

FIBER OPTIC CABLE PRODUCT

MULTI TUBE, OUTDOOR, SINGLE JACKET SM



PRODUCT DESCRIPTION

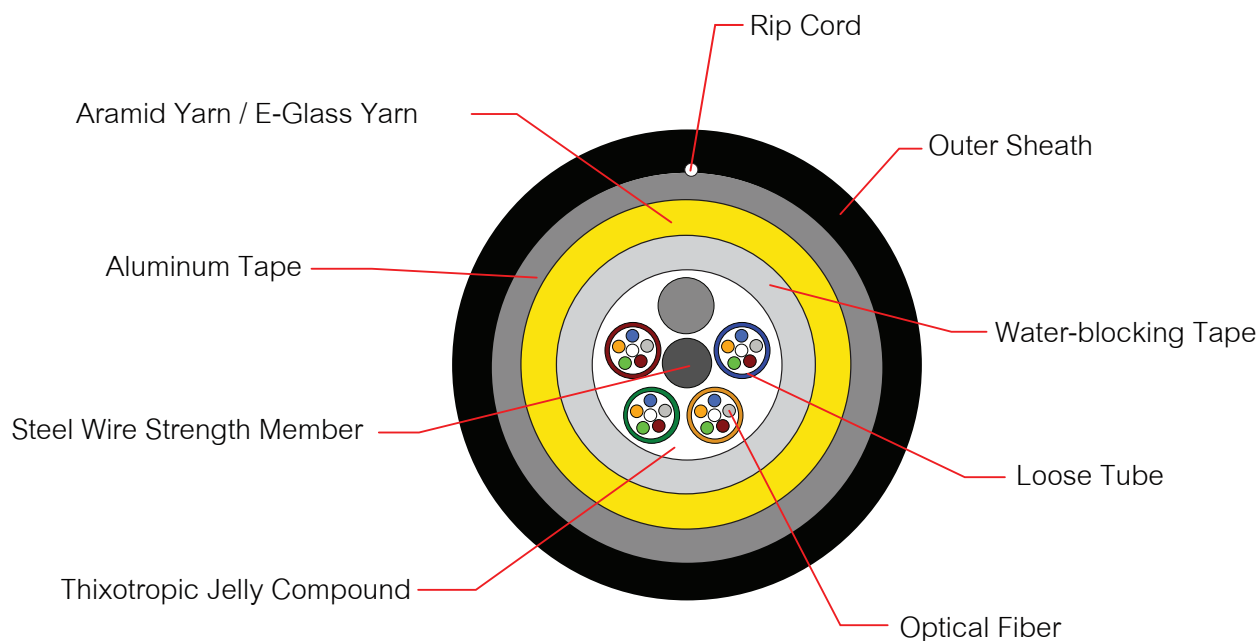
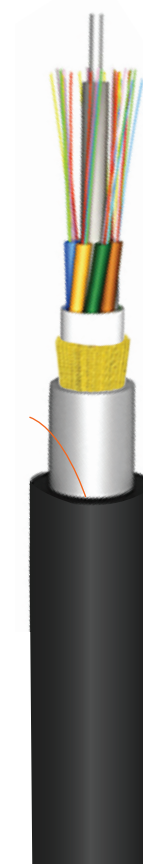
- Low attenuation and dispersion. Controlled fiber length ensures excellent mechanical and environmental performance.
- Filling compound and water-blocking material effectively prevent water ingress.
- Aramid yarn enhances tensile strength.
- Compact and lightweight design.

APPLICATION

- Designed specifically for both outdoor and indoor environments
- All-dielectric construction
- Suitable for duct or lash aerial installation
- Compatible with both single-mode and multi-mode fiber optic systems

STANDARD

- ATM, FDDI, FTTX, Fiber Channel, CATV, Communication
- ISO/IEC 11801:2007, ISO/IEC 11801:2011(Ed.2.2)
- ANSI/TIA/EIA-568-B.3, ANSI/TIA-568-C.3, ANSI/TIA-568-D.3, ANSI/ICEA 640
- Telcordia (Bellcore) GR-20-CORE, GR-409-CORE
- ANSI/ICEA 596, ICEA696, IEC61034-2, IEC60754-2, IEC60793, IEC60794-1-2
- ITU G.652D, ITU-TG 657A2
- TIA/EIA-598-C (Rev.TIA/EIA-598-A), EIA-359-A.
- IEEE802.3z, IEEE802.3ae, IEEE802.3 (LAN, Ethernet Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet 40-100 Gbps)
- RoHS compliant
- TIS 2165
- Made in Thailand (MIT)



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CONSTRUCTION

Structure / Item		Specification		
Fiber Count		6 / 12 / 24	48	96
Cores per Tube		6	12	12
Loose Tube Diameter (mm)	Multi-core	Ø 1.8	Ø 2.1	Ø 2.1
No. of Elements		5	5	5
Tube Outer Diameter (mm)		9.6	10.3	12.3
Cable Sheath (Outer Jacket)	Material	HDPE 1.5 mm with Rodent Repellent (LS2)		
	Water Blocking Tape	0.3 mm		
	Support Yarn	Aramid yarn / E-glass yarn		
	Strength Member	FRP (Fiber Reinforced Plastic)		
Outer Cable Diameter (mm)		Approx.16.7	Approx.17.4	Approx.19.9
Crush Resistance	Short term	1000 N/mm		
	Long term	100 N/mm		
Bending radius	Dynamic	20x Cable Diameter		
	Static	10x Cable Diameter		
Operating temperature	Storage	-20°C to +75°C		
	Installation	-40°C to +80°C		
Tensile Strength	Installation	2700 N		
	Long term	1000 N		

