



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 ( $\lambda_{cc}$ ) ≤ 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 <sup>2</sup> /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 H<sub>2</sub>-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                               |