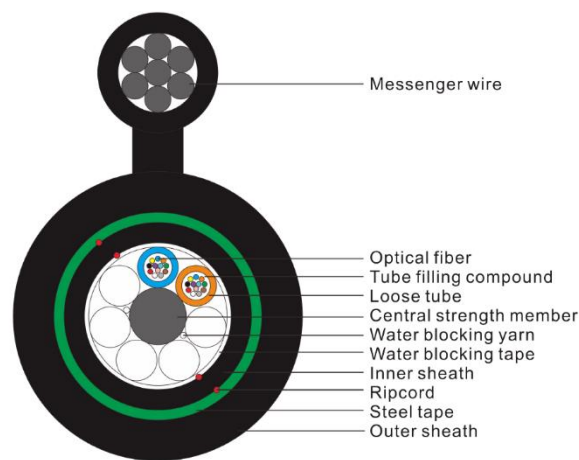


Reference

The cable offered by PROSE are designed, manufactured and tested according to the standards as follows:

ITU-T G.652	Characteristics of a single-mode optical fiber
IEC 60794-1-1	Optical fiber cables-part 1-1: Generic specification-General
IEC 60794-1-2	Optical fiber cables-part 1-2: Generic specification-Basic optical cable test procedure
IEC 60794-3	Optical fiber cables-part 3: Sectional specification-Outdoor cables

Cable Cross-section



Cable Identification

1. Fiber color code

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

2. Loose tube (LT) & filler rod (FR) color code

Fiber count	Element no.											
	1	2	3	4	5	6	7	8	9	10	11	12
12	LT	FR	FR	FR	FR	FR	FR					
24	LT	LT	FR	FR	FR	FR	FR					

* "LT" means "Loose Tube";

** "FR" means "Filler Rod".

Cable Assembly & Dimensions

Item	Contents	Value	
		12	24
Loose tube	Number	1	2
	Outer diameter (mm)	2.0±0.1	
	Thickness(mm)	0.3±0.05	
	Material	PBT	
	Water blocking	Tube filling compound	
Filler	Material	PP	
	Number	6	5
Max. Fiber counts per tube	G.652D	12	
Central strength member	Material	FRP	
	Diameter (mm)	2.8±0.1	
	PE layer diameter (mm)	-	
Water blocking	Material	Water blocking yarn & tape	
Ripcord	Number	2	
Inner Sheath	Material	PE	
	Color	Black	
	Thickness (mm)	Nominal 1.0, Minimum 0.8	
Ripcord	Number	2	
Armored	Material	Steel tape	
Messenger wire	Material	Galvanized steel wires	
	Nominal diameter(mm)	7×1.3	
	Thickness of sheath(mm)	Nominal 1.0, Minimum 0.8	
Web	Height(mm)	Approx. 2.0±0.5	
	Width(mm)	Approx. 2.5±0.5	
Outer Sheath	Material	PE	
	Color	Black	
	Thickness(mm)	Nominal 2.0, Minimum 1.8	
Cable diameter(mm) Approx.		14.2±5%	
Cable height(mm) Approx.		22.0±5%	
Cable weight(kg/km) Approx.		276±15%	

Performance of Cabled Optical Fiber

The performance of cabled optical fiber (ITU-T Rec. G.652D)

Item		Specification
Fiber type		Single mode
Fiber material		Doped silica
Attenuation coefficient	@ 1310 nm	≤ 0.35 dB/km
	@ 1383 nm	≤ 0.32 dB/km
	@ 1550 nm	≤ 0.21 dB/km
	@ 1625 nm	≤ 0.24 dB/km
Cable cut-off wavelength		≤ 1260 nm
Zero-dispersion wavelength		1300 ~ 1324 nm
Zero-dispersion slope		≤ 0.092 ps/(nm ² .km)
Micro bending Loss	@ 1550nm (100turns;Φ60mm)	≤0.05 dB
Chromatic dispersion	@ 1285 ~ 1340 nm	-3.0~3.0 ps/(nm. km)
	@ 1550 nm	≤18 ps/(nm. km)
	@ 1625 nm	≤22 ps/(nm. km)

PMD		$\leq 0.2 \text{ ps/km}^{1/2}$
Mode field diameter	@ 1310 nm	$9.2 \pm 0.4 \text{ }\mu\text{m}$
	@ 1550 nm	$10.4 \pm 0.8 \text{ }\mu\text{m}$
Core / Clad concentricity error		$\leq 0.4 \text{ }\mu\text{m}$
Coating/cladding concentricity error		$\leq 12 \text{ }\mu\text{m}$
Cladding diameter		$125.0 \pm 0.7 \text{ }\mu\text{m}$
Cladding non-circularity		$\leq 1.0 \text{ }\%$
Primary coating diameter		$245 \pm 10 \text{ }\mu\text{m}$
Proof stress		$\geq 0.69 \text{ Gpa}$

