



G.652.D/G.657.A1

PureBand™-R[LL]

Bend Insensitive Single-Mode Optical Fiber



Sumitomo Electric Industries, Ltd. (SEI) offers a bend-insensitive single-mode optical fiber "PureBand™-R [LL]" made by the Vapor Phase Axial Deposition (VAD) method, enabling customers to construct simple and attractive wiring with superior bending performance. The fiber, made of a germanium doped silica core and a silica cladding, complies with ITU-T G.657.A1 and ITU-T G.652.B and D. A dual-layer acrylate is coated over the cladding to provide high product reliability and allows easy splicing. The fiber supports access networks, including last one-mile applications such as FTTH, due to its excellent bending performance while maintaining compatibility with conventional SMF.

Fiber Optical Specifications

Attenuation

Attenuation at 1310 nm	≤ 0.32 dB/km
Attenuation at 1383 nm*	≤ 0.32 dB/km
Attenuation at 1550 nm	≤ 0.18 dB/km
Attenuation at 1625 nm	≤ 0.20 dB/km

Point Discontinuity (PD)

Point discontinuity at 1310/1550 nm ≤ 0.05 dB

Bending Induced Attenuation

Mandrel Radius	Number of Turns	Wavelength	Attenuation
10 mm	1	1550 nm	≤ 0.75 dB
10 mm	1	1625 nm	≤ 1.5 dB
15 mm	10	1550 nm	≤ 0.25 dB
15 mm	10	1625 nm	≤ 1.0 dB
16 mm	1	1550 nm	≤ 0.05 dB
25 mm	100	1310 nm	≤ 0.05 dB
25 mm	100	1550 nm	≤ 0.05 dB
30 mm	100	1625 nm	≤ 0.05 dB

Cut-off Wavelength

Cable cut-off wavelength (λ_{cc}) ≤ 1260 nm

Mode Field Diameter (MFD)

MFD at 1310 nm 9.2 ± 0.4 μm

Chromatic Dispersion (CD)

Zero dispersion wavelength	1300–1324 nm
Zero dispersion slope	≤ 0.092 ps/nm ² /km
CD at 1550 nm	≤ 18 ps/nm/km

Polarization Mode Dispersion (PMD)

Max. individual fiber PMD**	≤ 0.1 ps/rkm
PMD link design value***	≤ 0.04 ps/rkm

* After H₂-aging in accordance with IEC 60793-2-50

** Measured by loosely coiled fiber

*** Since PMD value may change when fiber is cabled, actual individual fiber PMD and actual PMD link design value in a cable shall be confirmed by cable manufacturer. Under appropriate cable design, SEI's "PureBand™-R [LL]" specification supports network design requirements for a 0.20 ps/rkm of maximum PMD link design value specified by ITU-T G.652.D and G.657.A1.

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Geometrical Specifications

Glass Geometry

Core/Clad concentricity error	≤ 0.5 μm
Cladding diameter	125.0 ± 0.7 μm
Cladding non-circularity	≤ 0.7%
Fiber curl radius	≥ 4.0 m

Coating Geometry

Coating diameter (Uncolored)	245 ± 10 μm
Coating diameter (Colored)	250 ± 15 μm
Coating-Cladding concentricity	≤ 12 μm

Mechanical Specifications

Proof Test

Proof stress level	0.86 GPa (1.2%, 120 kpsi)
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Coating Strip Force (F)

F (peak)	1.3 N ≤ F ≤ 8.9 N
F (average)	1 N ≤ F ≤ 5 N

Dynamic Tensile Strength

Unaged (median; 0.5 m)	≥ 3.8 GPa (≥ 550 kpsi)
Aged (median; 0.5 m)	≥ 3.0 GPa (≥ 440 kpsi)

Fatigue

Fatigue	20 (nominal value)
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Environmental Specifications

Environmental Test	Conditions	Induced Attenuation at 1310,1550,1625 nm
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Temperature cycling	-60°C to +85°C	≤ 0.05 dB/km
Temperature Humidity cycling	-10°C to +85°C/98%RH	≤ 0.05 dB/km
Water immersion	+23°C	≤ 0.05 dB/km
Dry heat	+85°C	≤ 0.05 dB/km
Damp heat	+85°C/85%RH	≤ 0.05 dB/km