



G.652.D/G.657.A1

PureBand™-PLUS

Bend Insensitive Single-Mode Optical Fiber



Sumitomo Electric Industries, Ltd. (SEI) offers a single-mode optical fiber “PureBand™-Plus” 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 | ≤ 0.35 dB/km |
| Attenuation at 1383 nm* | ≤ 0.35 dB/km |
| Attenuation at 1550 nm | ≤ 0.20 dB/km |
| Attenuation at 1625 nm | ≤ 0.23 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 8.9 ± 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*** | ≤ 0.06 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™-PLUS” 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.

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) |
|--------------------|---------------------------|

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) |
|---------|--------------------|

Environmental Specifications

| Environmental Test | Conditions | Induced Attenuation at 1310, 1550, 1625 nm |
|------------------------------|----------------------|--|
| 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 |