Messers: *TELE-FONIKA KFK S.A.*

Specification for Improved Bending Performance Single-Mode Optical Fiber "*PureAccess™*" (Colored fiber)

1. General Design

Sumitomo Electric Industries, Ltd. (SEI) offers a improved bending performance single-mode optical fiber "***PureAccess ™***", which enables customers to construct simple and attractive wiring with free from 30 mm of minimum bending radius restrictions of conventional SMF.

Product name	Minimum Bending Radius
Standard SMF	30.0 mm
PureAccess™	**15.0** mm

The fiber, its high performances are achieved through a germanium doped silica core and a silica cladding, made by the Vapor Phase Axial Deposition (VAD) method. 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 application such like FTTH due to its excellent bending performance while maintaining compatibility with conventional SMF with enough splicing performance.

NOTE: 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	8.6 ± 0.4 μm
Core/cladding concentricity error	≤ 0.4 μm
Cladding diameter	125.0 ± 0.5 μm
Cladding non-circularity	≤ 0.5 %
Primary coating material	UV curable acrylate
-diameter	250 ± 15 μm (Colored)
-color	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Pink, Aqua
Fiber curl radius	≥ 4 m

3. Optical Characteristics

Attenuation at 1310 nm	≤ 0.35 dB/km
at 1550 nm	≤ 0.22 dB/km
Point discontinuity at 1310 and at 1550 nm	≤ 0.1 dB
Fiber cut-off wavelength (λc)	1190-1330 nm
Cable cut-off wavelength (λcc)	≤ 1260 nm
Zero dispersion wavelength	1300 – 1334 nm
Zero dispersion slope	≤ 0.092 ps/nm^2·km
Chromatic dispersion at 1550 nm	≤ 18 ps/nm·km
Polarization mode dispersion	≤ 0.2 ps/√km (uncabled fiber)

4. Mechanical Characteristics

Proofstress level	1.5 % (156 kpsi, 1.07 GPa)
Minimum bending radius	15 mm
Bending induced attenuation at 1550 nm	
•100 turns on 30 mm diameter	≤ 0.50 dB
•1 turn on 32 mm diameter	≤ 0.50 dB
•100 turns on 50 mm diameter	≤ 0.10 dB
Coating strip force (F)	1.3 N ≤ F ≤ 8.9 N (Peak value)
	1 N ≤ F ≤ 5 N (Average value)
Dynamic tensile strength : unaged	≥ 3.8 Gpa (≥ 550 kpsi)
: aged	≥ 3.0 Gpa (≥ 440 kpsi)
Dynamic fatigue (n_d)	20 (Typical value)
Static fatigue (n_s)	20 (Typical value)

5. Environmental Characteristics

Induced attenuation at 1310 nm and at 1550 nm	
•-60°C ~ +85°C Temperature cycling	≤ 0.05 dB/km
•+85°/98% RH Temperature Humidity cycling	≤ 0.05 dB/km
•+85°C Heat aging	≤ 0.05 dB/km
•+23°C Water immersion	≤ 0.05 dB/km

6. Packaging

Spool type		SB	
- size	Flange	235 mm	
	Width	141.6 mm	
	Spindle hole	25.4 mm	
Fiber length		21.0 km, 23.1 km, 25.2 km	≥ 70%
		12.6 km, 16.8 km, 18.9 km	≤ 30%

7. Performance Characteristics

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

8. Items for inspection certificate

Product name
SEI reference No./ Fiber ID No. / Fiber color
Ordered quantity
Fiber Length
Mode field diameter at 1310 nm
Core/cladding concentricity error
Cladding diameter
Cladding non-circularity
Attenuation at 1310 nm and 1550 nm
Zero dispersion wavelength
Zero dispersion slope
Chromatic dispersion at 1550 nm
Fiber-cutoff wavelength (λc)
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 15 mm. 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. Warranty

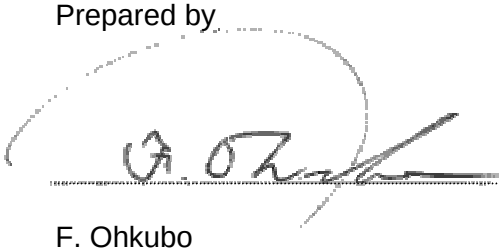
SEI warrants that the delivered fibers meet this specification. If the fiber does not appear to meet a specification as evaluated based on this specification and SEI agrees such non-conforming condition, SEI will replace such non-conforming fiber. SEI makes no warranty, however, as to the result to be 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.

11. Revision Record

Each new document is assigned a unique specification number with the letter A. A revised document keeps its specification number but is assigned the next alphabetic letter in order as well as the revised date. A vertical line in the left margin indicates the revised portion(s) since the previous document.

Issue No.	Description of change	Date	Incorporated by
A	Initial issue	June 3, 2003	F. Ohkubo

Prepared by



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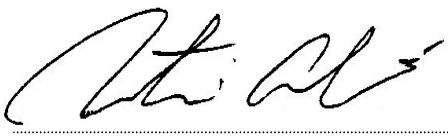

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