Single-Mode Optical Fiber

SF-SMF

Product Information

SAMSUNG's single-mode optical fiber (ITU-T. G.652.B) is designed and manufactured with a matched cladding step index profile using Samsung's advanced fiber manufacturing process. The design provides versatilities in applications for long haul, regional, metropolitan, and local area networks, as well as cable TV, utilities, ISPs, and private networks in a wide range of wavelength regions. With even more improved and reinforced specifications in major optical and geometrical parameters, Samsung's single-mode optical fiber far exceeds not only the current industry standards, but also customers' expectations. It is the product of choice for existing and future optical networks.

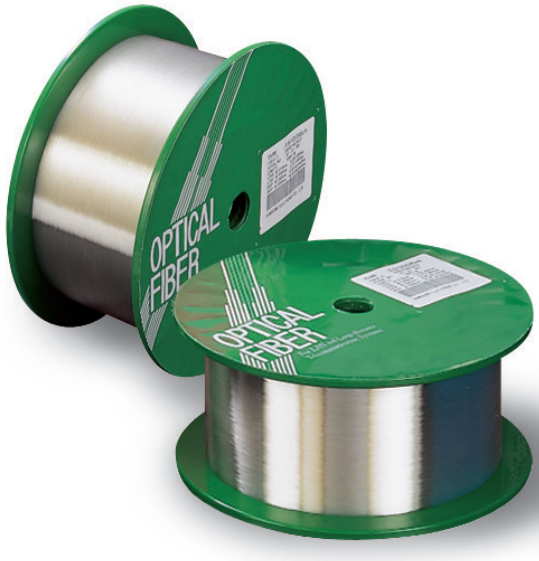
PI-1101
Issued : January 2004
Supersedes : June 2002

Features / Benefits

- Uniform low attenuation and optimized dispersion
- Coated with high performance dual acrylate coating for long-term reliability
- Enhanced PMDs and dispersions for additional flexibility in network design
- Excellent compatibility with any commercial fibers in legacy network systems
- Outstanding bending resistance and geometrical properties for use in loose tube, ribbon, tight buffer, and other cable structures
- Significant savings in coloring time and costs by reduced coating diameter tolerance
- Complies with ITU.T Recommendations G.652.B, TIA/EIA-492CAAA, IEC Publication 60793-2, and GR-20-CORE requirements

Applications

- Long Haul telecommunication cables
- High data-rate voice, video and data communication cables
- CATV cables
- Local Access, Metro Loop transmission cable



Single-Mode Optical Fiber

Optical Specifications

ATTENUATION

Parameters		
Attenuation (dB/km)	@ 1310 nm	≤ 0.34
	@ 1550 nm	≤ 0.21
	@ 1625 nm	≤ 0.24
Point Discontinuity (@ 1310 nm & 1550 nm)		≤ 0.05 dB

ATTENUATION VS. WAVELENGTH

- 1285 nm ~ 1330 nm wavelengh range
  The attenuation in the above wavelength range does not exceed the attenuation at 1310 nm by more than 0.03 dB/km
- 1525 nm ~ 1575 nm wavelengh range
  The attenuation in the above wavelength range does not exceed the attenuation at 1550 nm by more than 0.03 dB/km

MACROBENDING LOSS

Mandrel Diameter (mm)	Number of Turns	Wavelength (nm)	Induced Attenuation (dB)
32	1	1550	≤ 0.5
50	100	1310	≤ 0.05
50	100	1550	≤ 0.1
60	100	1550	≤ 0.05
60	100	1625	≤ 0.05

POLARIZATION MODE DISPERSION

PMD_Q	≤ 0.06 ps/√km †
Max. Individual Value	≤ 0.1 ps/√km

† Complies with IEC 60794-3:2001, Section 5.5, Method 1, September 2001

* PMD_Q : Quadrature Average PMD (also known as PMD Link Design Value)

* PMD values may change when cabled. Check with your cable manufacturer for specific PMD values for cabled fiber.

DISPERSION

Dispersion	@ 1285 ~ 1330 nm	≤ 3.0 ps/nm·km
	@ 1550 nm	≤ 17.5 ps/nm·km
	@ 1625 nm	≤ 22.0 ps/nm·km
Zero Dispersion Wavelength		1302 ~ 1322 nm
Zero Dispersion Slope		≤ 0.091 ps/nm²·km

MODE FIELD DIAMETER

- 9.2 ± 0.4 μm at 1310 nm
- 10.4 ± 0.5 μm at 1550 nm

CUTOFF WAVELENGTH

- ≤ 1260 nm (cabled fiber, λ_c)

Fiber Length

- Standard: 25.2 km, 50.4 km per spool
- Other fiber lengths up to 50.4 km are available upon request

Dimensional Specifications

Parameters		Unit	Specification
Glass	Clad Diameter	μm	125.0 ± 0.7
	Clad Non-Circularity	%	≤ 0.8
	Core-Clad Concentricity Error	μm	≤ 0.5
	Fiber Curl	m	≥ 4.0
Coating	Coating Diameter	μm	245 ± 3
	Coating Outer Non-Circularity	%	≤ 5.0
	Coating Concentricity Error	μm	≤ 10.0

