Optical Fibers & Cables

Optical Fibers

Product Information

Single-mode Optical Fibers

Product Name	PureBand™ PB	PureBand™ [LL] PB	PureBand™-Plus PB Plus	PureBand™-R PB-R	PureBand™-R [LL] PB-R	PureAccess™ PA	PureAccess™ [A2] PAA2
Standards Compliance	G.652.D	G.652.D	G.652.D/ G.657.A1	G.652.D/ G.657.A1	G.652.D/ G.657.A1	G.652.D/ G.657.A1	G.652.D/ G.657.A2
Available Coating Diameter	250 μm	250 μm	250 μm 200 μm	250 μm 200 μm	250 μm 200 μm	250 μm 200 μm 180 μm	250 μm 200 μm 180 μm
Minimum Bending Radius	25 mm	25 mm	10 mm	10 mm	10 mm	10 mm	7.5 mm
Mode Field Diameter at 1310 nm	9.2 ± 0.4 μm	9.2 ± 0.4 μm	8.9 ± 0.4 μm	9.2 ± 0.4 μm	9.2 ± 0.4 μm	8.6 ± 0.4 μm	8.6 ± 0.4 μm
Cable Cut-off Wavelength	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm	≤ 1260 nm
Attenuation at 1310 nm	≤ 0.35 dB/km	≤ 0.32 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km	≤ 0.32 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km
Attenuation at 1383 nm (After H_2 aging)	≤ 0.35 dB/km	≤ 0.32 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km	≤ 0.32 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km
Attenuation at 1550 nm	≤ 0.20 dB/km	≤ 0.18 dB/km	≤ 0.20 dB/km	≤ 0.20 dB/km	≤ 0.18 dB/km	≤ 0.21 dB/km	≤ 0.21 dB/km
Attenuation at 1625 nm	≤ 0.23 dB/km	≤ 0.20 dB/km	≤ 0.23 dB/km	≤ 0.23 dB/km	≤ 0.20 dB/km	≤ 0.22 dB/km	≤ 0.22 dB/km
Zero Dispersion Wavelength	1300–1324 nm	1300–1324 nm	1300–1324 nm	1300–1324 nm	1300–1324 nm	1300–1324 nm	1300–1324 nm
PMD Link Design Value	≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km

Optical Fibers

Ultra-Low Loss Single-mode Optical Fibers for Terrestrial Application

Product Name	PureAdvance™ -80 PAD	PureAdvance™ -110 PAD	PureAdvance™ -125 PAD
ITU-T Compliance	G.654.C / G.652.B	G.654.E	G.654.E
MFD at 1550 nm	10.5 ± 0.7 μm	11.7 ± 0.7 μm	12.5 ± 0.5 μm
Effective area (Typical) at 1550 nm	85 μm^2	110 μm^2	125 μm^2
Attenuation at 1550 nm	≤ 0.17 dB/km	≤ 0.16 dB/km	≤ 0.16 dB/km
Attenuation (Typical) at 1550 nm	0.160 dB/km	0.156 dB/km	0.156 dB/km
Cable cut-off wavelength (λcc)	≤ 1520 nm (G.654.C) ≤ 1260 nm (G.652.B)	≤ 1520 nm	≤ 1520 nm

Submarine Optical Fibers

Product Name	PureBand™ Submarine PBS	Z Fiber™ LL Z	PureAdvance™ -110 Submarine PAD	Z-PLUS Fiber™ ULL Z+	Z-PLUS Fiber™ 130 Z+ 130	Z-PLUS Fiber™ 150 Z+ 150
ITU-T Compliance	G.652.D	G.654.C	G.654.B, G.654.D	G.654.B, G.654.D	G.654.D	G.654.D
Effective area (Typical) at 1550 nm	83 μm^2	85 μm^2	110 μm^2	112 μm^2	130 μm^2	150 μm^2
Attenuation (Typical) at 1550 nm	0.174 dB/km	0.155 dB/km	0.154 dB/km	0.148 dB/km	LL: 0.152 dB/km ULL: 0.147 dB/km	LL: 0.150 dB/km ULL: 0.144 dB/km

Product Name	2C Z-PLUS Fiber™ ULL 2C
Effective area (Typical) at 1550 nm	112 μm^2
Attenuation (Typical) at 1550 nm	0.155 dB/km
Crosstalk in Counter propagation at C-band	≤ -43 dB

