



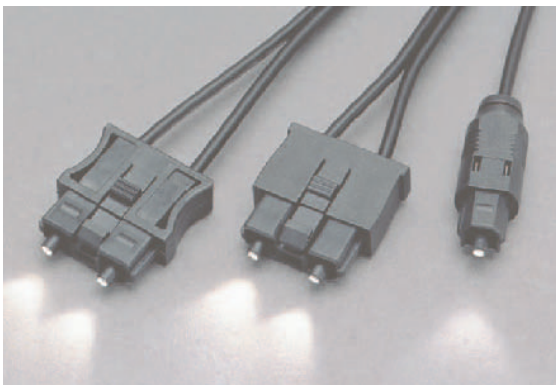
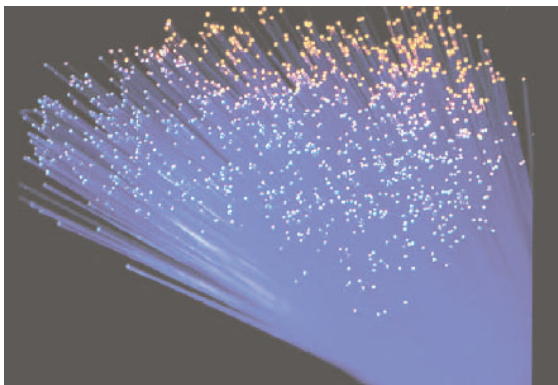
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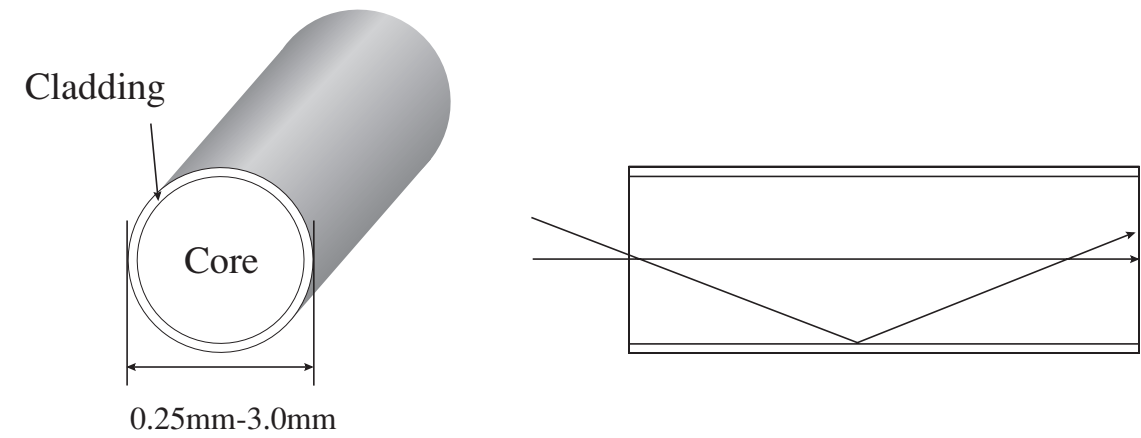
POF-Polymer Optical Fiber

ESKA is high performance optical fiber developed and refined by Mitsubishi Rayon since 1975. Polymer optical fiber has a concentric double-layer structure with high-purity polymethyl methacrylate (known as PMMA) core and specially selected transparent fluorine polymer cladding. The cladding has a lower refractive index than that of the core. This special structure efficiently keeps the launched light power.



features

- 1) Low transmission loss in the range of visible light spectrum.
- 2) Large core diameter and wide acceptance angle.
- 3) Excellent durability and reliability.
- 4) Large alignment tolerance for connections.

