

FIBER OPTICS PRODUCT

Optical Fiber · Cable · Connectivity · Accessories · Equipment



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GLOBAL LEADING COMPANY IN FIBER OPTICS

TAIHAN FIBER OPTICS

- Long history over 60 years
- Enhanced high technology in telecommunications
- Customer value in focus



- 2014 Developed 200um optical fiber(ANYWAVE 200) , Develops optical communication total solution(wire-wireless)
- 2013 Developed Korea's first ultra low loss fiber(ANYWAVE-LL)
- 2011 Business acquisition sign of Taihan Electric Wire Co., LTD. optical communication division
(Change the company name : Optomagic Co., Ltd. → TAIHAN FIBEROPTICS Co., Ltd.)
- 2010 Succeeded in mass-producing its "Bending-reinforced optical fiber"
- 2004 Developed the intergrated FTTH solution
- 2001 Taihan Electronic Wire Group separates the fiber optics department as Taihan Fiberoptics Co., Ltd.
(formerly Optomagic Co., Ltd.) and begins production of fiber optics
- 1998 Optical communication plant expansion in Anyang
(Introduction of VAD facilities and DRAWING facilities, Construct mass production system)
- 1996 Developed fiber distribution frame, optical terminal box and mechanical optical connector
- 1988 Developed submarine optical cable and leakage coaxial cable
- 1985 Began manufacturing of optical fiber ground wire(OPGW)
- 1981 Produced the nation's first optical cable & long wavelength low-loss fiber
- 1977 Developed optical fiber in Korea(MCVD method)
- 1974 Established TAIHAN FACTORY(Before Optomagic Co., Ltd.)
- 1961 Produced lead-sheathed communication cable for the first time in Korea
- 1955 Established TAIHAN ELECTRIC WRIE CO., LTD.



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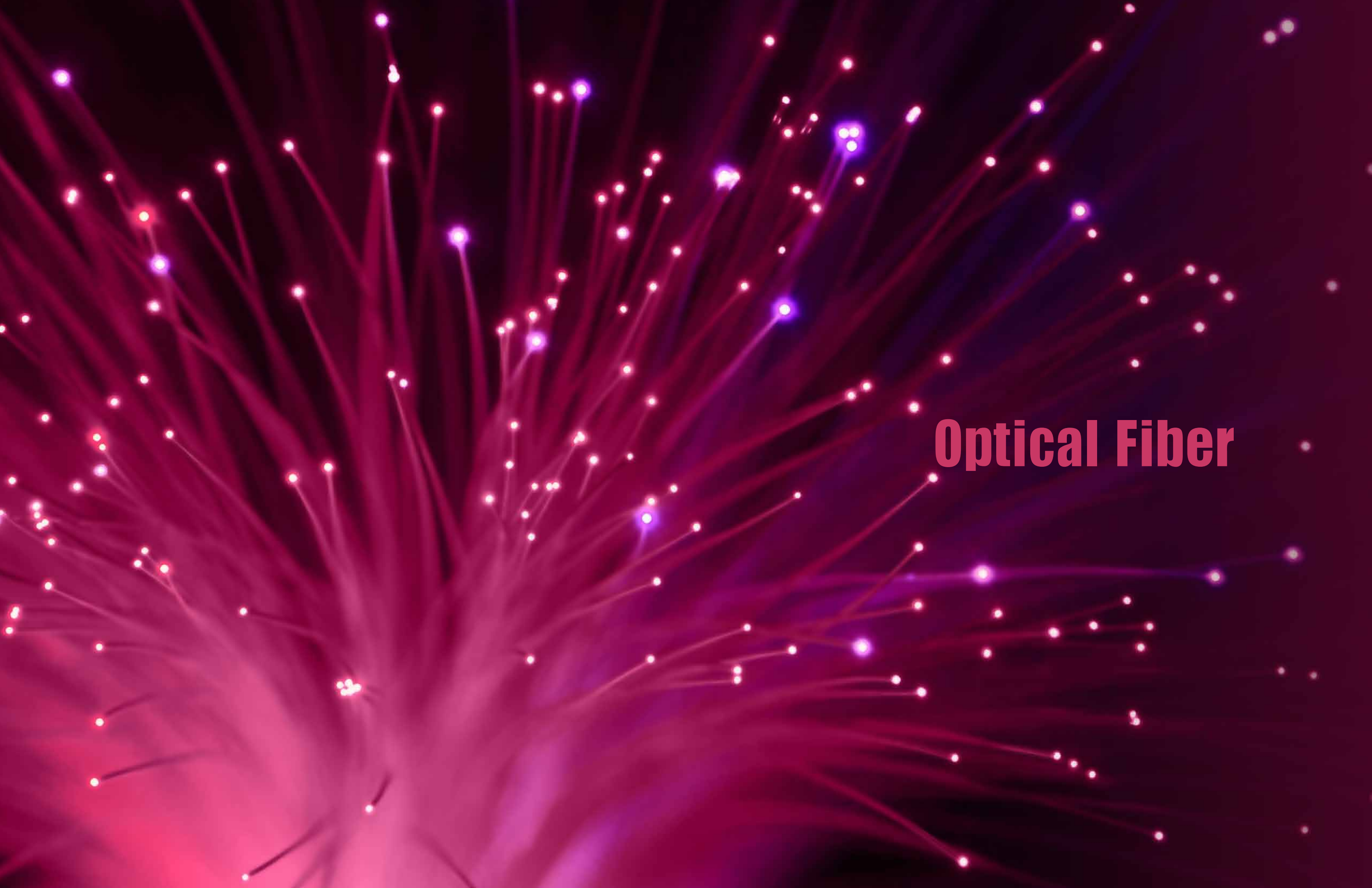
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Optical Fiber

ANYWAVE® B

ITU-T G.652.B

Single Mode Optical Fiber(VAD Process)

TAIHAN's single mode optical fiber is manufactured by the vapour – phase axial deposition(VAD) process to produce the highest quality glass with excellent geometry, high strength characteristics and attenuation level that approaches the theoretical minimum, and designed to operate at 1310nm and 1550nm. Its optical properties are achieved through a germanium doped silica core with a pure silica cladding. A dual acrylate protective coating is applied over glass to provide the maximum fiber lifetime.

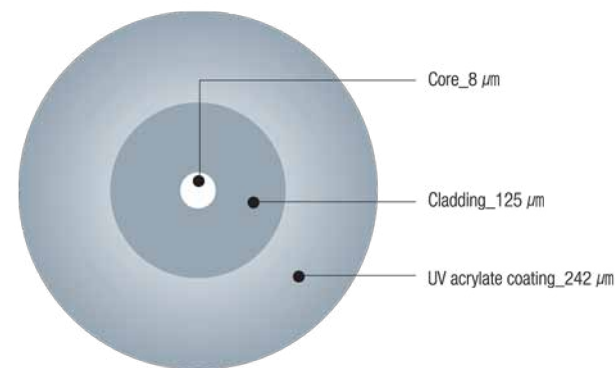
Feature

- Conspicuous lower attenuation
- Mechanically strippable coating
- Excellent geometric properties for low splicing loss
- Transmission capacity at 1310nm and 1550nm

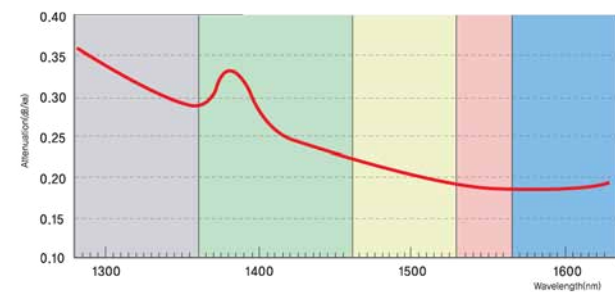
Application

- Data communication cable
- FTTH network cable
- Long haul telecommunication cable
- CATV cable

