistant Acrylate coating manufacturing process	Superior geometry, uniformity and homogeneity

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Optical Specifications
Attenuation

Attenuation Coefficient at 850 nm	≤ 2.3 dB/km
Attenuation Coefficient at 1300 nm	≤ 0.5 dB/km
Attenuation Coefficient at 1383 nm (water-peak)	≤ 0.5 dB/km

Overfilled Modal Bandwidth^{1,2}

Modal Bandwidth at 850 nm	≥ 440 MHz.km
Modal Bandwidth at 1300 nm	≥ 500 to ≥ 1000 MHz.km

Numerical Aperture

NA	0.200 ± 0.015
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Chromatic Dispersion

Zero Dispersion Wavelength, λ_0	1295 ≤ λ_0 ≤ 1340 nm	
Zero Dispersion Slope, S_0	1295 nm ≤ λ_0 ≤ 1310 nm	≤ 0.105 ps/nm ² .km
	1310 nm ≤ λ_0 ≤ 1340 nm	≤ 0.000375 (1590 - λ_0) ps/nm ² .km

Bending Loss (850 nm, 1300 nm / 100 turns, 75 mm diameter)

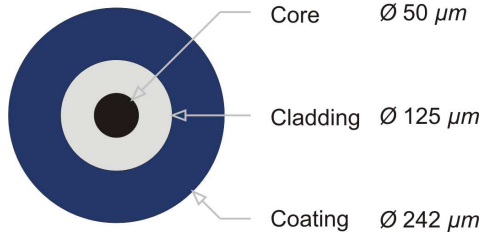
≤ 0.5 dB

Backscatter Specifications³

Point Discontinuity ⁴	850 nm, 1300 nm	≤ 0.1 dB
Irregularities over fiber length	850 nm, 1300 nm	≤ 0.1 dB
Reflections		Not Allowed

Group Index of Refraction (Typical)

Group Index of Refraction at 850 nm	1.482
Group Index of Refraction at 1300 nm	1.477

Geometrical Specifications


Core Diameter	50.0 ± 2.0 μm
Core Non-Circularity	≤ 5 %
Core/Cladding Concentricity Error	≤ 1 μm
Cladding Diameter	125.0 ± 1.0 μm
Cladding Non-Circularity	≤ 0.7 %
Coating Diameter	242 ± 5 μm
Coating Non-Circularity	≤ 5 %
Coating/Cladding Concentricity Error	≤ 6 μm
Length (Specific lengths available on request)	Standard lengths up to 17.6 km

Environmental Specifications

Temperature Cycling	850 nm, 1300 nm / - 60°C to + 85°C	≤ 0.1 dB/km
Temperature and Humidity Cycling	850 nm, 1300 nm / - 10°C to + 85°C, 4-98% RH	≤ 0.1 dB/km
Water Immersion	850 nm, 1300 nm / 23°C, 30 days	≤ 0.1 dB/km
Dry Heat	850 nm, 1300 nm / 85°C, 30 days	≤ 0.1 dB/km
Damp Heat	850 nm, 1300 nm / 85°C, 85% RH, 30 days	≤ 0.1 dB/km

Mechanical Specifications

Proof Test	Off line	≥ 0.7 GPa (100 kpsi)
Dynamic Tensile Strength (Median Value)	0.5 meter gauge length unaged and aged ⁵	≥ 3.8 GPa (550 kpsi)
Fatigue Parameter (Typical)	Dynamic fatigue, unaged and aged ⁵	n_d ≥ 25
Coating Strip Force	Average strip force, unaged and aged ⁶	1 to 3 N
	Peak strip force, unaged and aged ⁶	1.3 to 8.9 N

¹ The modal bandwidth is linearly normalized to 1km, according to IEC 60793-2-10

² Dual window bandwidth specifications are selectable; possibilities are:

850 nm	1300 nm
400	2000 MHz.km
600	1200 MHz.km
800	800 MHz.km

³ OTDR measurement with 0.5 μs pulse width

⁴ Mean of bi-directional measurement

⁵ Aging at 85°C, 85% RH, 30 days

⁶ Aging:

- 23°C, 0°C and 45°C
- 30 days at 85°C and 85% RH
- 14 days water immersion at 23°C

How can we be of service to you?

Value Innovation is a way of looking at the world. How can we help our customers do more, make more, save more, achieve more?

Take DrakaElite™. Based on our proprietary manufacturing process and our control of all technological building blocks, we offer an extensive portfolio of specialized optical fibers that have been designed, developed, manufactured

and tested for every environment. Whether you want to guide, amplify, transmit, process, control or sense light, Draka has the fiber you need, whatever your environment. And if for some reason we don't have exactly what you need, well, we'll just make it.

That's Value Innovation in action.

Draka Communications

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The Draka Communications policy of continuous improvement may cause in changed specifications without prior notice