

# FIBER OPTIC CABLE PRODUCT

SINGLE TUBE, OUTDOOR DROP WIRE ARMORED SM SERIES



## PRODUCT DESCRIPTION

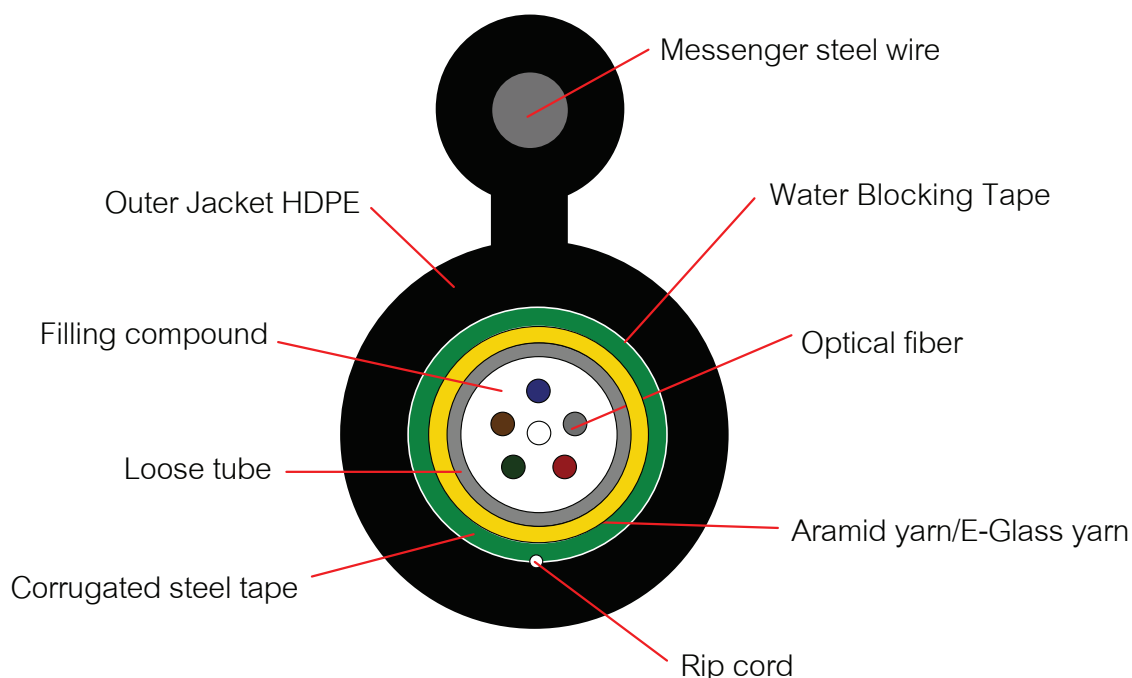
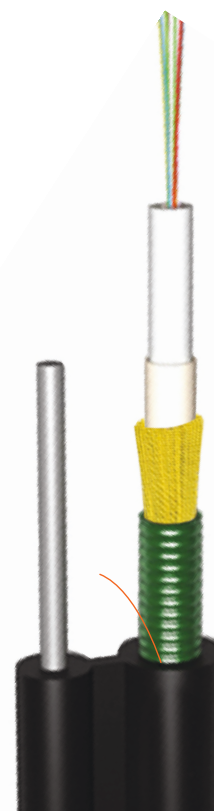
- Low attenuation, dispersion and special control of excess fiber length ensure excellent mechanical and envelopment properties.
- Filling compound and water block material validly prevent water penetration.
- Color code fiber and Loose tube in standard

## APPLICATION

- Special design for used together with outdoor and indoor
- All dielectric construction
- Multi-mode or single-mode fiber optic
- IEEE802.3, 10G Ethernet, Gigabit Ethernet, ATM, FDDI, Fiber Channel.