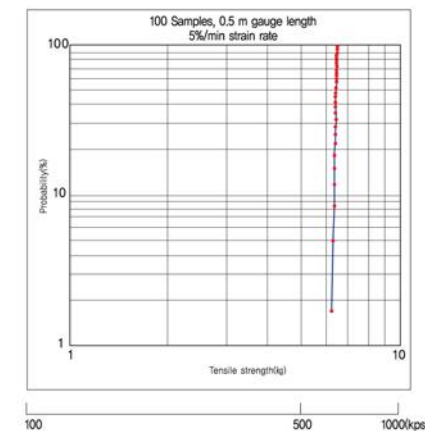
Structure



Spectral Attenuation



Weibull Parameter



Refractive Index Profile(Environmental Characteristic)



Classification	Attenuation change @1550nm(dB/km)
Temperature cycling performance	-60°C to +85°C ≤0.05
Temperature humidity test	+85°C, 98%, 30days ≤0.05
Water immersion	+23°C, 30days ≤0.05
Heat aging	+85°C, 30days ≤0.05

Performance Specification

Classification	Performance	Characteristic
Geometrical Characteristic	Mode field diameter	9.2±0.4μm at 1310nm 10.4±0.5μm at 1550nm
	Cladding diameter	125.0±0.7μm
	Core/cladding concentricity error	≤0.5μm
	Cladding non-circularity	≤0.7%
	Fiber curl radius	≥4m
	Primary coating diameter(For uncolored fiber)	242±5μm
	Primary coating diameter(For colored fiber)	250±10μm
	Coating/cladding concentricity error	≤12μm
Optical Characteristic	Fiber proof test level	≥120kpsi(1.2% strain)
	Attenuation at 1310nm	≤0.34dB/km
	Attenuation at 1550nm	≤0.20dB/km
	Attenuation at 1383±3nm	≤0.7dB/km
	Attenuation change at 1285~1330nm	≤0.05dB/km(1310nm)
	Attenuation change at 1525~1575nm	≤0.05dB/km(1550nm)
	Attenuation change at 1575~1610nm	≤0.03dB/km(Max-Min)
	Point discontinuity at 1310nm and 1550nm	≤0.05dB
	Zero dispersion wavelength	≤1302~1322nm
	Zero dispersion slope	≤0.090ps/(nm ² .km)
	Chromatic dispersion at 1285~1330nm	≤3.5ps/(nm.km)
	Chromatic dispersion at 1550nm	≤18ps/(nm.km)
Packaging	Cable cut-off wavelength	≤1260nm
	PMD for individual value(uncabled fiber)	≤0.15ps/km
	PMD for link value	≤0.1ps/km
	Fiber length	25,2/50,4km
	Spool dimension Flange diameter Nom.	234,5/265mm
	Spool dimension Barrel diameter Nom.	152,0/170mm
Spool dimension Inner width Nom.	96,0/150mm	
Spool dimension Outer width Nom.	116,0/175mm	
Spool dimension Bore diameter Nom.	25,4/25,4mm	

※ Other fiber lengths are available upon request

ANYWAVE® D

ITU-T G.652.D

Zero Water Peak Single Mode Fiber(VAD Process)

TAIHAN's Anywave single mode fiber(Zero water peak fiber) is manufactured by the vapour – phase axial deposition(VAD) process to produce the highest quality glass with excellent geometry, high strength characteristics. Anywave D can be used in all wavelength from 1280nm to 1625nm because OH ion is perfectly eliminated in specially designed manufacturing process. Anywave D is reliable for any wavelength division. Anywave D enables customers to construct high performance network for data transmission in WDM system.

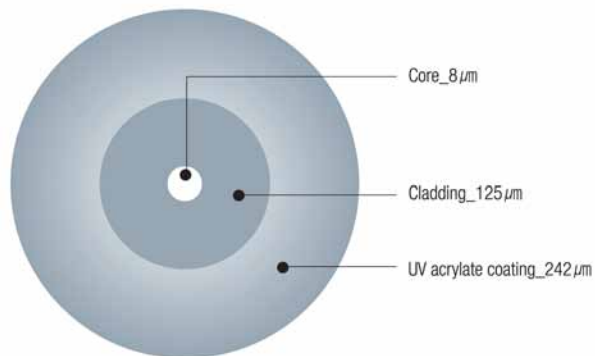
Feature

- Conspicuous lower attenuation
- Superior bending performance
- Mechanically strippable coating
- Excellent geometric properties for low splicing loss
- Transmission capacity at 1280nm to 1625nm

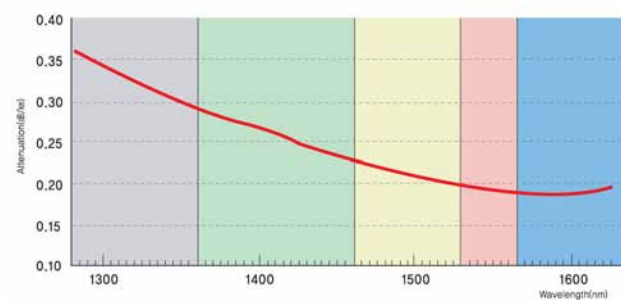
Application

- Data communication cable
- FTTH network cable
- Long haul telecommunication cable
- CATV cable
- Long term reliability for attenuation

Structure



Spectral Attenuation



Refractive Index Profile(Environmental Characteristic)



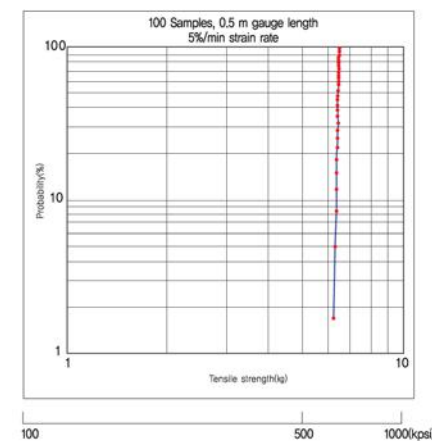
Classification	Performance	Characteristic
Temperature cycling performance	-60°C to +85°C	≤0.05
Temperature humidity test	+85°C, 98%, 30days	≤0.05
Water immersion	+23°C, 30days	≤0.05
Heat aging	+85°C, 30days	≤0.05

Performance Specification

Classification	Performance	Characteristic
Geometrical Characteristic	Mode field diameter	9.2±0.4μm at 1310nm 10.4±0.5μm at 1550nm
	Cladding diameter	125.0±0.7μm
	Core/cladding concentricity error	≤0.5μm
	Cladding non-circularity	≤0.7%
	Fiber curl radius	≥4m
	Primary coating diameter(For uncolored fiber)	242±5μm
	Primary coating diameter(For colored fiber)	250±10μm
	Coating/cladding concentricity error	≤12μm
	Fiber proof test level	≥120kpsi(1.2% strain)
	Optical Characteristic	Attenuation at 1310nm
Attenuation at 1550nm		≤0.194dB/km
Attenuation at 1383±3nm		≤0.31dB/km
Attenuation change at 1285~1330nm		≤0.05dB/km(1310nm)
Attenuation change at 1525~1575nm		≤0.05dB/km(1550nm)
Attenuation change at 1575~1610nm		≤0.03dB/km(Max-Min)
Point discontinuity at 1310nm and 1550nm		≤0.05dB
Zero dispersion wavelength		≤1302~1322nm
Zero dispersion slope		≤0.090ps/(nm ² .km)
Chromatic dispersion at 1285~1330nm		≤3.5ps/(nm.km)
Chromatic dispersion at 1550nm		≤18ps/(nm.km)
Cable cut-off wavelength		≤1260nm
PMD for individual value(uncabled fiber)		≤0.15ps/km
PMD for link value		≤0.1ps/km
Macrobending Loss	1 turn x 16mm radius @1550nm	≤0.05
	100 turn x 25mm radius @1310nm	≤0.05
	100 turn x 25mm radius @1550nm	≤0.05
	100 turn x 30mm radius @1625nm	≤0.05
Packaging	Fiber length	25.2/50.4km
	Spool dimension Flange diameter Nom.	234.5/265mm
	Spool dimension Barrel diameter Nom.	152.0/170mm
	Spool dimension Inner width Nom.	96.0/150mm
	Spool dimension Outer width Nom.	116.0/175mm
Spool dimension Bore diameter Nom.	25.4/25.4mm	

※ Other fiber lengths are available upon request

Weibull Parameter



ANYWAVE® REACH A(AS)&C

ITU-T G.655.