Performance of Optical Fiber Cable

- Cable bending radius: 10 x cable diameter (static)
20 x cable diameter (dynamic)
- Application temperature range
Operating temperature range : -40°C to +70°C
Storage / Transport temperature range : -40°C to +70°C
Installation temperature range : -40°C to +70°C

3. Mechanical & environmental performance test

S/N	Item	Test Method	Acceptance Condition
1	Tensile Strength IEC 794-1-21-E1	- Load: 3000N for short term - Load: 1000N for long term - Length of cable under load: 50 m - Load time: 1min	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - Fiber strain $\leq 0.6 \text{ }\%$ - No fiber break and no sheath damage.
2	Crush Test IEC 794-1-21-E3	- Load: 3000N/100mm for short term - Load: 1000N/100mm for long term - Load time: 1min	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - No fiber break and no sheath damage.
3	Impact Resistance IEC 794-1-21-E4	- Impact points: 3 - Impact number: 2 - Impact energy: 6.5J - Hammer head radius: 12.5mm	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - No fiber break and no sheath damage.
4	Repeated Bending IEC 794-1-21-E6	- Bending radius: 20 x cable diameter - Number of cycle: 25	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - No fiber break and no sheath damage.
5	Torsion IEC 794-1-21-E7	- Length: 2 m - Angle: ± 180 degree - Number of cycle: 10	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - No fiber break and no sheath damage.
6	Bend IEC 794-1-21-E11A	- Mandrel diameter: 20*D - No. of Turns: 4 - No. of cycle: 3	- Loss change $\leq 0.05 \text{ dB @1550 nm}$ - No fiber break and no sheath damage.
7	Water Penetration Test IEC 794-1-22-F5	- Height of water: 1 m - Sample length: 1 m - Test time: 1 hours	- No water shall have leaked from the opposite end of cable.

8	Temperature Cycling Test IEC 794-1-22-F1	- Temperature step: Transition from 0°C to -40°C:2hours; duration at -40°C:8 hours; Transition from -40°C to +85°C:4hours; duration at +°C:8 hours; Transition from +85°C to 0°C:2hours - Number of cycle: 5	- Loss change ≤ 0.05 dB/km @1550 nm - No fiber break and no sheath damage.
9	Compound Flow IEC 794-1-21-E14	- Sample length: 30 cm - Temp: 70°C $\pm$ 2°C - Time: 24 hours	- No compound flow

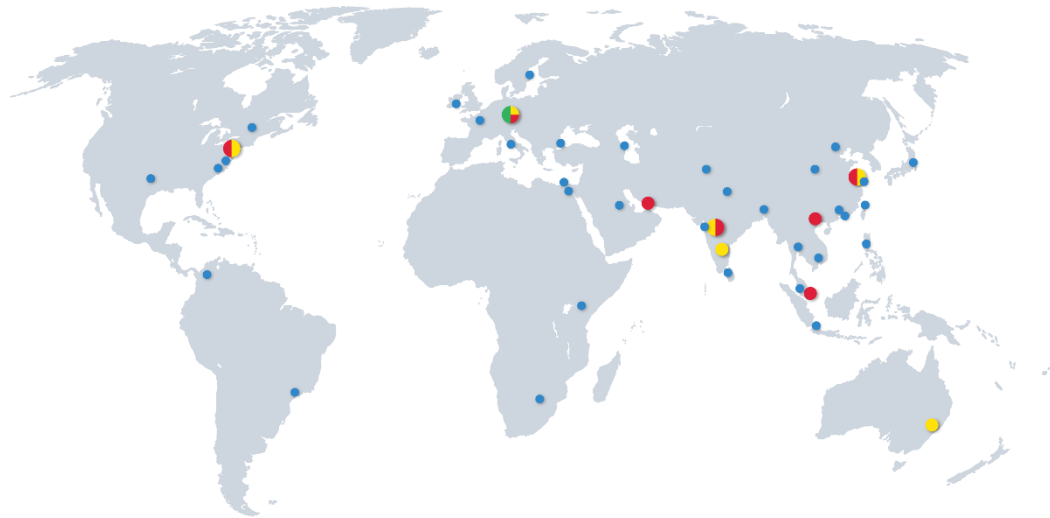
Ordering Information

Category	Cable Structure	Fiber Type	Outer Sheath Material	Fiber Count
FC: Fiber Cable	19: Outdoor, Double Jackets, Double Armored Aerial With Messenger Wire	GD: G652D M2: OM2 M3: OM3 M4: OM4 M5: OM5	3: PE	004:4F 008:8F 012:12F 016:16F 024:24F

Example:

Order Number	Fiber count	Description
FC19-GD3012	12	Cable, Outdoor, Double Jackets, Double Armored Aerial With Messenger Wire, 12F, SM G652D, PE
FC19-M33012	12	Cable, Outdoor, Double Jackets, Double Armored Aerial With Messenger Wire, 12F, MM OM3, PE
FC19-M43024	24	Cable, Outdoor, Double Jackets, Double Armored Aerial With Messenger Wire, 24F, MM OM4, PE

GLOBAL FOOTPRINT



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