

TECHNICAL DATA SHEET

for

Single Mode Optical Fiber Cable

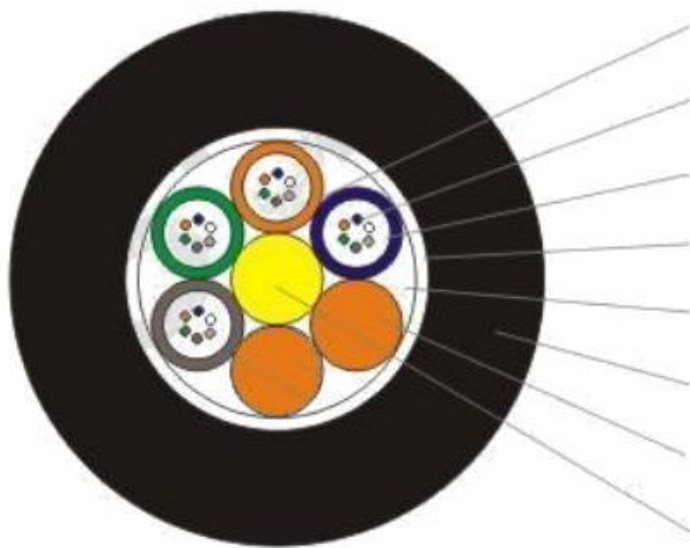
Type: Multi-tube Microduct Cable

A . Features:

- 1) Accurate fiber excess length ensures good mechanical and temperature performance.
- 2) High strength loose tube that is hydrolysis resistant and special tube filling compound ensure a critical protection of fiber.
- 3) Specially designed compact structure is good at preventing loose tubes form shrinking.
- 4) Crush resistance and flexibility.
- 5) PE sheath protects cable from ultraviolet radiation.
- 6) The features are taken to ensure the cable watertight:
 - a) Single Fiber Reinforced Plastic (FRP) as the central strength member;
 - b) 100% cable core filling;
 - c) Loose tube filling compound.

B. Structure:

The fibers, either of single-mode type, are placed in a loose tube made of high modulus pastic. The tubes are filled with a water-resistant filling compound. A Piece of Fiber reinforced Plastic (FRP) locates in the center of core as a non-metallic strength member. The tubes and the fillers are stranded around the strength member into a compact and circular cable core. The cable is completed with a polyethylene (PE) jacket.



- Loose tube
- Fiber
- filling compound
- Water blocking tape
- Cable grease
- PE sheath
- Possible filler
- strength member

C. Application:

Long distance and interoffice communication.

D. Laying mode:

Duct, Aerial

Fiber Color Identification

Fiber color and Binder color code: according to EIA/TIA 598B

No.	1	2	3	4	5	6	7	8	9	10	11	12
Fiber Color	Blue	Orage	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua

Technical parameter

Fiber count (Core)	48	
Outer diameter ($\pm 0.5\text{mm}$)	7.3	
Loose tube (mm)	1.9	
Weight (Kg/Km)	~45	
Central strength member (mm)	1.6 (FRP)	
Minimum tensile strength (N)	700	
Crushing (Min) (N/100mm)	1000	
Bending radius	Static	10 times of diameter
	Dynamic	20 times of diameter
Operating temperature range	-40°C to +60°C	
Storage / Transport temperature range	-50°C to +70°C	

The properties of single mode optical fiber (ITU-T Rec. G.652D)

Parameter	Specification
Fiber type	Single mode G.652D
Fiber material	Doped silica
Attenuation coefficient	
@ 1310 nm	≤ 0.36 dB/km
@ 1383 nm	≤ 0.36 dB/km
@ 1550 nm	≤ 0.22 dB/km
@ 1625 nm	≤ 0.30 dB/km
Point discontinuity	≤ 0.05 dB
Cable cut-off wavelength	≤ 1260 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0.093 ps/(nm ² .km)
Chromatic dispersion	
@ 1288 ~ 1339 nm	≤ 3.5 ps/(nm. km)
@ 1271 ~ 1360 nm	≤ 5.3 ps/(nm. km)
@ 1550 nm	≤ 18 ps/(nm. km)
@ 1625 nm	≤ 22 ps/(nm. km)
PMD _Q (Quadrature average*)	≤ 0.2 ps/km ^{1/2}
Mode field diameter @ 1310 nm	9.2 \pm 0.4 μm
Core/Clad concentricity error	≤ 0.5 μm
Cladding diameter	125.0 \pm 0.7 μm
Cladding non-circularity	$\leq 1.0\%$
Primary coating diameter	245 \pm 10 μm
Proof test level	100 kpsi (=0.69 Gpa), 1%
Temperature dependence 0°C~ +70°C @ 1310 & 1550nm	≤ 0.1 dB/km

* PMD_Q is a link of 20 cable sections (M) and a probability level of 0.01% (Q).

Main mechanical & environmental characteristics test

NO	ITEM	TEST METHOD	ACCEPTANCE REQUIREMENTS
1	Tensile Strength IEC 794-1-E1	- Load: 6, 000 N - Length of cable under load: 50m	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
2	Crush Test IEC 60794-1-E3	- Load: 1, 000 N/100mm - Load time: \geq 1min	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
3	Impact Test IEC 60794-1-E4	- Points of impact: 5 - Times of per point: 5 - Impact energy: 4.5Nm - Radius of hammer head: 12.5mm - Impact rate: 2sec/cycle	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
4	Repeated Bending IEC 60794-1-E6	- Bending Dia.: 20 x OD - Load: 150N - Flexing rate: 3sec/cycle - No. of cycle: 30	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
5	Torsion IEC 60794-1-E7	- Length: 1m - Load: 150N - Twist rate: 1min/cycle - Twist angle: $\pm 180^\circ$ - No. of cycle: 10	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
6	Water Penetration IEC 60794-1-F5B	- Height of water: 1m - Sample length: 3 m - Time: 24 hour	- No water shall have leaked from the opposite end of cable
7	Temperature Cycling IEC 60794-1-F1	- Temperature step: +20°C \rightarrow -40°C \rightarrow +60°C \rightarrow +20°C - Time per each step: 24 hrs - Number of cycle: 2	- Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
8	Compound Flow IEC 60794-1-E14	- Sample length: 30 cm - Temp: 70°C \pm 2°C - Time: 24 hours	- No compound flow
9	Sheath High Voltage Test	- On line test - 9t KV (t-sheath thickness)	- No sheath breakdown