Non-Zero Dispersion Shifted Optical Fiber(VAD Process)

TAIHAN's non-zero dispersion shifted single mode fiber(NZF) is operated for WDM system, which enables customers to construct high performance networks for voice, video and/or data transmission. Its high performances are achieved through a germanium doped double silica cladding made by the vapour – phase axial deposition(VAD) method. A dual layer acrylate is coated over the cladding to provide high product reliability and allows easy splicing throughout the cable life. The fiber operates in C–band, L–band and S–band.

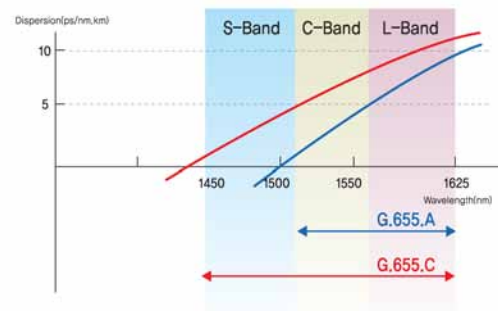
Feature

- Optimized for effective operating of WDM system
- 10Gbps, 40Gbps and higher data rates
- Superior performance for long haul networks
- Lower sensitivity of transmission properties
- Broad – range low attenuation properties

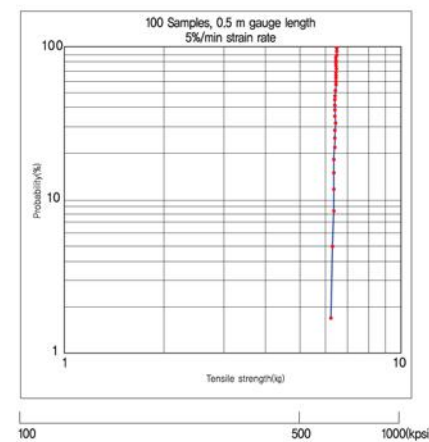
Application

- Submarine cable
- Voice, video and data transmission
- Long haul WDM system
- Long distance applications

Spectral Attenuation



Weibull Parameter



Environmental Characteristic

Classification	Attenuation change @1550nm(dB/km)
Temperature cycling performance	-60°C to +85°C ≤0.05
Temperature humidity test	+85°C, 98%, 30days ≤0.05
Water immersion	+23°C, 30days ≤0.05
Heat aging	+85°C, 30days ≤0.05

Performance Specification

Classification	Performance	Characteristic	
		REACH A(AS)	REACH C
Geometrical Characteristic	Mode field diameter	9,6±0,4μm at 1550nm (8,3±0,4μm)	9,2±0,5μm at 1550nm
	Cladding diameter	125,0±0,7μm	
	Core/cladding concentricity error	≤0,5μm	
	Cladding non-circularity	≤0,7%	
	Fiber curl radius	≥4m	
	Primary coating diameter(For uncolored fiber)	242±5μm	
	Primary coating diameter(For colored fiber)	250±10μm	
Optical Characteristic	Coating/cladding concentricity error	≤12μm	
	Fiber proof test level	≥120kpsi	
	Attenuation at 1550nm	≤0,22dB/km	
	Attenuation at 1625nm	≤0,25dB/km	
	Point discontinuity at 1550nm	≤0,05dB	
	Chromatic dispersion at 1530~1565nm	2,0~6,0ps/(nm.km)	5,5~10ps/(nm.km)
	Chromatic dispersion at 1565~1625nm	4,5~11,2ps/(nm.km)	7,5~13,5ps/(nm.km)
Macobending Loss	Cable cut-off wavelength(λ cc)	≤1450nm	
	PMD for individual value(uncabled fiber)	≤0,15ps/km	
	PMD for link value	≤0,1ps/km	
	for 1 turns at a 32mm mandrel diameter	≤0,5dB@1550nm	
Packaging	for 1 turns at a 32mm mandrel diameter	≤0,5dB@1625nm	
	for 100 turns at a 60mm mandrel diameter	≤0,05dB@1550nm	
	for 100 turns at a 60mm mandrel diameter	≤0,05dB@1625nm	
	Fiber length	25,2km	
Packaging	Spool dimension Flange diameter Nom.	234,5mm	
	Spool dimension Barrel diameter Nom.	152,0mm	
	Spool dimension Inner width Nom.	96,0mm	
	Spool dimension Outer width Nom.	116,0mm	
	Spool dimension Bore diameter Nom.	25,4mm	

※ Other fiber lengths are available upon request

ANYWAVE® FLEX A1

ITU-T G.657.A1

Bending Loss Insensitive Fiber ITU-T G.657.A1(VAD Process)

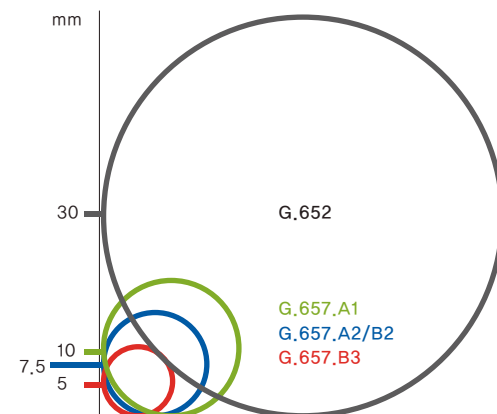
Taihan Fiber Optics Co., Ltd. offers Strong bend (Zero Water Peak) single mode optical fiber produced by the Vapour Phase Axial Deposition (VAD) method, which enables construction of high-capacity, low-cost transmission in FTTH Networks. Strong bend single mode optical fiber has step index and matched clad type characteristics operating in the entire wavelength region from 1280 nm to 1625 nm, free of OH-peak at 1383 – 3 nm in compliance with the latest ITU-T G.657.A1 standard. Its low sensitivity to macrobending results in lower attenuation levels in the 1600 nm wavelength region. Strong bend fiber has low PMD (Polarization Mode Dispersion) and supports legacy transmission equipment and applications.

Feature

- Fully compliant with ITU-T G.652,D&G.657.A1
- Allowable bending diameter : 20mm
- 2/3 Bending diameter compared to conventional SMF(Ø32mm)
- Good splicing with conventional SMF and ZWPF

Application

- Fully compatibility with conventional SMF
- Minimized construction space
- FTTH/Premise/LAN cable
- Air blown fiber
- Optical cord



Environmental Characteristic

Classification	Attenuation change @1550nm(dB/km)	
Temperature cycling performance	-60°C to +85°C	≤0.05
Temperature humidity test	+85°C, 98%, 30days	≤0.05
Water immersion	+23°C, 30days	≤0.05
Heat aging	+85°C, 30days	≤0.05

