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Specification for Low Water Peak Single-Mode Optical Fiber (G.652D)
"PureBand®" (Colored fiber)

1. General Design

Sumitomo Electric Industries, Ltd. (SEI) offers a low water peak single-mode optical fiber "***PureBand***®" made by the Vapor Phase Axial Deposition (VAD) method, which enables customers to construct high performance wired networks for voice, video, and/or data transmission. The fiber, made of a germanium doped silica core and a silica cladding, meets international standards such as ITU-T G.652 (Category A, B, C & D). A dual layer acrylate is coated over the cladding to provide high product reliability and allows easy splicing throughout the cable life. Its low water peak characteristics and excellent stability performance against hydrogen provide broad-range operation bandwidth while maintaining fully compatibility with conventional SMF.

NOTE *1: Unless otherwise verified using measurement method according to international standard such like ITU-T G.650, SEI's measurement values will be taken as the correct values. In the event of any discrepancy between measurement value of purchaser and that of SEI, the latter shall prevail over the former.

2. Geometrical Characteristics

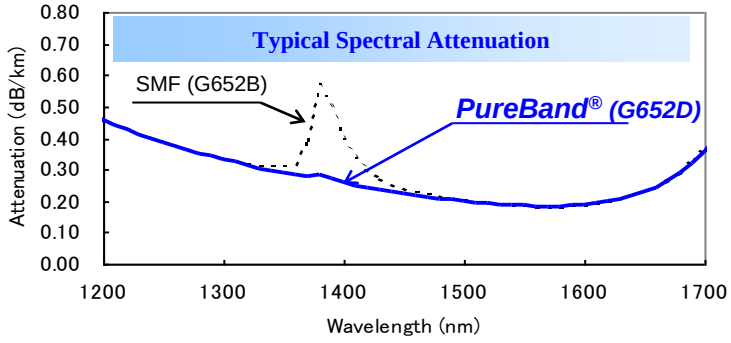
Mode field diameter at 1310 nm	9.20 ± 0.40 μm
at 1550 nm	10.40 ± 0.50 μm
Core/cladding concentricity error	≤ 0.4 μm
Cladding diameter	125.0 ± 0.5 μm
Cladding non-circularity	≤ 0.5 %
Coating/cladding concentricity error	≤ 12 μm
Primary coating material	UV curable acrylate
-diameter	250 ± 7 μm (Colored)
- color	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Pink, Aqua
Numerical aperture (NA)	0.12 (Calculated Value)
Fiber curl radius	≥ 4.0 m

3. Optical Characteristics

Attenuation at 1310 nm	≤ 0.334 dB/km
at 1383 nm	≤ 0.314 dB/km *2
at 1490 nm	≤ 0.244 dB/km
at 1550 nm	≤ 0.194 dB/km
at 1625 nm	≤ 0.224 dB/km

NOTE *2: Attenuation increase due to hydrogen aging at this wavelength will be 0.01 dB/km or less in accordance with IEC 60793-2-50 test procedure.

Point discontinuity at 1310 and at 1550 nm	≤ 0.05 dB



Fiber cut-off wavelength (λc)	≤ 1190 – 1320 nm
Cable cut-off wavelength (λcc)	≤ 1260 nm
Zero dispersion wavelength	1304 – 1324 nm
Zero dispersion slope	≤ 0.090 ps/nm^2·km
Chromatic dispersion in 1285 – 1330 nm	≤ 3.5 ps/nm·km
in 1270 – 1340 nm	≤ 6.0 ps/nm·km
at 1550 nm	≤ 18.0 ps/nm·km
at 1625 nm	≤ 22.0 ps/nm·km
Fiber polarization mode dispersion	≤ 0.20 ps/√km (Uncabled fiber)
	≤ 0.08 ps/√km (PMD link design value) *3

NOTE *3: Since PMD value may be changed when fibers are cabled, actual PMD Link design value in a cable shall be confirmed by cable manufacturer. Under appropriate design of a cable, *PureBand*® supports network for maximum 0.20 ps/r-km of PMD link design value specified by ITU-T G.652 D.

