

FutureGuide™-HSC-125
Compliant with ITU-T G.654.E

FutureGuide™-HSC-125 is a cut-off shifted single-mode optical fiber designed for long-haul terrestrial transmission systems, fully compliant with ITU-T G.654.E. Optimized for operation in the 1530–1625 nm wavelength range, it combines low attenuation and a large effective area to support coherent transmission technologies.

These characteristics help reduce nonlinear impairments and improve Optical Signal-to-Noise Ratio (OSNR), enabling advanced modulation formats and extended transmission distances.

In addition, FutureGuide™-HSC-125 benefits from Fujikura’s long-standing expertise in fiber manufacturing, offering high mechanical reliability and stable performance. This contributes to reduced maintenance needs and supports cost-effective deployment in backbone networks.

Features

- Ultra-low attenuation, significantly lower than conventional fibers.
- Optimized mode field diameter (effective area) in compliance with ITU-T G.654.E.
- Manufactured with Fujikura’s proven fiber technology, ensuring high mechanical reliability and long-term durability.

Customer Benefits

- Greater network margin, enabling advanced modulation formats, longer spans, and improved OSNR.
- Reduced signal degradation due to lower power density in the fiber core.
- Supports higher transmission capacity, flexible network design, and cost-effective implementation.

Optical Characteristics

| Attenuation | |
|------------------------------------------------------------------------|----------------|
| Uncolored and colored fiber Attenuation coefficient at 1550 nm | ≤ 0.17 dB/km |
| Uncolored and colored fiber Attenuation coefficient at 1625 nm | ≤ 0.20 dB/km |
| Ring-marked (1 ring / 200 mm pitch) Attenuation coefficient at 1550 nm | ≤ 0.18 dB/km |
| Ring-marked (1 ring / 200 mm pitch) Attenuation coefficient at 1625 nm | ≤ 0.21 dB/km |
| Attenuation vs. wavelength *1 | |
| 1525 – 1575 nm ref. λ of 1550 nm | α ≤ 0.02 dB/km |
| 1550 – 1625 nm ref. λ of 1550 nm | α ≤ 0.03 dB/km |
| Macro-bending loss | |
| ∅ = 60 mm, 100 turns at 1625 nm | ≤ 0.01 dB |

| Cut off wavelength | |
|---------------------------------------------|----------------------------------|
| Cable cut-off wavelength | ≤ 1520 nm |
| Chromatic dispersion | |
| Chromatic dispersion coefficient at 1550 nm | ≤ 23 ps/(nm·km) |
| Chromatic dispersion coefficient at 1625 nm | ≤ 26 ps/(nm·km) |
| Dispersion slope at 1550 nm | ≤ 0.070 ps/(nm ² ·km) |
| Polarization mode dispersion (PMD) *2 | |
| Uncabled fiber PMD coefficient | ≤ 0.1 ps/√km |
| Link design value PMD _Q | ≤ 0.04 ps/√km |

*1. The attenuation within the specified wavelength range is limited to a difference of α or less compared to the reference wavelength (ref. λ).

*2. This characteristic is guaranteed only under virtually tension-free conditions.



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Structural Characteristics

| | |
|--------------------------------|----------------|
| Mode field diameter at 1550 nm | 12.3 ± 0.5 μm |
| Cladding diameter | 125.0 ± 0.7 μm |
| Coating diameter (uncolored) | 242 ± 5 μm |
| Coating diameter (colored) | 250 ± 10 μm |
| Core concentricity error | ≤ 0.8 μm |
| Cladding non-circularity | ≤ 0.7 % |
| Coating-Cladding concentricity | ≤ 12 μm |
| Fiber curl radius | ≥ 4.0 m |

Environmental Characteristics

| | Attenuation Change at 1550, 1625 nm |
|--------------------------------------|-------------------------------------|
| Temperature dependence - 60 to 85 °C | ≤ 0.05 dB/km Ref. temp. 23 °C |
| Water immersion at 23 °C ± 2 °C | ≤ 0.05 dB/km |
| Dry heat at 85 °C ± 2 °C | ≤ 0.05 dB/km Ref. temp. 23 °C |
| Damp Heat 85 °C at 85 %R.H. | ≤ 0.05 dB/km Ref. temp. 23 °C |

Mechanical Characteristics

| | |
|---------------------------------------------------------------------|-----------------------------|
| Proof test *4 | ≥ 1 % (100 kpsi or 0.7 GPa) |
| Dynamic stress corrosion susceptibility parameter (n _d) | ≥ 20 |
| Coating strippability F | 1.0 N ≤ F ≤ 8.9 N |

*4. The product is subjected to tensile testing throughout its entire length.

Performance Characteristics

| | Typical value |
|-----------------------------------------------------------------|--------------------------------|
| Effective area (A _{eff}) | 125 μm ² |
| Attenuation coefficient at 1550 nm | 0.164 dB/km |
| Attenuation coefficient at 1625 nm | 0.179 dB/km |
| Dispersion slope at 1550 nm | 0.060 ps/(nm ² ·km) |
| Chromatic dispersion coefficient at 1550 nm | 21 ps/(nm·km) |
| Effective group index of refraction N _{eff} at 1550 nm | 1.4638 |
| Effective group index of refraction N _{eff} at 1625 nm | 1.4643 |

Note: This document is published for your reference purpose only and the specifications for commercial purpose will be issued upon agreement with customers.

Note: If you require more detailed information, please contact us by scanning the QR code below.



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