

FIBER OPTIC CABLE PRODUCT

MULTI TUBE, OUTDOOR, SINGLE JACKET SM



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.
- Aramid yarns increase the tensile strength of cable
- Small outer diameter, lightness and refined structure

APPLICATION

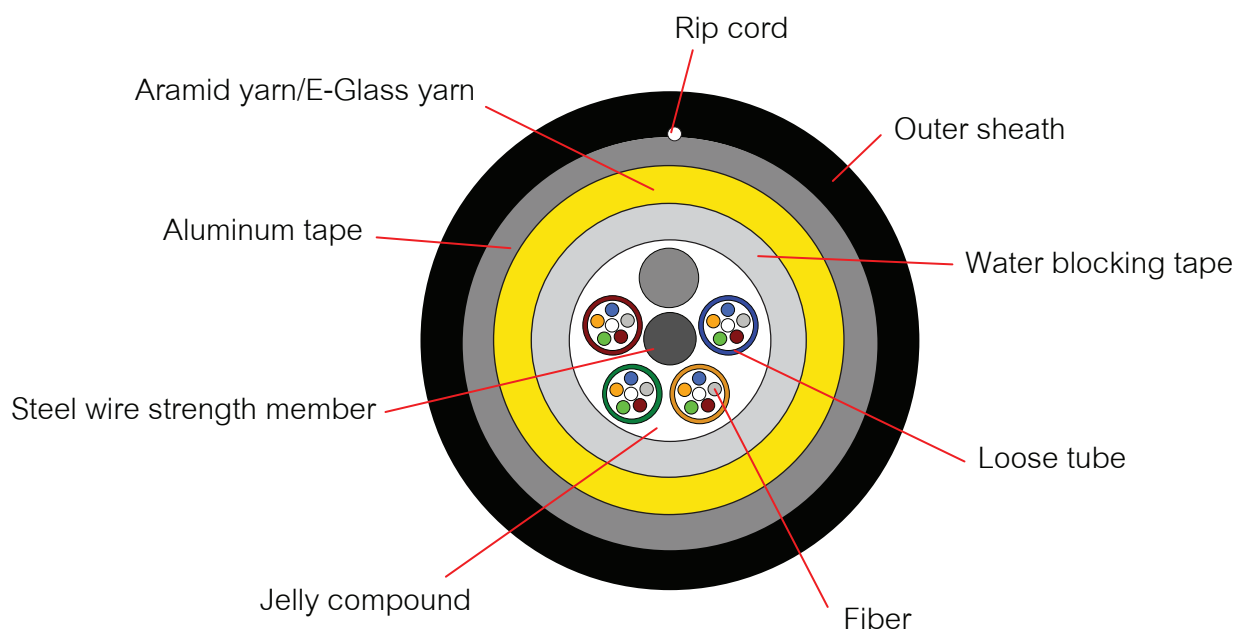
- Special design for used together with outdoor and indoor
- All dielectric construction
- Duct or Lash Aerial install
- Multi-mode or single-mode fiber optic

STANDARD

- IEEE802.3 (LAN, Ethernet Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet)
ATM, FDDI, FTTX, FiberChannel, CATV, Communication
- ANSI/TIA-568-C.3, ANSI/ICEA 596, ANSI/TIA/EIA-568-B.3 ISO/IEC 11801:2002
- Telcordia(Bellcore) GR-409-CORE
- ITU-T G.652D (Singlemode), ITU-T G.651 (Multimode), ITU-TG 657A2
- IEC 60332-1, IEC 60332-2& IEC 60332-3, IEC 60793/60794, EIA/TIA-455
- UL Listed E337497 RoHS Compliant 2002/95/EC



F-ML-OD9-XX-SJ



TISI-2165

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CONSTRUCTION

Structure		Parameter		
Fiber count	Fibers	6/12/24	48	96
Cores of per tube	--	6	12	12
Loose tube	Multi Tube	ϕ1.8 mm	ϕ2.1	ϕ2.1
Element	--	5	5	5
Cable diameter	mm	9.6	10.3	12.3
Cable sheath thickness	Material	Outer Jacket	HDPE 1.5 mm with Rodent Repellent (LS2)	
	Water blocking tape	mm	0.3	
	Support strand wire	--	Aramid yarns/E -Glass yarn	
	Strength member	mm	FRP	
Cable height	mm	Approx.16.7	Approx.17.4	Approx.19.9
	N	3000		
Crush resistance	Short term		1000N/mm	
	Long term		100N/mm	
Bending radius	Dynamic	mm	20H	
	Static	mm	10H	
Operating temperature	Storage		-20-+75°C	
	Installing		-40-+80°C	
Max. tensile load	Installing		2700N	
	Long term		1000N	

OPTICAL FIBERCHARACTERISTICS

Description		Specifications
Optical Specifications		G.652
Attenuation	@1310nm	≤0.35dB/km
	@1383nm	≤0.35db/km
	@1550nm	≤0.21dB/km
	@1625nm	≤0.23dB/km
Attenuation discontinuity		≤0.05dB
Attenuation vs. Wavelength	@1285 -1330 nm	≤0.05dB/km
	@1525 -1575nm	≤0.05dB/km
Zero dispersion wavelength		1300-1324nm
Zero dispersion slope		≤0.092ps/(nm².km
Dispersion	@1310nm	≤3.5ps/nm.km
	@1550nm	≤18ps/nm.km
Cable cutoff wavelength (λ _{cc})		≤1260nm
Effective group index of refraction	@1310nm	1.4675
	@1510nm	1.4681
Geometric Specifications		
Mode field diameter	@1310nm	9.2±0.6μm
	@1550nm	10.4±0.8μm
Cladding diameter		125±1μm
Cladding non-circularity		≤1.0%
Coating diameter		250±5μm
Coating/Cladding concentricity error		≤8μm
Core/Cladding concentricity error		≤0.8μm
Mechanical Specifications		
Proof test level		≥1.0%
Fiber curl radius		≥4.0m
Peak coating strip force		1.3-8.9N

TEST REQUIREMENTS

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

PACKING AND DRUM

The cable is rounded on a non-returnable wooden drum. 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

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

ORDER INFOMATION

PRODUCT	PART NUMBER
Outdoor Cable, Single Jacket, SM 9/125 12Core	F-ML-OD9-12-SJ
Outdoor Cable, Single Jacket, SM 9/125 24Core	F-ML-OD9-24-SJ
Outdoor Cable, Single Jacket, SM 9/125 48Core	F-ML-OD9-48-SJ
Outdoor Cable, Single Jacket, SM 9/125 96Core	F-ML-OD9-96-SJ
Outdoor Cable, Single Jacket, SM 9/125 120Core	F-ML-OD9-120-SJ