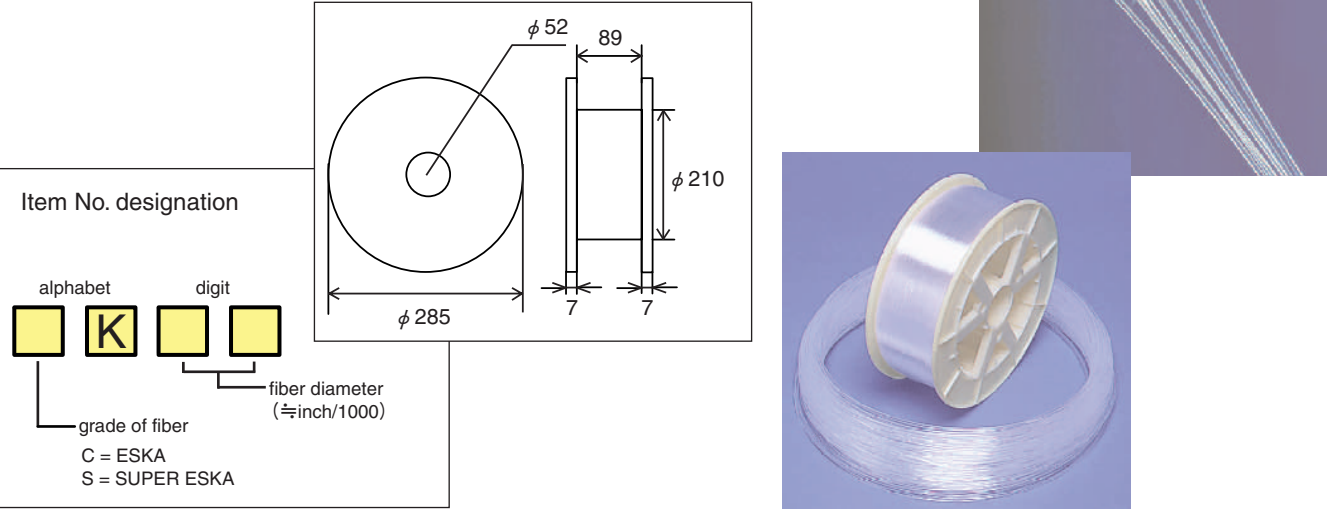


Products

	bare fiber	cable & bare fiber	cable	cable	cable
grade	ESKA	SUPER ESKA	ESKA PREMIER	ESKA MEGA	ESKA Hi-Temp
application	Lighting, Illuminations, Signs	Consumer Data, Sensors, Lighting	Industrial Data, Automotive	Digital home appliance	Industrial Data, Sensors
characteristics	various diameter	high quality standard	high reliability, various jacket	low NA, wide bandwidth	Heat resistant
fiber code	CK	SK	not available	not available	not available
cable code	not available	SH	GH	MH	BH
refractive index	1.49	1.49	1.49	1.49	1.49
Numerical Aperture (NA)	0.5	0.5	0.5	0.3	0.58
temperature range	-55℃ ~ 70℃	-55℃ ~ 70℃	-55℃ ~ 85℃	-55℃ ~ 85℃	-55℃ ~ 105℃
transmission loss *	200dB/km (CK40)	190dB/km (SH4001)	170dB/km (GH4001)	160dB/km (MH4001)	200dB/km (BH4001)
bandwidth **	not specified	not specified	40MHz	200MHz	not specified