Performance Specification

Classification	Performance	Characteristic	
Geometrical Characteristic	Mode field diameter	8.9±0.4μm at 1310nm	
	Cladding diameter	125.0±0.7μm	
	Core/cladding concentricity error	≤0.5μm	
	Cladding non-circularity	≤0.7%	
	Fiber curl radius	≥4m	
	Primary coating diameter(For uncolored fiber)	242±5μm	
	Primary coating diameter(For colored fiber)	250±10μm	
Optical Characteristic	Coating/cladding concentricity error	≤12μm	
	Attenuation at 1310nm	≤0.34dB/km	
	Attenuation at 1550nm	≤0.20dB/km	
	Attenuation at 1383±3nm	≤0.31dB/km(after H2 aging)	
	Attenuation change at 1285~1330nm	≤0.03dB/km(1310nm reference)	
	Attenuation change at 1525~1575nm	≤0.02dB/km(1550nm reference)	
	Point discontinuity at 1310nm and 1550nm	≤0.05dB	
	Zero dispersion wavelength	≤1302~1322nm	
	Zero dispersion slope	≤0.090ps/(nm ² .km)	
	Chromatic dispersion at 1285~1330nm	≤3.5ps/(nm.km)	
	Chromatic dispersion at 1550nm	≤18ps/(nm.km)	
	Cable cut-off wavelength(λ _{cc})	≤1260nm	
	PMD for individual value(uncabled fiber)	≤0.15ps/km	
PMD for link value	≤0.1ps/km		
Fiber proof test level	≥120kpsi(1.2% strain)		
Packaging	Fiber length	6.3~25.2km in multiples of 2.1	
	Spool dimension Flange diameter Nom.	234.5mm	
	Spool dimension Barrel diameter Nom.	152.0mm	
	Spool dimension Inner width Nom.	96.0mm	
	Spool dimension Outer width Nom.	116.0mm	
	Spool dimension Bore diameter Nom.	25.4mm	
Mechanical Characteristic	Macrobending loss	for 1 turns at a 20mm mandrel diameter	≤0.75dB@1550nm
		for 1 turns at a 20mm mandrel diameter	≤1.5dB@1625nm
		for 10 turns at a 15mm mandrel diameter	≤1.0dB@1625nm
		for 10 turns at a 30mm mandrel diameter	≤0.25dB@1550nm
		for 10 turns at a 30mm mandrel diameter	≤1.0dB@1625nm
	for single bend (10mm diameter one turn)	≤1.5dB@1625nm	
	Coating strip force	1.3~8.9N	
Dynamic fatigue resistance parameter	≥20		

※ Other fiber lengths are available upon request

ANYWAVE® FLEX A2

ITU-T G.657.A2

Bending Loss Insensitive Fiber ITU-T G.657.A2(VAD Process)

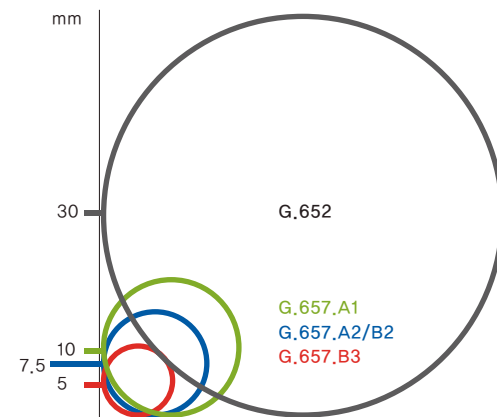
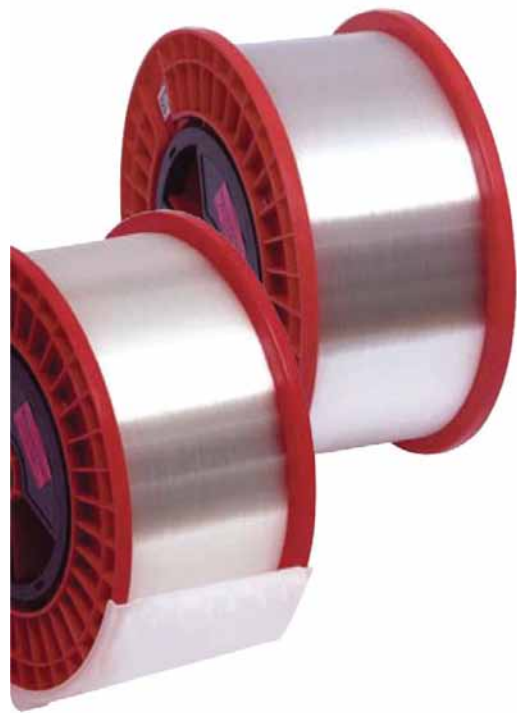
Taihan Fiber Optics Co., Ltd. offers ANYWAVE® FLEX A2(Low Water Peak) single mode optical fiber produced by the Vapour Phase Axial Deposition (VAD) method, which enables construction of high-capacity, low-cost transmission in FTTH Networks. ANYWAVE® FLEX A2 single mode optical fiber has step index and matched clad type characteristics operating in the entire wavelength region from 1280 nm to 1625 nm, free of OH-peak at 1383 – 3 nm in compliance with the latest ITU-T G.657.A2&B2 standards. Its low sensitivity to macrobending results in lower attenuation levels in the 1600 nm wavelength region. This fiber also has low PMD (Polarization Mode Dispersion) and supports legacy transmission equipment and applications.

Feature

- Fully compliant with ITU-T G.652,D&G.657.A2
- Allowable bending diameter : 20mm
- 1/3 Bending diameter compared to conventional SMF ()
- Good splicing with conventional SMF and ZWPF

Application

- Fully compatibility with conventional SMF
- Minimized construction space
- FTTH/Premise/LAN cable
- Air blown fiber
- Optical cord



Environmental Characteristic

Classification		Attenuation change @1550nm(dB/km)
Temperature cycling performance	-60°C to +85°C	≤0.05
Temperature humidity test	+85°C, 98%, 30days	≤0.05
Water immersion	+23°C, 30days	≤0.05
Heat aging	+85°C, 30days	≤0.05

Performance Specification

Classification	Performance	Characteristic	
Geometrical Characteristic	Mode field diameter	8,6±0,4μm at 1310nm	
	Cladding diameter	125,0±0,7μm	
	Core/cladding concentricity error	≤0,5μm	
	Cladding non-circularity	≤0,7%	
	Fiber curl radius	≥4m	
	Primary coating diameter(For uncolored fiber)	242±5μm	
	Primary coating diameter(For colored fiber)	250±10μm	
Optical Characteristic	Coating/cladding concentricity error	≤12μm	
	Attenuation at 1310nm	≤0,34dB/km	
	Attenuation at 1550nm	≤0,20dB/km	
	Attenuation at 1383±3nm	≤0,31dB/km(after H2 aging)	
	Attenuation change at 1285~1330nm	≤0,03dB/km(1310nm reference)	
	Attenuation change at 1525~1575nm	≤0,02dB/km(1550nm reference)	
	Point discontinuity at 1310nm and 1550nm	≤0,05dB	
	Zero dispersion wavelength	≤1302~1324nm	
	Zero dispersion slope	≤0,090ps/(nm ² .km)	
	Chromatic dispersion at 1285~1330nm	≤3,5ps/(nm.km)	
	Chromatic dispersion at 1550nm	≤18ps/(nm.km)	
	Cable cut-off wavelength(λ cc)	≤1260nm	
	PMD for individual value(uncabled fiber)	≤0,15ps/km	
PMD for link value	≤0,1ps/km		
Fiber proof test level	≥120kpsi(1,2% strain)		
Packaging	Fiber length	6,3~25,2km in multiples of 2,1	
	Spool dimension Flange diameter Nom.	234,5mm	
	Spool dimension Barrel diameter Nom.	152,0mm	
	Spool dimension Inner width Nom.	96,0mm	
	Spool dimension Outer width Nom.	116,0mm	
Mechanical Characteristic	Spool dimension Bore diameter Nom.	25,4mm	
	Macrobending loss	for 1 turns at a 15mm mandrel diameter	≤0,5dB@1550nm
		for 1 turns at a 15mm mandrel diameter	≤1,0dB@1625nm
		for 1 turns at a 20mm mandrel diameter	≤0,1dB@1550nm
		for 1 turns at a 20mm mandrel diameter	≤0,2dB@1625nm
		for 10 turns at a 15mm mandrel diameter	≤0,1dB@1625nm
		for 10 turns at a 30mm mandrel diameter	≤0,03dB@1550nm
		for 10 turns at a 30mm mandrel diameter	≤0,1dB@1625nm
	for single bend(10mm diameter one turn)	≤0,2dB@1625nm	
	Coating strip force	1,3~8,9N	
Dynamic fatigue resistance parameter	≥20		

