

## FutureGuide™-HSC-125

Compliant with ITU-T G.654.E

We offer the FutureGuide™-HSC-125, a leading-edge cut-off shifted fiber optimized for digital-coherent transmission in long-haul terrestrial networks. This fiber fully complies with ITU-T G.654.E standards.

The FutureGuide™-HSC-125 features extremely reduced attenuation, providing a larger network-designing margin. This enables the use of advanced modulation formats, extension of network spans, and improvement of OSNR gain, among other advantages.

With its combination of features, the FutureGuide™-HSC-125 offers various benefits for terrestrial long-haul networks, including higher transmission capacity, network system design flexibility, and cost-effective implementation.

### Features

- Extremely reduced attenuation lower than existing conventional fibers.
- Optimized Mode field diameter (Effective area) complying with ITU-T G.654.E.

### Customer's advantages

- Gives more network margin which allows advanced modulation formats, extension of the network span and OSNR gain etc.
- Suppresses signal degradation thanks to reduced power density in a fiber core.
- Provides higher transmission capacity, network system design flexibility and cost-effective implementation.

### Optical Characteristics

Attenuation	
Uncolored and colored Attenuation coefficient at 1550 nm	≤ 0.17 dB/km
Uncolored and colored 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 <sup>2</sup> ·km)
Polarization mode dispersion (PMD) *2	
Uncabled fiber PMD coefficient	≤ 0.1 ps/√km
Link design value PMD <sub>Q</sub>	≤ 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 in a virtually tension-free condition.



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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)	255 ± 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 <sub>d</sub> )	≥ 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 <sub>eff</sub> )	125 μm <sup>2</sup>
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 <sup>2</sup> ·km)
Chromatic dispersion coefficient at 1550 nm	21 ps/(nm·km)
Effective group index of refraction N <sub>eff</sub> at 1550 nm	1.4638
Effective group index of refraction N <sub>eff</sub> at 1625 nm	1.4643

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



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