* measured with 650nm collimated light
** measured at 50m

Bare Fibers

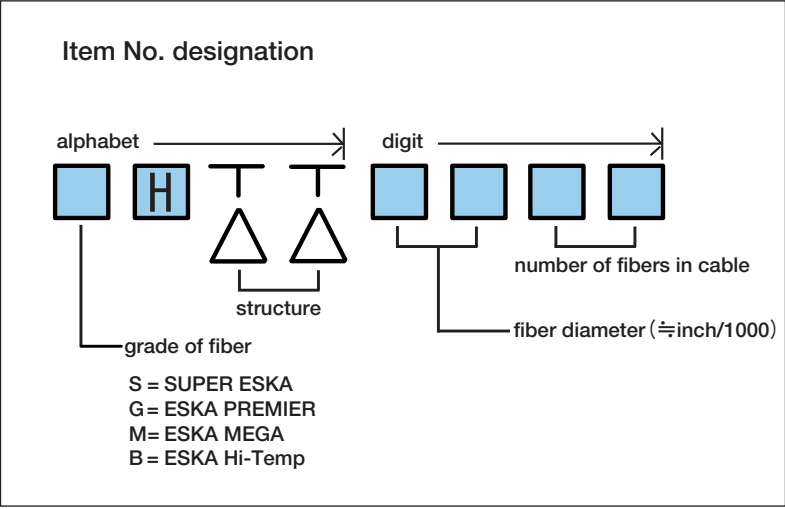


	Item No.	Fiber Diameter (mm)	Core Diameter (mm)	Transmission Loss (dB/km)	Temperature Range (°C)	Length (m)	Net Weight (fiber weight) (kg)	Spool Weight (kg)	Box size (mm)	Gross Weight (fiber+spool+box) (kg)
CK (Lighting)	CK10	0.25	0.24	350	-55 ~ +70	12,000	0.72	0.66	286x286x130	1.7
	CK20	0.5	0.486	250	-55 ~ +70	6,000	1.44	0.66	286x286x130	2.7
	CK30	0.75	0.735	200	-55 ~ +70	2,700	1.458	0.66	286x286x130	2.7
	CK40	1.0	0.98	200	-55 ~ +70	1,500	1.5	0.66	286x286x130	2.8
	CK60	1.5	1.47	200	-55 ~ +70	700	1.54	0.66	286x286x130	2.8
	CK80 *	2.0	1.96	200	-55 ~ +70	250	0.95	—	405x410x75	1.7
	CK100 *	2.5	2.448	200	-55 ~ +70	250	1.5	—	405x410x75	2.2
SK (Lighting)	CK120 *	3.0	2.944	200	-55 ~ +70	150	1.29	—	405x410x75	2.0
	SK10	0.25	0.24	300	-55 ~ +70	12,000	0.72	0.66	286x286x130	2.0
	SK20	0.5	0.486	200	-55 ~ +70	6,000	1.44	0.66	286x286x130	2.7
	SK30	0.75	0.735	150	-55 ~ +70	2,700	1.458	0.66	286x286x130	2.7
	SK40	1.0	0.98	150	-55 ~ +70	1,500	1.5	0.66	286x286x130	2.8
	SK60	1.5	1.47	150	-55 ~ +70	700	1.54	0.66	286x286x130	2.8
	SK80 *	2.0	1.96	150	-55 ~ +70	250	0.95	—	405x410x75	1.7

