Alcatel 6901
Enhanced Singlemode Fiber

Alcatel Enhanced Singlemode Fiber (E-SMF) extends Alcatel's premium product portfolio. E-SMF is designed to provide improved performance across the full 1300 to 1625nm region. It has a minimum dispersion in the 1310nm window and has a low attenuation in the 1383nm-water peak region to open up the Extended Band (1360 to 1460nm). Alcatel E-SMF meets the expanded ITU652 Table C requirements and is available in all Alcatel cable designs including loose tube, flextube and ribbon.

E-SMF with its wide operating spectrum provides optimum performance in residential, business and in metropolitan, access, backbone applications. The wide spectrum expands future growth capabilities and also allows flexible configuration of voice, data, & video services within the fiber. For networks built using single-mode fiber for long distance, E-SMF's with its lower attenuation and PMD provides superior performance.

E-SMF is manufactured using Alcatel's APVD process, providing superior performance. Combined with Alcatel Fiber Coating (AFC™) with Colorlock™, E-SMF offers superb reliability. Even when aged with hydrogen, E-SMF 1383nm-water peak attention is ≤0.33 dB/km.

Singlemode Fiber is the most prevalent fiber used today. Alcatel's E-SMF provides improved performance in all SMF applications.

As one of the world's largest manufacturers of communication products, Alcatel has the expertise, technology and manufacturing resources to provide a total end-to-end solution to support your fiber, cable, and systems requirements.

FEATURES	BENEFITS
Low 1383nm performance permits full utilization of wavelengths from 1300 to 1625nm.	Extends the use of Coarse Wavelength Division Multiplexing (CWDM) into this E-band allowing savings through cheaper lasers, multiplexing filters, and higher number of channels
Low hydrogen sensitivity	Low attenuation in the 1383nm region for improved performance
Low dispersion in water peak region	Reduces compensation requirements by 1/2 compared to the 1550nm region
Lower PMD of 0.08ps/√km	Extends the PMD performance on 40 Gbit/s systems by 50% thereby reducing regeneration cost.
Lower 1550nm attenuation (<0.22 dB/km cabled)	Extends equipment reach capabilities by 10%
Lower 1450nm attenuation (<0.26 dB/km) provides better Raman pumping efficiency	Every 0.01 dB/km decrease at 1450nm improves the optical signal to noise ratio by 0.1
AFC Colorlock process incorporates the fiber color within the fiber coating.	The fiber color is always consistent and distinguishable. It offers increased reliability and durability resulting in lower maintenance and replacement costs.

KEY INDUSTRY LEADING MILESTONES

- **1993** - Introduced Alcatel's AFC™ coating process for superior aging performance
- **1994** - Introduced Alcatel's proprietary Advanced Plasma and Vapor Deposition (APVD) fiber production process to ensure the highest quality fiber
- **1996** - Developed and introduced ColorLock™, enhancing fiber identification and color coatings
- **2001** - Introduced E-SMF, offering low aged water peak performance with reduced attenuation and enhanced PMD performance.

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Optical Specifications

Attenuation (cabled)

Attenuation @1310nm	≤0.35 dB/km
Attenuation @1550nm	≤0.22 dB/km
Attenuation @1625nm	≤0.25 dB/km
Attenuation @1450nm	≤0.26 dB/km
Attenuation at 1383nm H_2 aged*	≤0.33 dB/km

Attenuation Uniformity

No point discontinuity greater than 0.1dB at 1310nm and 1550nm.

Wavelength vs. Attenuation

Maximum attenuation *change* over the window.

Wavelength (nm)	Attenuation (dB/km)
1285-1310	≤0.035
1310-1330	≤0.03
1525-1550	≤0.03
1575-1550	≤0.03

Attenuation with Bending

100 turns, 60mm diameter @1550 &1620nm:	≤0.05 dB
1 turn, 32mm diameter @1550 &1620nm:	≤0.5 dB

Wavelength

Cutoff Wavelength (cabled)	≤1260nm
Zero Dispersion Wavelength	1310±10nm

Dispersion Slope

Zero Dispersion Slope	< 0.090 ps/nm^2•km

PMD (cabled)

PMD link design value:**	≤ 0.08ps/√km

Dimensional Specifications

Mode Field Diameter @1310nm:	9.0±0.4µm
Mode Field Diameter @1550nm:	10.2±1.0µm
Fiber Outside Diameter:	125.0±1.0µm
Core/cladding offset:	≤0.6µm
Fiber Non-Circularity:	< 1.0%
Colored Coating Outside Diameter:	242±7µm
Colored Coating/Clad Concentricity Error:	≤12µm
Fiber Curl (radius):	> 4 meters

Mechanical Specifications

Proof Test of AFC™ ColorLock™ Coated

The entire length is subjected to a tensile proof stress >100 Kpsi (0.7 GN/m^2); 1% strain equivalent

Tensile Strength

Dynamic Tensile Strength (0.5 meter gauge length):	
Aged* & Unaged	median ≥ 550 Kpsi (3.8GN/m^2)

Dynamic and Static Fatigue

Dynamic Fatigue, Tensile:	N_d=20 unaged and aged*
Dynamic Fatigue, 2 Point Bend:	N_d=20 unaged and aged*
Static Fatigue:	N_s≥20 aged at 85°C, 85% RH

Coating Strip Force

Coating Strip Force:	2.0lbf (8.9N) max, 0.3 lbf (1.3N) min.

23°C, 0°C, and 45°C
Aged: 30 days at 85°C and 85% relative humidity
14 days water immersion at 23°C
Wasp spray exposure (Telcordia)

Environmental Specifications

Induced Attenuation@1550nm	(dB/km)
Temperature Cycling Performance (-60°C to 85°C):	≤0.05
Temperature Humidity Cycling (-10°C to 85°C, 4-98%RH):	≤0.05
Water Immersion (23°C):	≤0.05
Heat Aging (85°C):	≤0.05

Typical Characterization Values

Nominal Zero Dispersion Wavelength:	1310nm
Nominal Zero Dispersion Slope:	0.086 ps/nm^2•km
Effective Group Index @ 1310nm:	1.4640
@ 1550nm:	1.4645
Backscatter Coefficient @ 1310nm:	-76.7 dBm
Backscatter Coefficient @ 1550nm:	-81.7 dBm
Typical Core Diameter:	8.8µm
Dynamic Tensile Strength (*Aged): (0.5m gauge length)	median 750 Kpsi (5.26GN/m^2)
Dynamic Fatigue (*Aged):	N_d=22
Static Fatigue:	N_s≥25 aged @ 85°C, 85% RH
Dispersion @1285-1330nm:	≤2.8 ps/nm•km
Dispersion @1550nm	≤17 ps/nm•km

Alcatel's Enhanced Singlemode Fiber is fully ITU G.652 including table C, IEC 60793-1and Telcordia GR-20-CORE compliant.

*Aged in1% hydrogen at one atmosphere per IEC 60793-2.

**Complies with IEC SC86A, WG1 method 1, 1997. PMD link design value provides a statistical upper limit for PMD over concatenated fibers.

Cable specifications apply to Alcatel manufactured cables and are tested or characterized in compliance to international standards.

Alcatel reserves the right to change specifications without prior notice.

*Aged for 30 days at 85°C. 85% relative humidity

For additional information visit Alcatel online or call your nearest Optical Fiber Sales Representative

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