4. Mechanical Characteristics

Proofstress level	1.2 % (120 kpsi, 0.86 GPa)
Minimum bending radius	30 mm
Bending induced attenuation	
•1 turn on 32 mm diameter at 1550 nm	≤ 0.05 dB
•100 turns on 50 mm diameter at 1310 nm	≤ 0.05 dB
•100 turns on 50 mm diameter at 1550 nm	≤ 0.05 dB
•100 turns on 60 mm diameter at 1625 nm	≤ 0.05 dB
Coating strip force (F)	1.3 N ≤ F ≤ 8.9 N (Peak value)
	1 N ≤ F ≤ 5 N (Average value)

Dynamic tensile strength : The median tensile strength of unaged samples with a 0.5 meter gauge length is: ≥ 3.8 GPa (≥ 550 kpsi)

The median tensile strength of aged samples with a 0.5 meter gauge length is: ≥ 3.0 GPa (≥ 440 kpsi)

Fatigue (n) 20 (Typical value)

5. Environmental Characteristics

Induced attenuation at 1310 nm, at 1550 nm and at 1625 nm

•-60°C ~ +85°C Temperature Cycling	≤ 0.05 dB/km
•-10°C ~ +85°/up to 98% RH Dump Heat Cycling	≤ 0.05 dB/km
•+85° +/- 2°C Dry Heat	≤ 0.05 dB/km
•+23° +/- 2°C Water Immersion	≤ 0.05 dB/km

6. Packaging

Spool type		SB	SH
Spool size	Flange	235 mm	265 mm
	Width	141.6 mm	169 mm
	Spindle hole	25.4 mm	25.4 mm
Maximum fiber length *4		25.2 km	50.4 km

NOTE *4: The fiber length shall be decided by mutual agreement between the customer and SEI in each order basis.

7. Performance Characteristics

Effective group index of refraction	1.466 @ 1310 nm/1383 nm 1.467 @ 1550 nm 1.470 @ 1625 nm
Coating strip method	Mechanical stripping tool

8. Items for inspection certificate

Product name
SEI reference No./ Fiber ID No.
Ordered quantity
Fiber length (Spec. length and Actual length)
Cladding diameter
Coating diameter
Mode field diameter at 1310 nm
Core / Cladding concentricity error
Cladding non-circularity
Fiber cut-off wavelength
Attenuation at 1310 nm, 1383 nm, 1490 nm, 1550 nm and 1625 nm
Chromatic dispersion in 1285 – 1330 nm and at 1550 nm
Zero dispersion wavelength
Zero dispersion slope
Proofstress level

9. Notice during Handling and/or Storage

9.1 The optical fiber must be handled carefully according to the following notice because glass splinters may cause injury to personnel when the optical fiber is broken.

9.1.1 Unless otherwise specified, the minimum-bending radius shall be 30mm. It is strictly prohibited to exceed this minimum-bending radius.

9.1.2. Glass splinters generated from the optical fiber should be disposed of as glass scrap. Please be careful in order to avoid splinter contact with eyes, fingers, etc.

9.2. It is strictly prohibited to look down the end of the optical fiber while it is connected to a light source. Strong light may cause permanent eye damage or blindness.

9.3. Please do not lay a shipping spool wound with optical fiber on it's side during storage. It may cause collapse of the winding condition of the optical fiber.

9.4. Please hold the shipping spool in both hands in order to keep the winding condition of the optical fiber. If it is held by only one hand, the winding condition may collapse and the optical fiber may break during the manufacturing process.

9.5. In the event that the ordered quantities do not match the specified fiber length, a spool wound with unspecified fiber length may be used as part of the delivery to meet the ordered quantities.

10. RoHS compliance

We comply that our product does not contain the substances defined in COMMISSION DECISION of 18 August 2005 amending Directive 2002/95/EC of the European Parliament and of the Council for the purpose of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment. Namely the product does not contain in any homogeneous material more than 0.1% of lead, mercury hexavalent chromium, polybrominated biphenyls (PBB) or polybromical diphenyl ethers (PBDE) by weight, nor more than 0.01% of cadmium by weight.

11. Warranty

SEI warrants that the delivered fibers meet this specification. If the fiber does not appear to meet a specification as evaluated based on this specification and SEI agrees such non-conforming condition, SEI will replace such non-conforming fiber. SEI makes no warranty, however, as to the result to be obtained from the use of these fibers. In no event shall SEI be liable for removal or installation costs or other indirect or consequential damages.

12. Note

This is a standard specification that covers generic technical requirements. The specification may be changed without notice to improve the cost or properties. We are willing to talk about your specific requirements if any and are willing to make the customized specification on request.
Unless otherwise specified, all figures are construed as expressed by symmetric arithmetic rounding method.

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