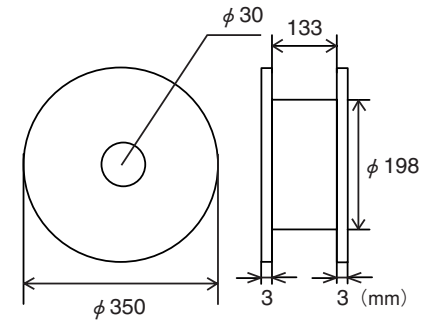
* bundled coil



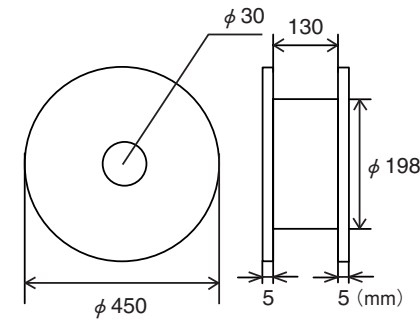
Cables



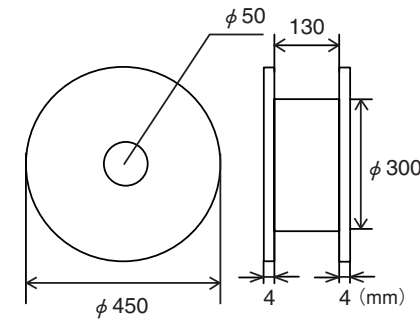
spool type A 1.2kg



spool type B 2.0kg



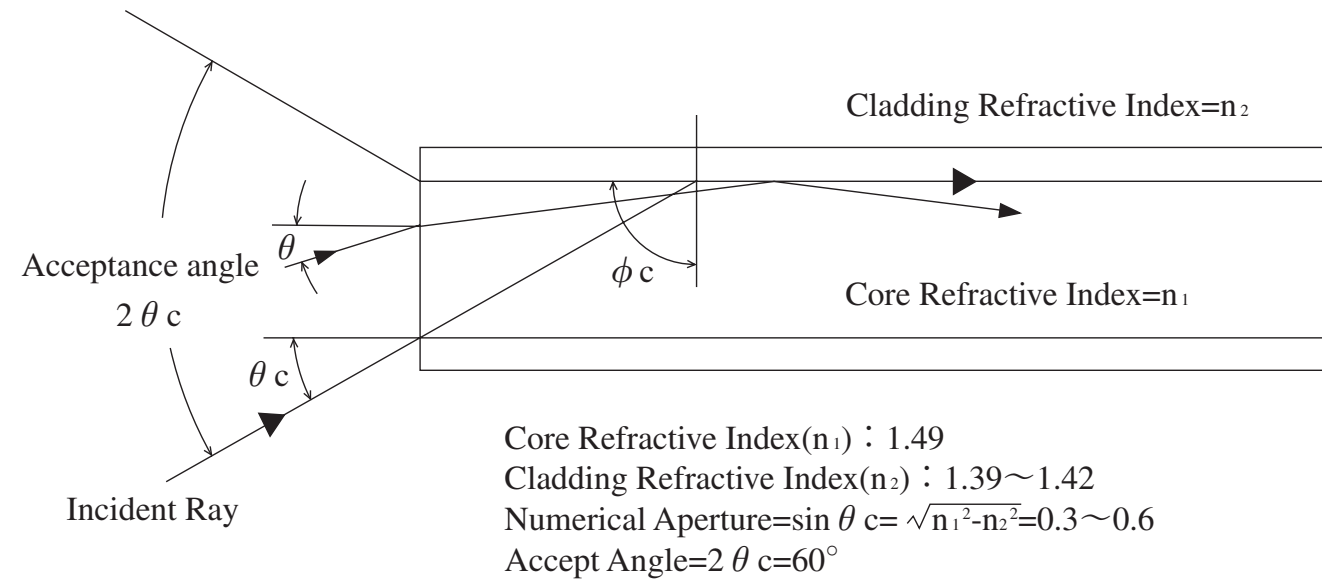
spool type C 1.8kg



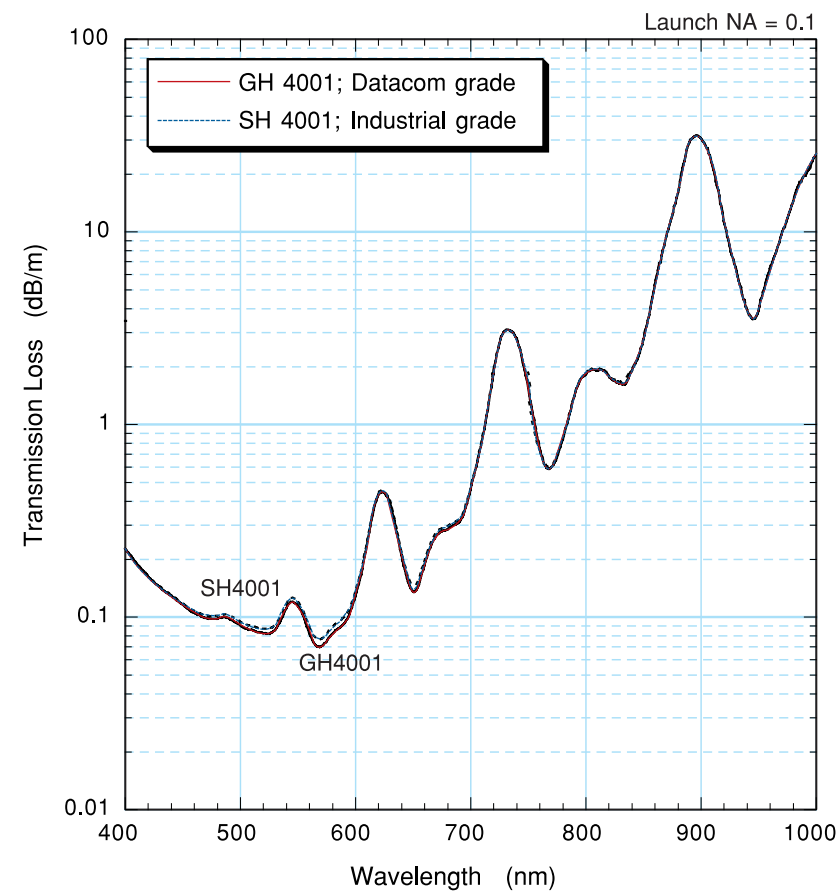
	Item No.	Fiber Diameter x Number of Fibers	Cable Outer Diameter (mm)	Transmission Loss (dB/km)	Jacket Material	Temperature Range (°C)	Tensile Strength (N)	Length (m)	Net Weight (without spool) (kg)	Type of Spool	Box size (mm)	Gross Weight (cable+spool+box) (kg)	Remarks
SH (Consumer Data)	SH1001	0.25mm x 1	1.0 ± 0.05	700	PE	-55~+70	6	1000	0.74	A	365 x 365 x 160	2.3	
	SH2001-J	0.5mm x 1	1.0 ± 0.05	210	PE	-55~+70	18	1000	1.0	A	365 x 365 x 160	2.6	
	SH2002	0.5mm x 2	1.0 x 2.0 ± 0.1	210	PE	-55~+70	36	500	1.0	A	365 x 365 x 160	2.6	
	SH3001	0.75mm x 1	2.2 ± 0.07	200	PE	-55~+70	45	500	2.0	A	365 x 365 x 160	3.6	
	SH3002	0.75mm x 2	2.2 x 4.3 ± 0.1	200	PE	-55~+70	90	500	4.0	A	365 x 365 x 160	5.6	
	SH4001	1.0mm x 1	2.2 ± 0.07	190	PE	-55~+70	70	500	2.0	A	365 x 365 x 160	3.6	
	SH4002	1.0mm x 2	2.2 x 4.3 ± 0.1	190	PE	-55~+70	140	500	4.0	A	365 x 365 x 160	5.6	