Optical Fibers & Cables

Optical Fibers

Submarine Fibers

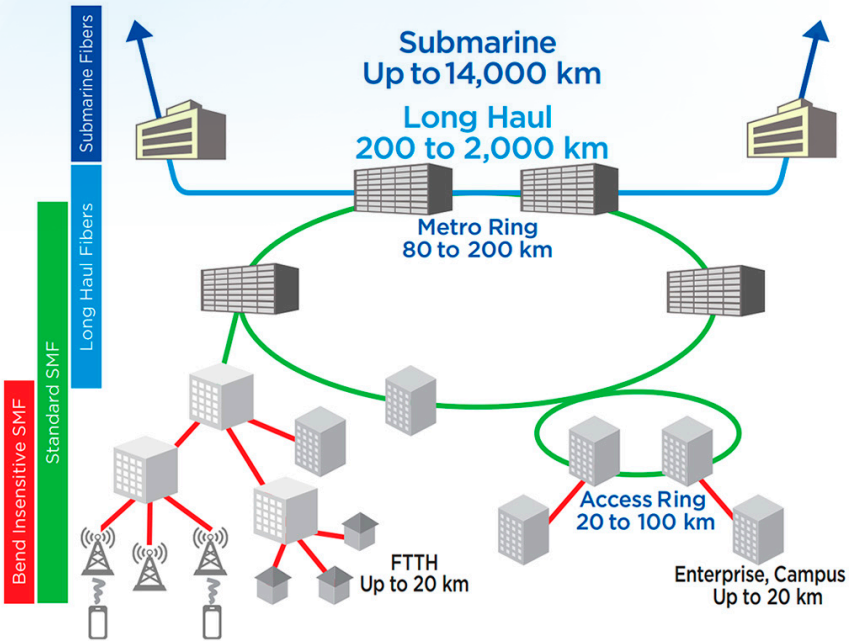
ITU-T	Product Name
G.654.B/C/D	Z Fiber™ Series Z

Long Haul Fibers

ITU-T	Product Name
G.654.E/G.654.C	PureAdvance™ Series PAD

Standard SMF/Bend Insensitive SMF

ITU-T	Product Name
G.652.D	PureBand™ PB
G.652.D	PureBand™ LL PB
G.652.D and G.657.A1	PureBand™-R PB-R
G.652.D and G.657.A1	PureBand™-R LL PB-R
G.652.D and G.657.A1	PureBand™-Plus PB Plus
G.652.D and G.657.A1	PureAccess™ PA
G.652.D and G.657.A2	PureAccess™ [A2] PAA2



Multi-mode Optical Fibers

	Core diameter: 50 μm			Core diameter: 62.5 μm
	General purpose	Broadband		General purpose
	Enhanced flexural characteristic ϕ30mm(R15mm)			
	PureEther™-Access1G 1G	PureEther™-Access10G 10G	PureEther™-Access10G+ 10G+	EG6 EG6
Optical fiber code	GI(PE-A1G)	GI(PE-A10G)	GI(PE-A10G+)	GI(62.5)
Transmission loss	≤ 3.0 dB/km (λ=850nm) ≤ 1.0 dB/km (λ=1300nm)	≤ 3.0 dB/km (λ=850nm) ≤ 1.0 dB/km (λ=1300nm)	≤ 3.0 dB/km (λ=850nm) ≤ 1.0 dB/km (λ=1300nm)	≤ 3.5 dB/km (λ=850nm) ≤ 1.5 dB/km (λ=1300nm)
Transmission band	≥ 500 MHz•km (λ=850nm) ≥ 500 MHz•km (λ=1300nm)	≥ 1500 MHz•km Effective band ≥ 2000 MHz•km (λ=850nm) ≥ 500 MHz•km (λ=1300nm)	≥ 3500 MHz•km Effective band ≥ 4700 MHz•km (λ=850nm) ≥ 500 MHz•km (λ=1300nm)	≥ 200 MHz•km (λ=850nm) ≥ 500 MHz•km (λ=1300nm)
Min. permissible bending radius*1	15 mm	15 mm	15 mm	30 mm
Standards	IEC60793-2-10 A 1a.1 type OM2*-compliant	IEC60793-2-10 A 1a.2 type OM3*-compliant	Compatible with upper grade of IEC60793-2-10 A 1a.2 type OM4*-compliant	IEC60793-2-10 A 1b type OM1*-compliant
		Transmits signals up to 300 meters at 10 gigabits per second.	Transmits signals up to 550 meters at 10 gigabits per second.	