※ Other fiber lengths are available upon request

ANYWAVE® FLEX B3

ITU-T G.657.B3

Bending Loss Insensitive Fiber ITU-T G.657.B3(VAD Process)

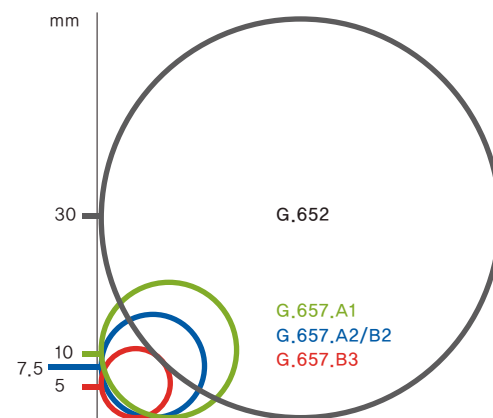
Taihan Fiber Optics Co., Ltd. offers ultra strong bend single mode optical fiber produced by the Vapour Phase Axial Deposition (VAD) method, which enables construction of high-capacity, low-cost transmission in FTTH Networks. Ultra strong bend single mode optical fiber has step index and matched clad type characteristics operating in the entire wavelength region from 1280 nm to 1625 nm in compliance with the latest ITU-T G.657. B3 standards. Its low sensitivity to macrobending results in lower attenuation levels in the 1600 nm wavelength region. This fiber also has low PMD (Polarization Mode Dispersion) and supports legacy transmission equipment and applications.

Feature

- Fully compliant with ITU-T G.652.D&G.657.A2
- Allowable bending diameter : 20mm
- 1/3 Bending diameter compared to conventional SMF(Ø32mm)
- Good splicing with conventional SMF and ZWPF

Application

- Fully compatibility with conventional SMF
- Minimized construction space
- FTTH/Premise/LAN cable
- Air blown fiber
- Optical cord



Environmental Characteristic

Classification		Attenuation change @1550nm(dB/km)
Temperature cycling performance	-60°C to +85°C	≤0.05
Temperature humidity test	+85°C, 98%, 30days	≤0.05
Water immersion	+23°C, 30days	≤0.05
Heat aging	+85°C, 30days	≤0.05

Performance Specification

Classification	Performance	Characteristic	
Geometrical Characteristic	Mode field diameter	8.6±0.4μm at 1310nm	
	Cladding diameter	125.0±0.7μm	
	Core/cladding concentricity error	≤0.5μm	
	Cladding non-circularity	≤0.7%	
	Fiber curl radius	≥4m	
	Primary coating diameter(For uncolored fiber)	242±5μm	
	Primary coating diameter(For colored fiber)	250±10μm	
Optical Characteristic	Coating/cladding concentricity error	≤12μm	
	Attenuation at 1310nm	≤0.34dB/km	
	Attenuation at 1550nm	≤0.20dB/km	
	Attenuation at 1383±3nm	≤0.33dB/km(after H2 aging)	
	Attenuation change at 1285~1330nm	≤0.03dB/km(1310nm reference)	
	Attenuation change at 1525~1575nm	≤0.02dB/km(1550nm reference)	
	Point discontinuity at 1310nm and 1550nm	≤0.05dB	
	Zero dispersion wavelength	≤1302~1324nm	
	Zero dispersion slope	≤0.090ps/(nm ² .km)	
	Chromatic dispersion at 1285~1330nm	≤3.5ps/(nm.km)	
	Chromatic dispersion at 1550nm	≤18ps/(nm.km)	
	Cable cut-off wavelength(λ _{cc})	≤1260nm	
	PMD for individual value(uncabled fiber)	≤0.15ps/km	
	PMD for link value	≤0.1ps/km	
Fiber proof test level	≥120kpsi(1.2% strain)		
Packaging	Fiber length	6.3~25.2km in multiples of 2.1	
	Spool dimension Flange diameter Nom.	234.5mm	
	Spool dimension Barrel diameter Nom.	152.0mm	
	Spool dimension Inner width Nom.	96.0mm	
	Spool dimension Outer width Nom.	116.0mm	
Mechanical Characteristic	Spool dimension Bore diameter Nom.	25.4mm	
	Macrobending loss	for 1 turns at a 10mm mandrel diameter	≤0.15dB@1550nm
		for 1 turns at a 10mm mandrel diameter	≤0.45dB@1625nm
		for 1 turns at a 15mm mandrel diameter	≤0.08dB@1550nm
		for 1 turns at a 15mm mandrel diameter	≤0.25dB@1625nm
		for 1 turns at a 20mm mandrel diameter	≤0.03dB@1550nm
	for 1 turns at a 20mm mandrel diameter	≤0.1dB@1625nm	
Coating strip force	1.3~8.9N		
Dynamic fatigue resistance parameter	≥20		

※ Other fiber lengths are available upon request

ANYWAVE® LL

G.657.A1

Low Loss Single Mode Fiber(VAD Process)

TAIHAN's Anywave low loss single mode fiber is manufactured by the vapour – phase axial deposition(VAD) process to produce the highest quality glass with excellent geometry, high strength characteristics. Anywave LL can be used in all wavelength from 1280nm to 1620nm because OH ion is perfectly eliminated in specially designed manufacturing process. Anywave LL is reliable for any wavelength division, Anywave LL enables customers to construct high performance network for data transmission in WDM system.

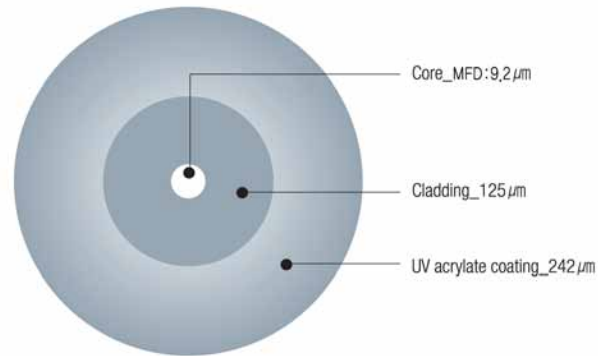
Feature

- Conspicuous lower attenuation
- Superior bending performance
- Mechanically strippable coating
- Excellent geometric properties for low splicing loss
- Transmission capacity at 1285nm to 1625nm

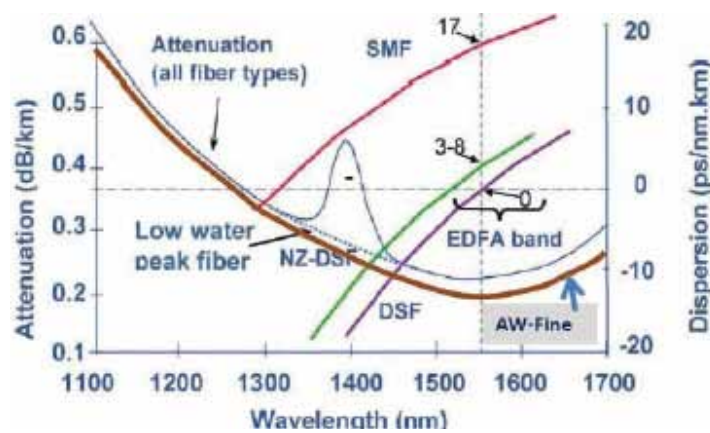
Application

- Data communication cable
- FTTH network cable
- Long haul telecommunication cable
- CATV cable
- Submarine cable

Structure



Spectral Attenuation



Environmental Characteristic

Classification		Attenuation change(dB/km)	
		1310nm	1550nm
Temperature performance	-60°C to +85°C	≤0,05	≤0,05
Temperature cycling performance	-10°C to +85°C	≤0,05	≤0,05