	SH6001	1.5mm x 1	3.0 ± 0.15	190	PE	-55~+70	118	500	3.55	A	365 x 365 x 160	5.2	
	SH8001	2.0mm x 1	3.0 ± 0.15	200	PE	-55~+70	200	500	4.0	A	365 x 365 x 160	5.6	
	SHV4001	1.0mm x 1	2.2 ± 0.07	190	PVC	-55~+70	70	500	2.75	A	365 x 365 x 160	4.4	UL1581VW1, Style No.5235
	SHEV4001	1.0mm x 1	4.0 ± 0.2	200	PE/PVC	-55~+70	70	500	8.5	B	470 x 470 x 180	10.9	
	SHCP4001	1.0mm x 1	2.2 ± 0.07	200	Chlorinated PE	-55~+70	70	500	3.0	A	365 x 365 x 160	4.6	UL1581VW1, Style No.5310
	SHCP4002	1.0mm x 2	2.2 x 4.3 ± 0.1	200		-55~+70	140	500	6.0	A	365 x 365 x 160	7.6	UL1581VW1, Style No.5310
	SH1016	0.265mm x 16	2.2 ± 0.07	650	PE	-55~+70	50	500	1.9	A	365 x 365 x 160	3.5	
	SH1032	0.265mm x 32	2.8 ± 0.07	650	PE	-55~+70	(> 50)	500	3.1	A	365 x 365 x 160	4.7	
	SH1048	0.265mm x 48	3.0 ± 0.07	650	PE	-55~+70	(> 50)	500	3.65	A	365 x 365 x 160	5.3	
	SH1064	0.265mm x 64	3.25 ± 0.07	650	PE	-55~+70	(> 50)	500	4.4	A	365 x 365 x 160	6.0	
GH (Industrial Data)	GH4001	1.0mm x 1	2.2 ± 0.07	170	PE	-55~+85	70	500	2.0	A	365 x 365 x 160	3.6	
	GH4002	1.0mm x 2	2.2 x 4.4 ± 0.1	170	PE	-55~+85	140	500	4.0	A	365 x 365 x 160	5.6	
	GHV4001	1.0mm x 1	2.2 ± 0.07	170	PVC	-55~+85	70	500	2.75	A	365 x 365 x 160	4.4	UL1581VW1, Style No.5237