Optical Fibers

Ethernet Standards and Recommended Optical Fibers

Standard name			Wavelength	Form Factor	Optical connecter	MM:OM2 1G	MM:OM3 10G	MM:OM4 10G+	SM:OS1 SM	SM:OS1,OS2 PB PAPB PAA2
100Gigabits Ethernet	IEEE802.3ba	100GBASE-SR10	850 nm	CFP/CFP2	MPO	—	100 m	150 m	—	—
		100GBASE-SR4	850 nm	CFP4/QSFP28	MPO	—	70 m	100 m	—	—
		100GBASE-LR4	LAN-WDM	CFP/CFP2/ CFP4/QSFP28	LC	—	—	—	—	10,000 m
		100GBASE-ER4	LAN-WDM	CFP/CFP2	LC	—	—	—	—	40,000 m
40Gigabits Ethernet	IEEE802.3ba	40GBASE-SR4	850 nm	CFP/QSFP+	MPO	—	100 m	150 m	—	—
		40GBASE-LR4	CWDM	CFP/QSFP+	LC	—	—	—	10,000 m	10,000 m
	IEEE802.3bg	40GBASE-FR	1550 nm	CFP	LC	—	—	—	2,000 m	2,000 m
10Gigabits Ethernet	IEEE802.3ae	10GBASE-SR	850 nm	SFP+	LC	82 m	300 m	550 m	—	—
		10GBASE-LR	1310 nm	SFP+	LC	—	—	—	10,000 m	10,000 m
		10GBASE-ER	1550 nm	SFP+	LC	—	—	—	40,000 m	40,000 m
Gigabits Ethernet	IEEE802.3z	1000BASE-SX	850 nm	SFP	LC	550 m	550 m	550 m	—	—
		—	850 nm	SFP	LC	—	1000 m*	1000 m*	—	—
		1000BASE-LX	1300 nm	SFP	LC	550 m	550 m	550 m	—	—
			1310 nm	SFP	LC	—	—	—	5,000 m	5,000 m

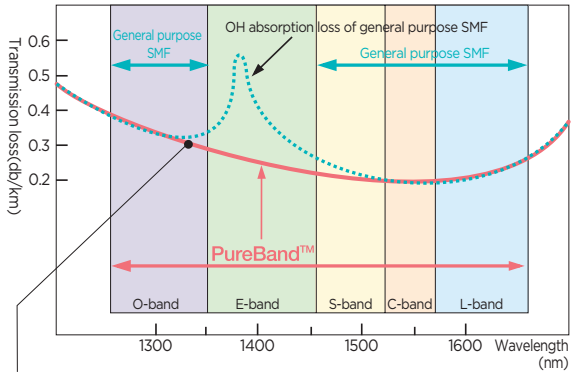
*: Values measured by Sumitomo Electric. Actual measurements may vary with different cabling, network equipment, and devices.

The world's industry leading G.652.D and G.657.A1

PureBand™ and PureAccess™

These optical fibers will meet the future need for a substantial increase in the transmission capacity of trunk lines that link local bases.

These fibers comply with ITU-T G.652.D and are usable over a wide wavelength range from 1260 nm to 1625 nm.
Fully compatible with general purpose SM fibers, PureBand™ and PureAccess™-PB fibers have been widely used to construct local community informatization infrastructures.



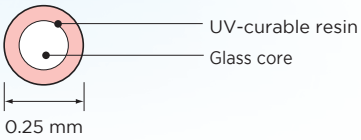
Significant reduction of OH absorption loss in 1383 nm waveband

Optical Fibers & Cables

Primary Coated Fiber/Secondary Jacketed Fibers/Fiber Ribbons

0.25 mm (UV) Primary Coated Fiber

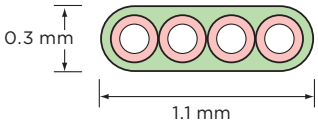
An optical fiber made by cladding a glass core with UV curable resin to form a diameter of 0.25 mm



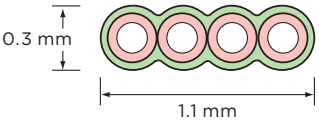
Fiber Ribbons

A fiber ribbon made by laying a group of primary coated fibers in parallel and cladding them with UV-curable resin. Since each fiber ribbon can be fusion-spliced as a unit, fiber ribbon splice time is saved substantially compared with single fiber.

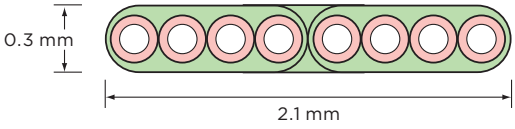
4-fiber ribbon [fiber ribbon code: 4]



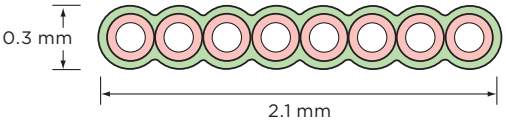
4-fiber EZbranch™ ribbon [fiber ribbon code: 4/(EZB)]



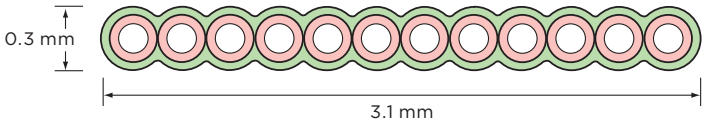
Split type 8-fiber ribbon [fiber ribbon code: 8]