Performance Specification

Classification	Performance	Characteristic	
Geometrical Characteristic	Mode Field Diameter	9,2±0,4µm at 1310nm	
	Cladding Diameter	125,0±0,7µm	
	Core/Cladding Concentricity Error	≤0,5µm	
	Cladding Non-Circularity	≤0,7%	
	Fiber Curl Radius	≥4m	
	Primary Coating Diameter(For Uncolored Fiber)	242±5µm	
	Primary Coating Diameter(For Colored Fiber)	250±10µm	
	Fiber Proof Test Level	≥120kpsi(1,2% strain)	
Optical Characteristic	Attenuation	at @1310nm	≤0,32dB/km
		at @1383nm	≤0,32dB/km(after H2 aging)
		at @1550nm	≤0,18dB/km
		at @1625nm	≤0,20dB/km
		Point discontinuity at 1310nm and 1550nm	≤0,05dB
		Zero dispersion wavelength	≤1302~1322nm
		Zero dispersion slope	≤0,090ps/(nm ² .km)
		Chromatic dispersion at 1285~1330nm	≤3,5ps/(nm.km)
	Macrobending loss	Chromatic dispersion at 1550nm	≤18ps/(nm.km)
		Cable cut-off wavelength(λ _{cc})	≤1260nm
		1 turn x 10mm radius @1550nm	≤0,75dB
		1 turn x 10mm radius @1625nm	≤1,5dB
		10 turns x 15mm radius @1550nm	≤0,25dB
		10 turns x 15mm radius @1625nm	≤1,0dB
PMD Linked Design Value	≤0,1ps/km		
Maximum Individual Fiber PMD	≤0,15ps/km		
Packaging	Fiber Length	6,3~25,2km in multiples of 2,1	
	Spool dimension	Flange Diameter Nom,	234,5mm
		Barrel Diameter Nom,	152,0mm
		Inner Width Nom,	96,0mm
		Outer Width Nom,	116,0mm
		Bore Diameter Nom,	25,4mm

※ Other fiber lengths are available upon request

ANYWAVE® 200

ITU-T G.652.D

200µm Low Water Peak Single Mode Fiber(VAD Process)

Taihan Fiber Optics Co., Ltd. offers 200µm ANYWAVE® (Low Water Peak) single mode optical fiber produced by the Vapour Phase Axial Deposition(VAD) method, which enables construction of high-capacity, low-cost transmission in Metropolitan and WDM Network. 200µm ANYWAVE® single mode optical fiber has step index and matched clad type characteristics operating in the entire wavelength region from 1280 nm to 1625 nm, free of OH-peak at 1383 ±3nm in compliance with the latest ITU-T G.652.D standard. 200µm ANYWAVE® fiber fully complied with ITU-T G.652D and G657A1 specifications.

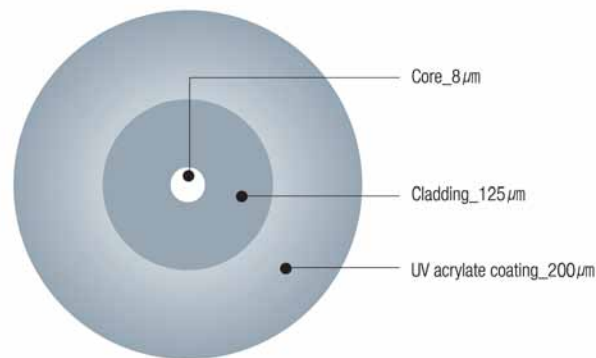
Feature

- Conspicuous lower attenuation
- Superior bending performance
- Mechanically strippable coating
- Excellent geometric properties for low splicing loss
- Transmission capacity at 1280nm to 1625nm
- Fully compliant with with ITU-T G.652D & G.657A1

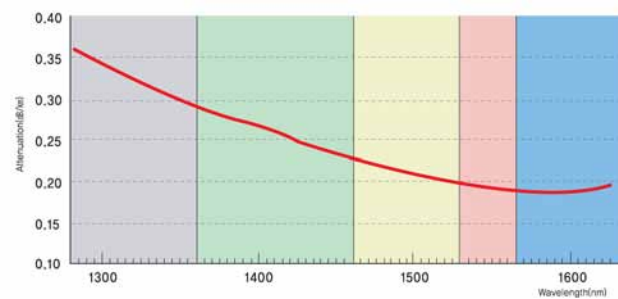
Application

- Data communication cable
- FTTH network cable
- Long haul telecommunication cable
- CATV cable
- Long term reliability for attenuation

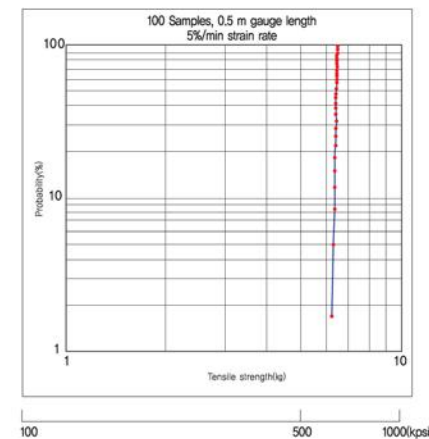
Structure



Spectral Attenuation



Weibull Parameter



Environmental Characteristic

Classification		Attenuation change(dB/km)	
		1310nm	1550nm
Temperature performance	-60°C to +85°C	≤0.05	≤0.05
Temperature cycling performance	-10°C to +85°C	≤0.05	≤0.05

Performance Specification

Classification	Performance	Characteristic	
Geometrical Characteristic	Mode Field Diameter	8.9±0.4µm at 1310nm	
	Cladding Diameter	125.0±0.7µm	
	Core/Cladding Concentricity Error	≤0.5µm	
	Cladding Non-Circularity	≤1%	
	Primary Coating Diameter(For Uncolored Fiber)	190±10µm	
	Primary Coating Diameter(For Colored Fiber)	200±10µm	
	Coating/Cladding Concentricity Error	≤12µm	
Optical Characteristic	Attenuation	at @1310nm	≤0.34dB/km
		at @1550nm	≤0.20dB/km
		at @1383±3nm	≤0.31dB/km
		at @1625nm	≤0.21dB/km
	Attenuation Change	at 1285~1330nm	≤0.03dB/km(1310nm reference)
		at 1525~1575nm	≤0.02dB/km(1550nm reference)
	Point Discontinuity	at 1310nm and 1550nm	≤0.05dB
Zero Dispersion Wavelength		1302~1322nm	
Zero dispersion slope		≤0.090ps/(nm ² ·km)	
Chromatic dispersion	at 1285~1330nm	≤3.5ps/(nm·km)	
	at 1550nm	≤18ps/(nm·km)	
Macrobending Loss	for 1 turns at a 20mm mandrel diameter	≤0.2dB@1550nm	
	for 1 turns at a 20mm mandrel diameter	≤0.5dB@1625nm	
	for 10 turns at a 30mm mandrel diameter	≤0.2dB@1550nm	
	for 10 turns at a 30mm mandrel diameter	≤0.5dB@1625nm	
	for 100 turns at a 50mm mandrel diameter	≤0.01dB@1550nm	
	for 100 turns at a 50mm mandrel diameter	≤0.05dB@1625nm	
Packaging	Cable cut-off wavelength (λ _{cc})	≤1260nm	
	PMD	for individual value (uncabled fiber)	≤0.15ps/√µm·km
		for link value	≤0.1ps/√km
	Fiber Length		25.2km/50.4km
	Spool Dimension	Flange Diameter Nom.	234.5mm/265mm
Barrel Diameter Nom.		152.0mm/170mm	
Inner Width Nom.		96.0mm/150mm	
Outer Width Nom.		116.0mm/175mm	
Bore Diameter Nom.		25.4mm	

※ Other fiber lengths are available upon request

ANYWAVE® Ribbon

Ribbon Optical Fiber

TAIHAN's ribbon optical fiber is available in standard counts of 4, 8, 12 fibers to meet a wide variety of applications. Ribbon fiber is used in applications requiring high communication rate and high fiber density in small area. Also ribbon fiber offers precise fiber geometries for mass precision splicing and multi-fiber array. Its high performance is achieved through a germanium doped double silica cladding produced by the vapour - phase axial deposition(VAD) method.

