Sumitomo Fiber Specification

SE-5**

PureBand™ Single-Mode Fiber

Low Water Peak Attenuation Optical Fiber, TIA Type IVa

Issued: August 2004

SUMITOMO ELECTRIC LIGHTWAVE

CONTENTS

1. General

This specification covers the design requirements and performance standards for the optical fiber described below. This fiber is used in Sumitomo's optical cables. The features described in this document are intended to provide information on the performance of Sumitomo Electric's optical fiber and aid in handling and use. Refer to the appropriate *cable* specification for details regarding the finished cable's performance.

1.1 Fiber Description

Sumitomo's PureBand™ single-mode optical fiber is a low water peak, step index dispersion unshifted fiber with a glass core, glass cladding and dual acrylate protective coatings. This Type IVa TIA specified fiber is optimized for operation in 5 operating windows between 1285 to 1625. It is fully compatible with commercially available splicing and connector products and can be spliced to other commercially available single-mode fibers.

The PureBand single-mode fiber used in Sumitomo's cables meets all Telcordia requirements and is compatible with conventional ITU-T G.652D single mode fibers. Eliminating attenuation loss at the water peak spectrum is ideal for WDM use in Access or Metro Network. The expanded capacity of PureBand fiber fully supports DWDM applications in enterprise and local area networks.

1.2 Quality

Sumitomo ensures a high level of quality through ISO / TL 9000 registered Quality Management Systems and our commitment to continuous improvement. Guaranteed, high quality products have been manufactured at Sumitomo's facility in Research Triangle Park, North Carolina since 1984.

1.3 Reliability

Sumitomo ensures product reliability through rigorous qualification testing of each product family to meet or exceed industry standards. Both initial and periodic qualification testing are performed to assure the fiber's performance and durability in the field environment.

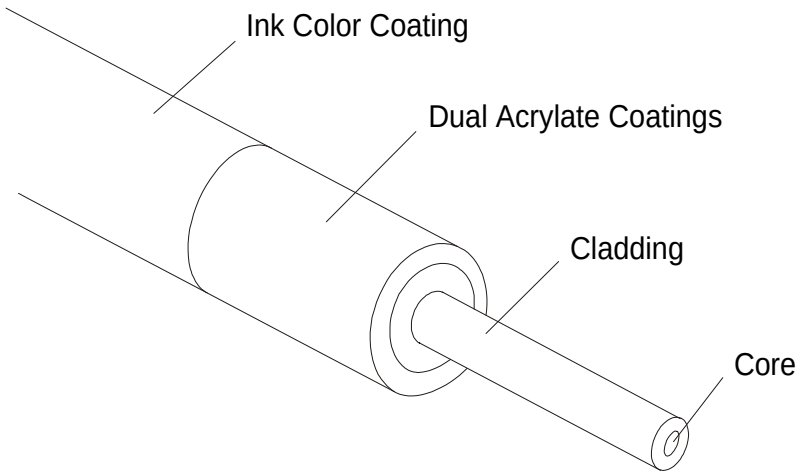
Sumitomo supports industry standards organizations such as Bell Communications Research (Telcordia), Telecommunications Industry Association (TIA), International Telecommunications Union (ITU), International Electrotechnical Commission (IEC), American Society for Testing and Materials (ASTM), Rural Utilities Service (RUS), The Institute of Electrical and Electronics Engineers (IEEE), and Insulated Cable Engineers Association (ICEA).

2. Fiber Design

2.1 General

Sumitomo employs only the highest quality, low water-peak, single-mode fibers in their cables. The step index glass fibers are coated with dual acrylate protective coatings to provide the necessary bending and tensile strength required for handling in the field and to ensure maximum fiber lifetime through increased reliability. Colored ink coatings are applied per the detailed cable specification.

SINGLE-MODE OPTICAL FIBER



2.2 Construction

SINGLE-MODE OPTICAL FIBER			
FIBER REGION	PROPERTY	TEST PROCEDURE	SPECIFICATION
Core (Glass)	Core/Cladding Offset	EIA/TIA-455-176	≤ 0.4 μm
Cladding (Glass)	Diameter Non-Circularity	EIA/TIA-455-176 EIA/TIA-455-176	125 ± 0.5 μm ≤ 0.5 %
Coating	Material Inked Diameter	 EIA/TIA-455-173	UV-Acrylate 250 ± 15 μm

3. Fiber Characteristics

3.1 Optical Characteristics

SINGLE- MODE OPTICAL FIBER			
PROPERTY		**TEST PROCEDURE**	**SPECIFICATION**
Maximum Individual Fiber Attenuation (Uncabled)	1310nm 1383nm 1550nm 1625nm	EIA/TIA-455-61	≤0.33 dB/km ≤0.31 dB/km ≤0.19 dB/km ≤0.22 dB/km
Point Discontinuities	1310/1550nm	EIA/TIA-455-59	≤ 0.05 dB
Water Peak Stability at 1383 nm		EIA/TIA-455-78	≤ 0.32 dB/km
Attenuation Change vs. Bending	100 wraps / 60 mm dia. (1625nm) 100 wraps / 50 mm dia. (1310/1550nm) 1 wrap / 32 mm dia. (1550nm)	EIA/TIA-455-62	≤ 0.05 dB ≤ 0.05 dB ≤ 0.50 dB
Chromatic Dispersion	1550nm 1625nm	EIA/TIA-455-168	≤ 18.0 ps/nm·km ≤ 22.0 ps/nm·km
Zero Dispersion Wavelength		EIA/TIA-455-168	1302 - 1322 nm
Zero Dispersion Slope		EIA/TIA-455-168	≤ 0.090 ps/nm^2·km
Nominal Mode Field Diameter	1310nm	EIA/TIA-455-167	9.20 µm
Mode Field Diameter Tolerance		EIA/TIA-455-167	± 0.40 µm
Cabled Fiber Cutoff Wavelength (λ_{cc})		EIA/TIA-455-170	≤ 1260 nm
Group Index of Refraction	1310nm 1550nm 1625nm	EIA/TIA-455-44	1.466 1.467 1.470
Polarization Mode Dispersion	Uncabled fiber PMD Link Design Value		< 0.20 ps/√km < 0.08 ps/√km

Note: PureBand fiber specification supports network design requirements for a 0.20 ps/√km of maximum PMD link design value specified by ITU-T G.652D.

3.2 Mechanical Characteristics

SINGLE-MODE OPTICAL FIBER			
PROPERTY		TEST PROCEDURE	SPECIFICATION
Proof Test Stress		EIA/TIA-455-31	120 kpsi (0.86 GPa)
Fiber Curl Radius		Internal	≥ 4 meters
Maximum Bend Radius:	During Installation		16.0 mm
	During Service		30.0 mm