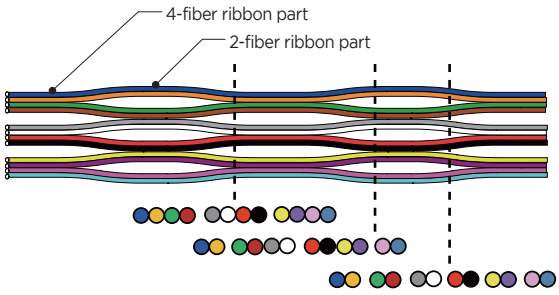
8-fiber EZbranch™ ribbon [fiber ribbon code: 8/(EZB)]



12-fiber FREEFORM RIBBON™ [fiber ribbon code:12/(FFR)]



12-Fiber FREEFORM RIBBON™



Primary Coated Fibers/Secondary Jacketed Fibers/Fiber Ribbons

Fiber Ribbon for Mid-Span Entry (EZbranch™)

EZbranch™; optical fiber ribbon that can be split for breakout and branching after cable installation

If you try removing the ribbon matrix of the optical fiber ribbon in the midst of its length, the probability is that you could break the fiber or damage the coating of the fiber. Or should you succeed taking individual fibers successfully, it would take several minutes accompanied by the unbearable uneasiness during the process.

However, with our EZbranch™ optical ribbon, a single fiber of optical fiber ribbon can be easily separated by gently snapping and pulling on the optical fiber ribbon using our exclusive tool due to its unique structure with deliberately designed depressions between fibers. The separation can be done in 30 to 40 seconds with no danger of open circuits.

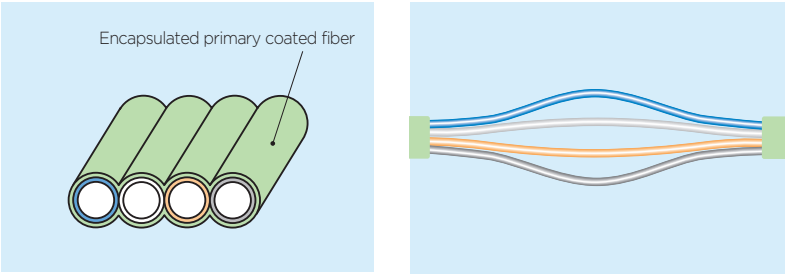


Fig.1
Construction of EZbranch™

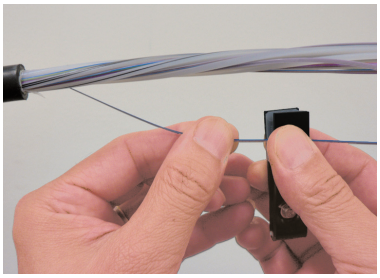


Fig.2
Mid-span entry with tool and the separation of fibers

EZbranch™ optical fiber ribbon conforms to standard specifications for optical fiber ribbon, and connection is compatible with conventional optical fiber ribbon; wiring parts such as cabinets and closures for conventional optical fiber ribbon can be used as is.

Intermediate single core branching is possible, greatly increasing the utilization efficiency of the fiber

Any unused fiber in the optical fiber ribbon can be separated and connected to form an intermediate single core branch for a new subscriber, without cutting any passing single fiber ribbon, eliminating any waste of the fiber.

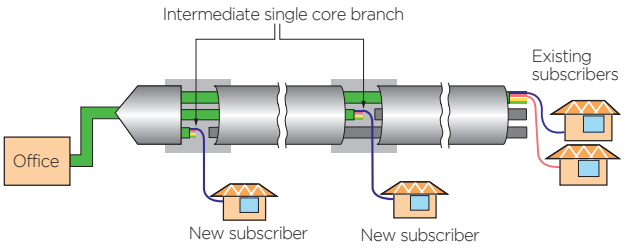


Fig.3
Taking separate fiber out of the identical ribbon fiber can increase the efficiency.

EZbranch™ ribbon can be used in many kinds of fiber ribbon cables

We have the cable product range with EZbranch™ ribbon fiber as we have them with the conventional fiber ribbon. And thanks to the thin ribbon matrix, the fiber ribbon experience lower PMD in EZbranch™ statistically than that of the conventional ribbon.

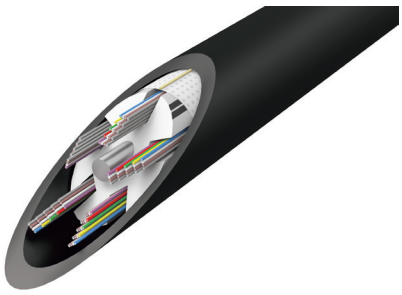


Fig.4
Variety of EZbranch™ applications with cables

EZbranch™ exercise its performance best with the bending insensitive fiber PureAccess™ in FTTx applications. Drop/Indoor cable with PureAccess™ EZbranch™ ribbon will give you new opportunities of wiring the optical fiber into the premises.