Feature

- Small diameter cable by high density fiber
- Precise fiber geometry
- Easily accessible individual fibers
- Reduce the installation cost by easy handling and low weight

Application

- Easy handling, installation and shipping
- Installation costs and cables weight
- Available for distribution of dense metropolitan area

Structure

4 Fiber



8 Fiber



12 Fiber



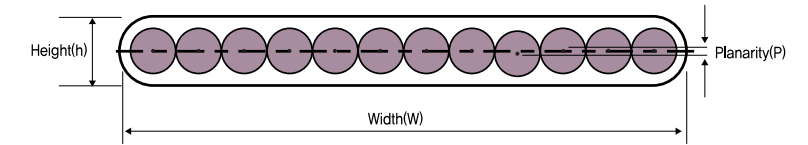
* Fig 1 : Cross-Section of 4-12 optical fiber ribbon



Refractive Index Profile(Environmental Characteristic)

Classification		Attenuation change @ 1550nm(dB/km)
Temperature cycling performance	TIA / EIA 455-3	≤0,05dB/km(-40°C to +70°C)
Temperature humidity test	+85°C, 98%, 30days	≤0,1dB/km
Water immersion	+23°C, 14days	≤0,1dB/km(+23°C)

Dimension



Fiber count	Height(h)	Width(w)		Planarity(p)	
		Typical	Max.	Typical	Max.
4	310±20	1100	1150	25	25
8	310±20	2150	2200	30	30
12	310±20	3150	3200	35	35

Performance Specification

Classification	Performance		Characteristic																					
Geometrical Characteristic	Mode field diameter	at 1310nm	9,2±0,4µm																					
		at 1550nm	10,4±0,5µm																					
	Cladding diameter		125,0±0,7µm																					
	Core/cladding concentricity error		≤0,5µm																					
	Cladding non-circularity		≤0,7%																					
	Primary coating diameter	For uncolored fiber	242±5µm																					
		For colored fiber	250±10µm																					
	Coating/cladding concentricity error		≤12µm																					
Fiber proof test level		≥120kpsi(1,2% strain)																						
Optical Characteristic	Attenuation	at 1310nm	≤0,35dB/km																					
		at 1550nm	≤0,22dB/km																					
		at 1383nm	≤0,31dB/km																					
	Attenuation change	at 1285~1330nm	≤0,05dB/km(1310nm)																					
		at 1525~1575nm	≤0,05dB/km(1550nm)																					
		at 1575~1610nm	≤0,03dB/km(Max-Min)																					
	Point discontinuity at 1310nm and 1550nm		≤0,05dB																					
	Zero dispersion	wavelength	≤1302~1322nm																					
		slope	≤0,090ps/(nm²,km)																					
	Chromatic dispersion	at 1285~1330nm	≤3,5ps/(nm,km)																					
at 1550nm		≤18ps/(nm,km)																						
at 1625nm		≤22ps/(nm,km)																						
Cable cut-off wavelength		≤1260nm																						
PMD for individual value(uncabled fiber)		≤0,15ps/km																						
PMD for link value		≤0,1ps/km																						
Packaging	Delivery length of each ribbon bobbin shall be in multiples of 2km. Maximum length shall be changed upon special agreement to within the maximum take-up length specified in Table. 1																							
	Dimensions of ribbon bobbin are specified in Table. 1																							
	Ribbon bobbin shall be packaged with anti-moisture, anti-vibration and anti-shock to maintain the ribbon's performance.																							
<table border="1"> <caption>Table. 1</caption> <thead> <tr> <th>Type</th> <th>Flange Diameter</th> <th>Barrel Diameter</th> <th>Outside Width</th> <th>Inside Width</th> <th>Axial Hole Diameter</th> <th>Maximum Take-up Length</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>410</td> <td>310</td> <td>170</td> <td>102</td> <td>∅25,5 or 50,9</td> <td>12km</td> </tr> <tr> <td>B</td> <td>410</td> <td>310</td> <td>390</td> <td>322</td> <td>∅25,5 or 50,9</td> <td>35km</td> </tr> </tbody> </table> <p>*Maximum Take-up Length is based on 4 optical fiber ribbon</p>				Type	Flange Diameter	Barrel Diameter	Outside Width	Inside Width	Axial Hole Diameter	Maximum Take-up Length	A	410	310	170	102	∅25,5 or 50,9	12km	B	410	310	390	322	∅25,5 or 50,9	35km
Type	Flange Diameter	Barrel Diameter	Outside Width	Inside Width	Axial Hole Diameter	Maximum Take-up Length																		
A	410	310	170	102	∅25,5 or 50,9	12km																		
B	410	310	390	322	∅25,5 or 50,9	35km																		

ANYWAVE® OM1**ITU-T 62.5/125μm Multi Mode Fiber**

TAIHAN's 62.5/125μm multimode fiber is a graded-index multimode optical fiber with a 62.5μm core diameter and a 125μm cladding diameter. The optical fiber is comprehensively optimized for performance at the 850nm and 1300nm operating wavelengths. The fiber has the highest bandwidth and lowest attenuation, which is satisfying the sue at 850nm and 1300nm. TAIHAN's 62.5/125μm multimode fiber is designed and manufactured according to the most advanced level in the world.

Feature

- Designed for use at 850nm and 1300nm
- Low attenuation and high bandwidth, which overfills the transmission demand of IEEE 802.3z Gigabit Ethernet
- Good protection and excellent strip force stability

Application

- Local area network(LAN), video, voice and data service
- Data communication cable
- FTTH network cable

Refractive Index Profile(Environmental Characteristic)

Classification		850nm&1310nm
Temperature performance	-60°C to +85°C	≤0.10dB/km
Temperature cycling performance	-10°C to +85°C	≤0.10dB/km
Watersoak dependence induced attenuation	23°C±2°C, 30days	≤0.10dB/km
Damp heat dependence induced attenuation	85°C±2°C and 85%RH, 30days	≤0.10dB/km
Dry heat aging	85°C±2°C	≤0.10dB/km

Performance Specification

Classification	Performance	Characteristic	
Optical Characteristic	Attenuation	at @850nm	≤2.70~≤3.00dB/km
		at @1300nm	≤0.60~≤1.00dB/km
	Min. Modal Bandwidth	at @850nm	≥200~≥100MHz.km
		at @1300nm	≥600~≥160MHz.km
	Numerical Aperture	0.275±0.015	
Backscatter Characteristics	Irregularities over fiber length and point discontinuity		≤0.1dB
	Attenuation uniformity		≤0.1dB
	Step(Mean of bidirectional measurement)		≤0.1dB/km
Geometry Characteristics	Core Diameter		62.5±2.5μm
	Core Non-Circularity		≤5.0%
	Cladding Diameter		124.3±0.7μm
	Cladding Non-Circularity		≤2.0%
	Core/Cladding Concentricity Error		≤1.5μm
	Coating Diameter		245±10μm
	Coating/Cladding Concentricity Error		≤12.0μm
Mechanical Specification	Delivery Length		~16.8km/reel
	Proof test		≥9.0N
	Macrobend dependence induced attenuation 100turns Ø75mm		≤0.5dB
	Coating strip force	Typical average force	1.5N
		Peak force	≥1.3, ≤8.9N
Dynamic stress corrosion susceptibility parameter		≥20	

ANYWAVE® OM2**ITU-T 50/125μm Multi Mode Fiber**

TAIHAN's 50/125μm multimode fiber is a graded-index multimode optical fiber with a 50μm core diameter and a 125μm cladding diameter. The optical fiber is comprehensively optimized for performance at the 850nm and 1300nm operating wavelengths. The fiber has the highest bandwidth and lowest attenuation, which is satisfying the sue at 850nm and 1300nm. TAIHAN's 50/125μm multimode fiber is designed and manufactured according to the most advanced level in the world.