## STANDARD

- ATM, FDDI, FTTX, Fiber Channel, CATV, Communication
- ISO/IEC 11801:2007, ISO/IEC 11801:2011(Ed.2.2), ISO/IEC 11801:2017
- ANSI/TIA/EIA-568-B.3, ANSI/TIA-568-C.3, ANSI/TIA-568.3-D, ANSI/ICEA 640
- Telcordia (Bellcore)GR-20CORE
- ANSI/ICEA 596, ICEA696, IEC61034-2, IEC60754-2, IEC60332-1-2, IEC60793, IEC60794-1-2
- ITU G.652D, ITU-TG 657A2
- TIA/EIA-598-C (Rev.TIA/EIA-598-A), EIA-359-A.
- EN 50173-1
- IEEE802.3z, IEEE802.3ae, IEEE802.3 (LAN, Ethernet Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet 40-100 Gbps)
- RoHS compliant
- TIS 2166-2548
- Made in Thailand : MIT



## CONSTRUCTION

Structure		Parameter
Fiber count		Fibers 4/6/12/24
Loose tube		Material PBT
		No. fiber per tube 4/6/12/24
		Diameter Approx. 2.5
		Filling compound material Thixotropic jelly
		Water Blocking Tape 0.3 mm
Support wire	Material	Galvanized steel wire
	Diameter	Φ1.6 mm
Armored	Material	Corrugated steel tape
Strength member	Material	Aramid yarn /E-Glass yarn
Cable diameter	Material	HDPE with Rodent Repellent (LS2)
	Thickness	1.6 mm
Overall		Approx. 4.5
Poly Ethylene (sheath)		Approx. 9.6 ±1.0 mm
Cable sheath		HDPE
Max. tensile load	Installing	1500N
	Long term	800N

## OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
<b>Mechanical Specifications</b>		
Proof test level		≥1.0 %
Fiber curl radius		≥4.0 m
Peak coating strip force		1.3 - 8.9N
Relative humidity		Up to 90%, no frost
Maximum Span Length	Sag 0.5%	30 m.
	Sag 1.0%	80 m.
Maximum Wind Velocity		80 m and wind force 126 Km/hr
Max. Tensile load	Installation	1,800 N.
	Operation	1,000 N.
Maximum Crush resistance		4,400 N./10 cm.
Minimum bending Radius	Installation	20 x Diameter of Cable
	Operation	10 x Diameter of Cable
temperature	Installation	-40 °C - 70 °C
	Operation	-40 °C - 75 °C

## OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
<b>Optical Specifications</b>		ITU-T G.652D(SinglemodeOS2) 9/125 μm (OS2) ITU-T G651(Multimode) 62.5/125 μm , 50/125 μm
Attenuation	@1310nm	≤0.35/≤0.33dB/km
	@1383nm	≤0.35/≤0.31dB/km
	@1490nm	≤0.24db/km
	@1550nm	≤0.21/≤0.19dB/km
	@1625nm	≤0.23/≤0.20dB/km
Attenuation discontinuity		≤0.05 dB
Attenuation vs. Wavelength	1285 -1330 @1310nm	≤0.05 dB/km
	1525 -1575@1550nm	≤0.05 dB/km
Zero dispersion wavelength		1300 -1324 nm
Zero dispersion slope		≤0.092 ps/(nm <sup>2</sup> .km)
Dispersion	@1310nm	≤3.5 ps/nm.km
	@1550nm	≤18 ps/nm.km
Polarization mode dispersion(PMD)		≤0.2 ps/km <sup>1/2</sup>
Cable cutoff wavelength (λ <sub>cc</sub> )		≤1260 nm
Effective group index of reaction	@1310nm	1.4675
	@1550nm	1.4681
<b>Geometric Specifications</b>		
Mode field diameter	@1310nm	9.2 ± 0.6 μm
	@1550nm	10.4 ± 0.8 μm
Cladding diameter		125 ± 1 μm
Cladding diameter , Primary		242 ± 5 μm
Cladding diameter , Secondart		250 ± 5 μm
Cladding non -circularity		0.7 %
Coating Material	Material	UV curable acrylate
	Diameter	250 ± 5μm
Coating/Cladding concentricity error		≤12 μm
Core/Cladding concentricity error		≤0.5μm
Color Fiber Diameter		250 μm ± 15 μm (Colored)
Fiber proof-tested		0.69 GPa ( 1.0%, 100kpsi) in accordance with the optical fiber proof test by IEC 60793-1-30
Group Refractive index	@1310nm	1.4676
Group Refractive index	@1550nm	1.4682