	GHV4002	1.0mm x 2	2.2 x 4.3 ± 0.1	170	PVC	-55~+85	140	500	5.5	A	365 x 365 x 160	7.1	UL1581VW1, Style No.5238
	GHEV4001	1.0mm x 1	3.0 ± 0.1	170	PE/PVC	-55~+85	120	500	4.25	B	470 x 470 x 180	6.7	
	GHEV4002	1.0mm x 2	4.0 x 5.5 ± 0.1	170	PE/PVC	-55~+85	160	500	11.5	B	470 x 470 x 180	13.9	
	GHN4001	1.0mm x 1	2.2 ± 0.07	170	NYLON	-55~+85	70	500	2.25	A	365 x 365 x 160	3.9	
	GHCP4001	1.0mm x 1	2.2 ± 0.07	170	Chlorinated PE	-55~+85	70	500	3.0	A	365 x 365 x 160	4.6	UL1581VW1, Style No.5310
	GHCP4002	1.0mm x 2	2.2 x 4.4 ± 0.1	170		-55~+85	140	500	6.0	A	365 x 365 x 160	7.6	UL1581VW1, Style No.5310
	GHTT4001	1.0mm x 1	5.0 ± 0.2	170	PE/PVC	-55~+85	245	500	14.0	B	470 x 470 x 180	16.4	aramid tension member
	GHTT4002	1.0mm x 2	6.0 ± 0.2	170	PE/PVC	-55~+85	420	400	21.0	B	470 x 470 x 180	23.4	aramid tension member
MH (wide bandwidth)	MH4001	1.0mm x 1	2.2 ± 0.07	160	PE	-55~+85	70	500	2.0	C	470 x 470 x 180	4.6	
	MH4002	1.0mm x 2	2.2 x 4.4 ± 0.1	160	PE	-55~+85	140	500	4.0	C	470 x 470 x 180	6.6	
BH (Heat resistant)	BH2001	0.5mm x 1	0.95 ± 0.05	250	Crosslinked PE	-55~+105	18	1000	0.81	A	365 x 365 x 160	2.8	
	BH4001	1.0mm x 1	2.18 ± 0.05	200		-55~+105	70	500	1.9	A	365 x 365 x 160	3.8	