Feature

- Designed for use at 850nm and 1300nm
- Low attenuation and high bandwidth, which overfills the transmission demand of IEEE 802.3z Gigabit Ethernet
- Good protection and excellent strip force stability

Application

- Local area network(LAN), video, voice and data service
- Data communication cable
- FTTH network cable

Refractive Index Profile(Environmental Characteristic)

Classification		850nm&1310nm
Temperature performance	-60°C to +85°C	≤0.10dB/km
Temperature cycling performance	-10°C to +85°C	≤0.10dB/km
Watersoak dependence induced attenuation	23°C±2°C, 30days	≤0.10dB/km
Damp heat dependence induced attenuation	85°C±2°C and 85%RH, 30days	≤0.10dB/km
Dry heat aging	85°C±2°C	≤0.10dB/km

Performance Specification

Classification	Performance	Characteristic	
Optical Characteristics	Attenuation	at @850nm	≤2.5dB/km
		at @1300nm	≤0.7dB/km
	Overfilled Launch Bandwidth	at @850nm	≥3500MHz.km
		at @1300nm	≥500MHz.km
	Effective Modal Bandwidth(850nm)		≥4700MHz.km
	10Gb/s Ethernet Link Length		550m
Numerical Aperture		0.185~0.215	
Backscatter Characteristics	DMD Specification		See FFOT OM4 Internal Standard
	Irregularities over fiber length and point discontinuity		≤0.1dB
	Attenuation uniformity		≤0.1dB
	Step(Mean of bidirectional measurement)		≤0.1dB/km
Geometry Characteristics	Core Diameter		50±2.5μm
	Core Non-Circularity		≤5.0%
	Cladding Diameter		124.3±0.7μm
	Cladding Non-Circularity		≤2.0%
	Core/Cladding Concentricity Error		≤1.5μm
	Coating Diameter		245±10μm
	Coating/Cladding Concentricity Error		≤12.0μm
Mechanical Specification	Delivery Length		~16.8km/reel
	Proof test		≥9.0N
	Macrobend dependence induced attenuation 100turns Ø75mm		≤0.5dB
	Coating strip force	Typical average force	1.5N
		Peak force	≥1.3, ≤8.9N
Dynamic stress corrosion susceptibility parameter		≥20	



ANYWAVE® OM3

ANYWAVE® OM4

ITU-T 50/125µm Multi Mode Fiber

ITU-T 50/125µm Multi Mode Fiber

TAIHAN's OM3 fiber is designed specifically for high speed local area network(LAN) such as Gigabit or higher speeds Ethernet. TAIHAN's OM3 fiber eliminates the differential mode delay(CMD) phenomenon observed on the conventional fibers in Gigabit applications. Thus, there is no need for expensive CMC compensation. TAIHAN's OM3 fibers satisfy the sue at 850nm and 1300nm. The maximum link distance up to 2000meter) for Gigabit Ethernet system are the longest distances available in the world.

TAIHAN's OM4 fiber is designed specifically for high speed local area network(LAN) such as Gigabit or higher speeds Ethernet. TAIHAN's OM4 fiber eliminates the differential mode delay(CMD) phenomenon observed on the conventional fibers in Gigabit applications. Thus, there is no need for expensive CMC compensation. TAIHAN's OM4 fibers satisfy the sue at 850nm and 1300nm. The maximum link distance up to 2000 meter) for Gigabit Ethernet system are the longest distances available in the world.

Feature

- Designed for use at 850nm and 1300nm
- Suited to applications in Gigabit Ethernet and higher bit-rat systems
- No need to use expensive DMD compensation in Gigabit Ethernet
- Enabling the longest link distances compared with congener products
- Good protection and excellent strip force stability

Application

- LAN, FDDI, Ethernet, ATM
- Data communication cable
- FTTH network cable

Refractive Index Profile(Environmental Characteristic)

Classification		850nm&1310nm
Temperature performance	-60°C to +85°C	≤0.10dB/km
Temperature cycling performance	-10°C to +85°C	≤0.10dB/km
Watersoak dependence induced attenuation	23°C±2°C, 30days	≤0.10dB/km
Damp heat dependence induced attenuation	85°C±2°C and 85%RH, 30days	≤0.10dB/km
Dry heat aging	85°C±2°C	≤0.10dB/km

Feature

- Designed for use at 850nm and 1300nm
- Suited to applications in Gigabit Ethernet and higher bit-rat systems
- No need to use expensive DMD compensation in Gigabit Ethernet
- Enabling the longest link distances compared with congener products
- Good protection and excellent strip force stability

Application

- LAN, FDDI, Ethernet, ATM
- Data communication cable
- FTTH network cable

Refractive Index Profile(Environmental Characteristic)

Classification		850nm&1310nm
Temperature performance	-60°C to +85°C	≤0.10dB/km
Temperature cycling performance	-10°C to +85°C	≤0.10dB/km
Watersoak dependence induced attenuation	23°C±2°C, 30days	≤0.10dB/km
Damp heat dependence induced attenuation	85°C±2°C and 85%RH, 30days	≤0.10dB/km
Dry heat aging	85°C±2°C	≤0.10dB/km

Performance Specification

Classification	Performance		Characteristic
Optical Characteristics	Attenuation	at @850nm	≤2.5dB/km
		at @1300nm	≤0.7dB/km
	Overfilled Launch Bandwidth	at @850nm	≥1500MHz.km
		at @1300nm	≥500MHz.km
	Effective Modal Bandwidth(850nm)		≥2000MHz.km
	10Gb/s Ethernet Link Length		300m
	Numerical Aperture		0.185~0.215
DMD Specification		See FFOT OM3 Internal Standard	
Backscatter Characteristics	Irregularities over fiber length and point discontinuity		≤0.1dB
	Attenuation uniformity		≤0.1dB
	Step(Mean of bidirectional measurement)		≤0.1dB/km
Geometry Characteristics	Core Diameter		50±2.5µm
	Core Non-Circularity		≤5.0%
	Cladding Diameter		124.3±0.7µm
	Cladding Non-Circularity		≤2.0%
	Core/Cladding Concentricity Error		≤1.5µm
	Coating Diameter		245±10µm
	Coating/Cladding Concentricity Error		≤12.0µm
	Delivery Length		~16.8km/reel
Mechanical Specification	Proof test		≥9.0N
	Macrobend dependence induced attenuation 100turns Ø75mm		≤0.5dB
	Coating strip force	Typical average force	1.5N
		Peak force	≥1.3, ≤8.9N
	Dynamic stress corrosion susceptibility parameter		≥20

Performance Specification

Classification	Performance		Characteristic
Optical Characteristics	Attenuation	at @850nm	≤2.5dB/km
		at @1300nm	≤0.7dB/km
	Overfilled Launch Bandwidth	at @850nm	≥3500MHz.km
		at @1300nm	≥500MHz.km
	Effective Modal Bandwidth(850nm)		≥4700MHz.km
	10Gb/s Ethernet Link Length		550m
	Numerical Aperture		0.185~0.215
DMD Specification		See FFOT OM4 Internal Standard	
Backscatter Characteristics	Irregularities over fiber length and point discontinuity		≤0.1dB
	Attenuation uniformity		≤0.1dB
	Step(Mean of bidirectional measurement)		≤0.1dB/km
Geometry Characteristics	Core Diameter		50±2.5µm
	Core Non-Circularity		≤5.0%
	Cladding Diameter		124.3±0.7µm
	Cladding Non-Circularity		≤2.0%
	Core/Cladding Concentricity Error		≤1.5µm
	Coating Diameter		245±10µm
	Coating/Cladding Concentricity Error		≤12.0µm
	Delivery Length		~16.8km/reel
Mechanical Specification	Proof test		≥9.0N
	Macrobend dependence induced attenuation 100turns Ø75mm		≤0.5dB
	Coating strip force	Typical average force	1.5N
		Peak force	≥1.3, ≤8.9N
	Dynamic stress corrosion susceptibility parameter		≥20