OPTICAL FIBER CHARACTERISTICS

Category	Description	Specification
Optical Specifications		ITU-T G.652D (Singlemode OS2) 9/125 µm
Attenuation	@1310nm	≤ 0.35 / ≤ 0.33 dB/km
	@1383nm	≤ 0.35 / ≤ 0.31 dB/km
	@1490nm	≤ 0.24 dB/km
	@1550nm	≤ 0.21 / ≤ 0.19 dB/km
	@1625nm	≤ 0.23 / ≤ 0.20 dB/km
(* Post-hydrogen aging performance according to IEC 60793-2-50 for B1.3 category)		
Attenuation Discontinuity		≤ 0.05 dB
Attenuation vs. Wavelength	1285 -1330	@ 1310nm ≤ 0.03 dB/km
	1525 -1575	@ 1550nm ≤ 0.02 dB/km
Zero Dispersion Wavelength		1300–1324 nm
Zero Dispersion Slope		≤ 0.092 ps / (nm².km)
Chromatic Dispersion Coefficient	@1310 nm	≤ 3.5 ps / (nm.km)
	@1550 nm	≤ 18 ps / (nm.km)
	@1625 nm	≤ 22 ps / (nm.km)
Polarization mode dispersion (PMD)		≤ 0.2 ps/km ½
Cable Cutoff Wavelength (λ _{cc})		≤ 1260 nm (TIA/EIA-455-170)
Effective Group Index of Refraction	@1310 nm	1.4676
	@1550 nm	1.4682

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Geometric Specifications		
Mode Field Diameter	@1310 nm	9.2 ± 0.6 μm
	@1550 nm	10.4 ± 0.8 μm
Cladding Diameter		125 ± 1 μm
Cladding Non-Circularity		≤ 1 %
Protective Coating Material	Material	UV curable acrylate
	Diameter	245 ± 5 μm (uncolored) , 250 ± 15 μm (Refer to EIA/TIA-455-173)
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 IEC 60793-1-30
PMD Coefficient	@ 1550 nm	250 μm ± 15 μm (Colored)
Maximum attenuation with Macrobending loss (100 turns @ 30 mm radius)	@ 1550 nm	≤ 0.10 dB
Proof test level		≥ 1.0%
Fiber curl radius		≥ 4.0m
Peak coating strip force		1.3-8.9N

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 (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

- Cable is packed on a non-returnable wooden reel, with a length of 4000 m per reel.
- Both ends shall be sealed with a shrinkable cap to prevent moisture ingress.
- The following information shall be printed on the outer sheath of the cable at approximately 1-meter intervals:
 - Cable type and number of optical fibers
 - Cable length
 - Manufacturer name
 - Logo and Thai language text
 - Month and Year of Manufacture
- The sequential meter marking shall have a tolerance of ±1% per meter.

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TEST REQUIREMENTS

Item	Test standard	Method	Acceptance Criteria
Tensile Test	IEC 60794-1-2-E1A TIA/EIA-455-33A	- Max. tensile strength: 3000 N - Sample length: 100 m - Time: 1 minute	- Fiber strain at maximum - Load max.: 0.33% - Attenuation increase ≤ 0.50 dB
Crush Test	IEC 60794-1-2-E3 TIA/EIA-455-41A	- Load: 1000 N - Time: 1 minute - Length: 100 mm	- No splits or cracks in outer jacket - No fiber break
Impact Test	IEC 60794-1-2-E4 TIA/EIA-455-25B	- Impact energy: 450 g - Height: 1 meter - Impact points: min.1 - Number of impacts: 5	- No splits or cracks in the outer jacket- Attenuation increase ≤ 0.5 dB
Cable Twist or Torsion Test	IEC 60794-1-2-E7, TIA/EIA-455-85A	- 1 m cable length with 150 N - $\pm 180^\circ$, 10 cycles	- No splits or cracks in the outer jacket - Attenuation increase ≤ 0.10 dB (after the test)
Temperature Cycling Test	IEC 60794-1-2-F1 TIA/EIA-455-3A	- Temperature step: +20 °C -40 °C+60 °C -40 °C+60 °C+20 °C - Time per each step: 12 hrs - Number of cycles: 2 cycles	- Attenuation variation for reference value (The attenuation to be measured before test at +20 $\pm$ 3 C) ≤ 0.50 dB/km
Water Penetration Test	IEC 60794-1-2-E5 TIA/EIA-455-82B	- Water height: 1 m - Sample length: 3 m - Duration of test: 24 hrs	- No water leakage at the end of the sample
Drip Test	IEC 60794-1-2-E14	- 5 $\times$ 0.3 m samples suspended vertically - Climate chamber at +70 °C for 24 hrs	- No filling compound shall drip from tubes after 24 hrs
Repeated Bending Test	IEC 60794-1-2-E6,	- Radius=20 $\times$ cable outer diameter-1m	- No splits or cracks in the outer jacket
Cable Bending Test	TIA/EIA-455-104A IEC 60794-1-2-E11B	cable length with 150N weight, 30 cycles	- Attenuation increase ≤ 0.10 dB (after the test)

ORDER INFORMATION