Technical information

Structural drawing of refractive index

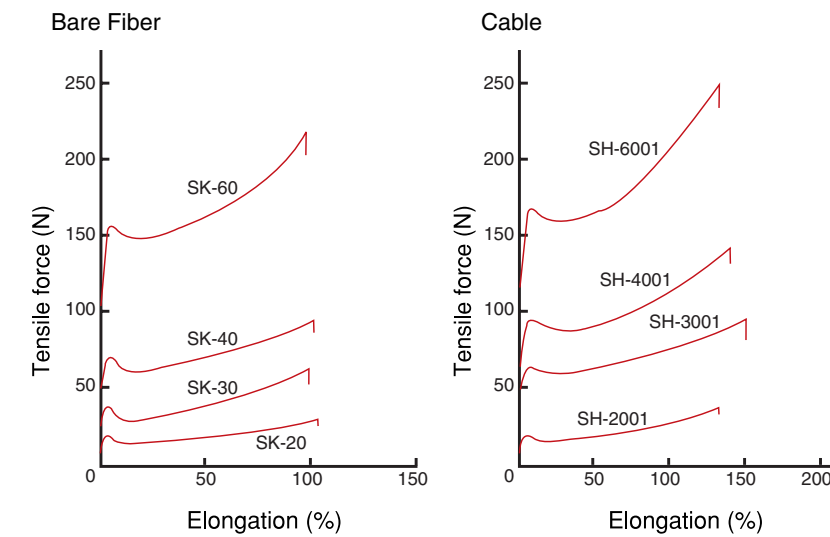


Typical loss spectra

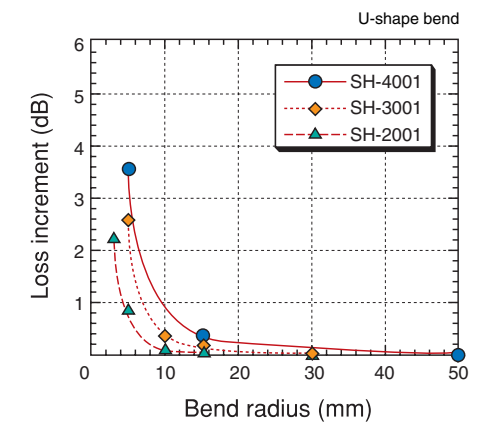


Technical information

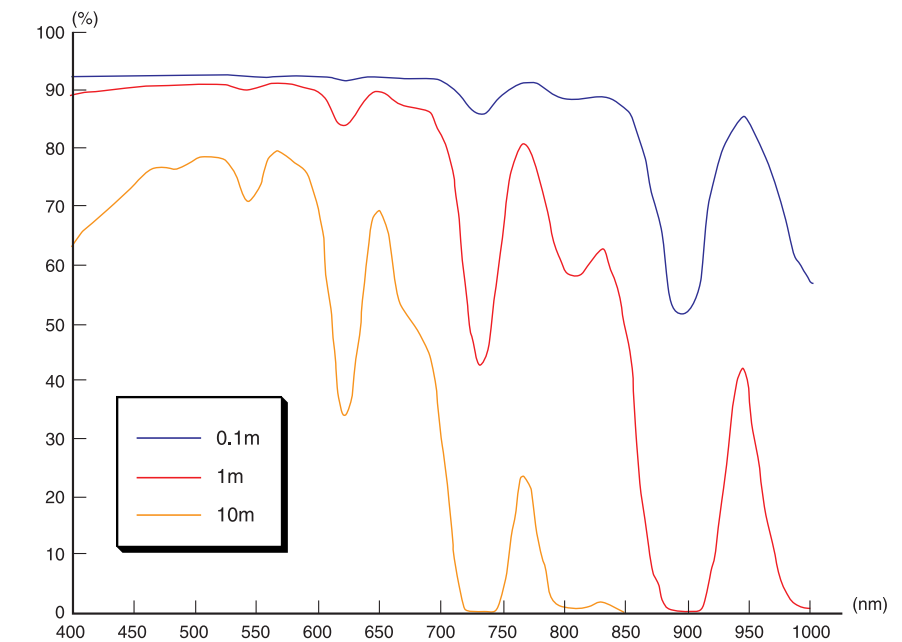
Tensile characteristics



Bending loss



Light transmission (%)



Cable standards

International standard **IEC60794-2-40** compliant POF cables

SH2001, SH2002, SH3001, SH3002, SH4001, SH4002, SHV4001, SHEV4001
GH4001, GH4002, GHV4001, GHV4002, GHEV4001, GHEV4002
MH4001, MH4002