## IDENTIFICATION COLOR CODE OF FIBER AND LOOSE TUBE

The color code of the loose tubes and the individual fibers within each loose tube shall be in accordance TIA/EIA-598-C (Rev.TIA/EIA-598-A) and EIA-359-A

NO.	FIBER COLOR	LOOSE TUBE COLOR
1	Blue	Blue
2	Orange	Orange
3	Green	Green
4	Brown	Brown
5	Slate	Slate
6	White	White
7	Red	Red
8	Black	Black
9	Yellow	Yellow
10	Violet	Violet
11	Rose	Rose
12	Aqua	Aqua

## PACKING AND DRUM

The cable is rounded on a non-returnable wooden drum. Cable Packing 4000m/reel. Both ends of cable are securely fastened to drum and sealed with a shrinkable cap to prevent ingress of moisture. The following information shall be marked on the outer sheath of the cable at an interval of about 1 meter.

- Cable type and number of optical fiber
- Manufacturer name
- Month and Year of Manufacture
- Cable length
- Logo and Thai word

The sequential number of the cable length shall be marked on the outer sheath of the cable at an interval of 1meter  $\pm$  1%

## TEST REQUIREMENTS

Item	Method	Acceptance criteria
Tensile test	- Max. tensile strength: 1200 N	-Fiber strain at maximum
IEC 60794-1-2-E1A	- Sample length: 50 meters	-Load max. 0.33 %
TIA/EIA-455-33A	- Times: 1 hour	-Attenuation increase $\leq$ 0.1dB
Crush or Compression test	- Load: 500 N	-No splits or cracks in the outer jacket
IEC 60794-1-2-E3	- Time: 10 minutes	-Attenuation increase $\leq$ 0.10 dB
TIA/EIA-455-41A	- Length: 100 mm	
Impact test	- Impact energy: 450 g	- No splits or cracks in the outer jacket
IEC 60794-1-2-E4	- Height: 1 meter	-Attenuation increase $\leq$ 0.10 dB (after the test)
TIA/EIA-455-25B	- Impact points: min.1	
	- Number of impacts: 5	
Torsion or Twist test	- 1 m cable length with 150 N weight	- No splits or cracks in the outer jacket
IEC 60794-1-2-E7	- $\pm 180^\circ$ ,10 cycles	-Attenuation increase $\leq$ 0.10 dB (after the test)
TIA/EIA-455-85A		
Repeated bending	- Radius = 20 $\times$ cable outer diameter	- No splits or cracks in the outer jacket
Cable bending Test	- 1m cable length with 150 N weight, 30 cycles	-Attenuation increase $\leq$ 0.10 dB (after the test)
IEC 60794-1-2-E6,		
TIA/EIA-455-104A		
IEC 60794-1-2-E11B		
Temperature cycling test	- Temperature step: +20 $^\circ$ C -40 $^\circ$ C+70 $^\circ$ C-40 $^\circ$ C	-Attenuation variation for reference
IEC 60794-1-2-F1	+70 $^\circ$ C+20 $^\circ$ C	value(the attenuation to be measured before
TIA/EIA-455-3A	- Time per each step: 16 hrs.	test at +20 $\pm$ 3 ) $\leq$ 0.10dB/km
	- Number of cycles: 2 cycles	
Water penetration test	- Water height: 1m	-No water leakage at the end of the sample
IEC 60794-1-2-F5	- Sample length:3m	
TIA/EIA-455-82B	- Duration of test: 24hrs	
Drip test	- Five 0.3m samples suspended vertically in a climate	-No filling compound shall drip from tubes after 24 hrs.
IEC 60794-1-2-E14	chamber, raised temperature to +70 $^\circ$ C	

## ORDER INFORMATION

F-SL-DWA9-H-06