Mechanical Specifications

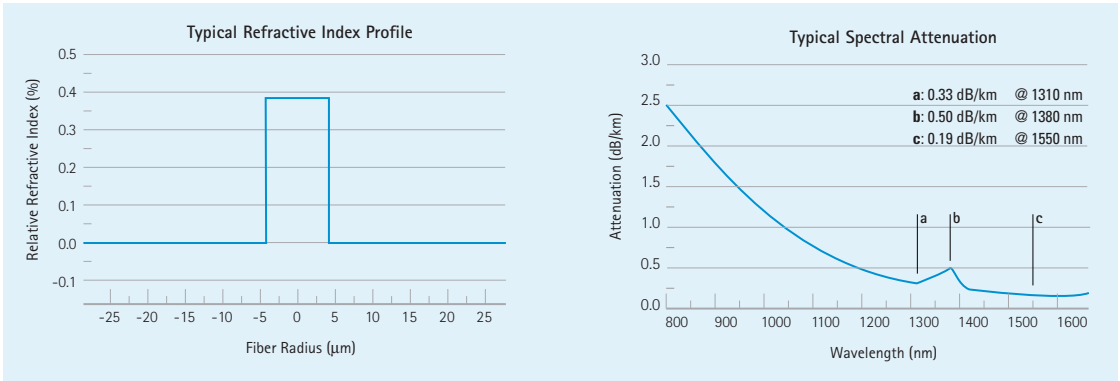
Parameters	Specifications
Proof Test Level	≥ 100 kpsi (0.7 GN/m²)
Dynamic Tensile Strength (Guage Length : 0.5 m)	Mean Value ≥ 4.0 GPa
Coating Strip Force	1.3 ~ 8.9 N

Environmental Specifications

Parameters	Specifications
Temperature Dependence (-60 ℃ ~ +85 ℃)	≤ 0.05 dB/km @ 1310 nm & 1550 nm
Temp.-Humidity Cycling (-10 ℃ ~ +85 ℃, 98% RH)	≤ 0.05 dB/km @ 1310 nm & 1550 nm
Water Immersion, 23 ± 2 ℃	≤ 0.05 dB/km @ 1310 nm & 1550 nm
Heat Aging, 85 ± 2 ℃	≤ 0.05 dB/km @ 1310 nm & 1550 nm

Typical Performance Characteristics

- Effective Group Index of Refraction — 1.4690 at 1310 nm, 1.4695 at 1550 nm
- Refractive Index Difference — 0.34 %
- Zero Dispersion Wavelength — 1312 nm
- Zero Dispersion Slope — 0.085 ps/nm²·km
- Dispersion at 1550 nm — 16.6 ps/nm·km
- Dynamic Fatigue Parameter (n_d) — 20
- Coating Strip Force — 3 N (Dry, Wet: 14-day water immersion at 23 ℃)

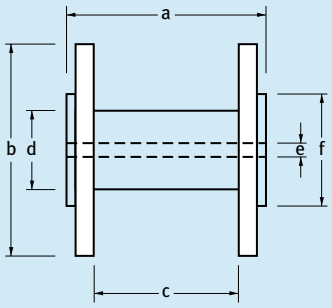


Packaging and Test Certification

PACKAGING

- Optical fiber is wound on a shipping spool for which dimensions are:

Spool size	25.2 km	50.4 km
a= width of outside flanges	120 mm	175 mm
b= flange diameter	248 mm	264.4 mm
c= width of inside flanges	95 mm	150 mm
d= barrel out-diameter	150 mm	170 mm
e= bore diameter	25.4 + 0.5 / -0.1 mm	25.4 + 0.3 / -0.0 mm
f= wing diameter	160 mm	182 mm



LABEL

- A label attached to each shipping spool contains at least the following information:
  - Fiber I.D.
  - Fiber Length
  - Chromatic Dispersion at 1310 nm & 1550 nm

TEST CERTIFICATION

- One copy of a test certification sheet is enclosed in the shipping carton.
- The sheet contains at least the following information.
  - Fiber I.D.
  - Fiber Length
  - Attenuation at 1310 nm & 1550 nm
  - Chromatic Dispersion at 1310 nm & 1550 nm
  - Mode Field Diameter at 1310 nm
  - Cutoff Wavelength
  - Geometries of the fiber and coating
  - PMD @ 1550 nm

SAMSUNG ELECTRONICS REGISTERED TO ISO9001 CERTIFICATE NO.9243

SAMSUNG ELECTRONICS REGISTERED TO TL9000 CERTIFICATE NO.9243

SAMSUNG ELECTRONICS REGISTERED TO ISO14001 CERTIFICATE NO.9872

SAMSUNG ELECTRONICS REGISTERED TO ISO18001 CERTIFICATE NO.9872

www.samsungfiberoptics.com

Samsung Electronics Fiberoptics Division
7th Floor, Samsung Main Building 250, 2-Ga, Taepyung-Ro,
Chung-Gu, Seoul, Korea 100-742
Tel: +82-2-751-2529 Fax: +82-2-728-4803
e-mail: fiberoptics@samsung.com

Samsung Telecommunications America
1130E, Arapaho Road, Richardson, TX 75081
Toll Free Number: 1-877-ssoptic / 1-877-776-7842
Fax: 1-972-761-7349

Please contact us for more information on Samsung Fiber Optic Products