Test conditions

test item	Applicable subclause of standard for test method	Test conditions		
		Measuring conditions	simplex cord	duplex cord
(1) Tensile performance	6.1 of JIS C6861	Elongation	5%	
(2) Crush	6.2 of JIS C6861	Crushing force	7 N/mm	14 N/mm
		Duration of application	3 min	
(3) Impact	6.3 of JIS C6861	Potential energy of impact pillar	0.2N · m	
		Diameter of impact pillar	25mm	
		Number of impacts	3	
(4) Repeated bending	6.4.1 of JIS C6861	Mass of weight	0.5kg	1.0kg
		Radius of bending	15mm	
		Number of cycles	1000	
(5) Cord bend	6.4.2 of JIS C6861	Diameter of mandrel	50mm	
		Number of turns	6	
		Number of cycles	10	
(6) Torsion	6.5 of JIS C6861	Length of specimen	250mm	—
		Mass of weight	0.5kg	
		Number of cycles	20	

Requirement

test item	Simplex		Duplex	
	0.75mm	1.0mm	0.75mm	1.0mm
(1) Tensile performance	49min.	78min.	90min.	140min.
(2) Crush	Increased loss 0.2 dB max.		Increased loss 0.2 dB max.	
(3) Impact				
(4) Repeated bending				
(5) Cord bend				
(6) Torsion				

Correspondence of IEC and JIS

	IEC	JIS
Generic specification	IEC 60793-1-1	JIS C 6820
Test methods for Mechanical Characteristics	IEC 60794-1-2	JIS C 6861
Test methods for Structural Parameters	IEC 60793-1-20	JIS C 6862
Test methods for Attenuation	IEC 60793-1-40	JIS C 6863
POF fibers	IEC 60793-2-40	JIS C 6837
POF cords	IEC 60794-2-40	JIS C 6836

* IEC- standard of International Electrotechnical Commission
* JIS - Japanese Industrial Standards

General Cautions

(1) Application

- 1) Please do not use the optical fiber Eska™ inside the human body, or for any application where it will come into direct contact with food.
- 2) When connecting to a light source with a very high brightness, such as halogen or metal halide lamps and collected sunlight, use a heat absorbent glass or cooling devices to keep the temperature from rising. Make sure to use the optical fibers within the specified operating temperature range.
- 3) When installing the optical fiber Eska™, follow the laws and regulations of the country or region where it is used.

(2) Usage Enviroment and Storage

- The optical fiber Eska™ is flammable. Make sure to use and store the optical fibers at the specified temperature range for each type.
- 1) Do not use open flames near or around the optical fiber Eska™.
 - 2) Do not use the optical fiber Eska™ in a location where there is a lot of dirt or dust. If the end face of the optical fiber gets contaminated with dust or dirt, it can reduce the optical characteristics. Also, when a very strong light is concentrated, the dust or dirt may heat up and deform the end of the optical fiber or cause it to ignite into flames.
 - 3) Place any remaining Eska™ optical fibers in a container casing for storage.

(3) Solvents and Chemicals

- 1) For cleaning of the Eska™ optical fiber, use water or a diluted neutral detergent. If a different detergent has been used, make sure to wash it off completely with running water.
- 2) Select bonding adhesives by performing adequate application testing before usage.
- 3) The surface of Eska™ optical fiber must be cleaned of all solvents and oil before bonding. Failure to do so could result in adverse effects to its optical and mechanical characteristics.

(4) Disposal

- 1) Make sure to have an industrial waste processing company with furnace facilities that can process hydrogen fluoride gas and hydrogen gas perform the disposal of the optical fiber Eska™. If you dispose of the optical fibers on your own, follow the laws of your country or region.
- 2) Burning Eska™ optical fibers will produce a corrosive and toxic hydrogen fluoride gas, and burning the vinyl chloride insulation cables will produce corrosive and toxic hydrogen chloride gas.