

1. General

1.1 This specification covers the requirements for the supply of single-mode and multimode optical fiber cables.

1.2 The optical fiber cable comply with the requirements of this specification and generally meet any latest relevant ITU-T Recommendation

2. Fiber characteristics

2.1 G.652D

2.1.1 Geometric characteristics

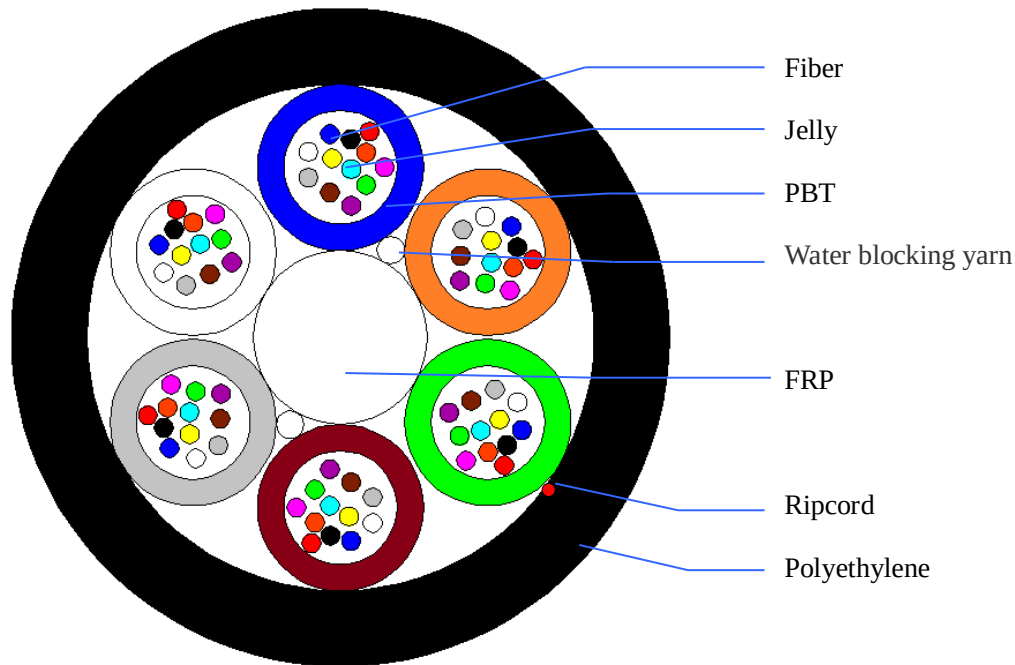
Item		Construction
Mode field diameter	At 1310nm	$9.2 \pm 0.5 \mu\text{m}$
Cladding diameter		$125 \pm 1.0 \mu\text{m}$
Core concentricity error		$\leq 0.6 \mu\text{m}$
Cladding non-circularity		$\leq 1.0\%$
Cut-off wavelength (λ_{cc}) (for cable)		$\leq 1260\text{nm}$
Cut-off wavelength (λ_c) (for fiber)		$1180\text{nm} \sim 1330\text{nm}$
Primary coating diameter	(Not included color layer)	$245 \pm 10 \mu\text{m}$
	(Included color layer)	$250 \pm 15 \mu\text{m}$
Coating-cladding concentricity error		$\leq 12.0 \mu\text{m}$
Fiber curl radius		$\geq 4\text{m}$

2.1.2 Transmission characteristics

Item		Performance
Attenuation	At 1310nm	$\leq 0.36\text{dB/km}$
	At 1550nm	$\leq 0.22\text{dB/km}$
Macro bending loss	$\Phi=60\text{mm}$, 100turns at 1550nm&1625nm	$\leq 0.05\text{dB}$
Chromatic dispersion	Within 1288~1339nm	$\leq 3.5\text{ps/nm} \cdot \text{km}$
	At 1550nm	$\leq 18\text{ps/nm} \cdot \text{km}$
Zero dispersion wavelength		$1300 \sim 1324\text{nm}$
Zero dispersion slope		$\leq 0.092\text{ps/nm}^2 \cdot \text{km}$

3 Optical Fiber Cable

3.1 Cross section



3.2 Dimension of the cable

Amount. of fiber	Max. numb. of the fiber per tube	Number of Tube Positions	Number of Active Tubes	*Nom. thickness of sheath	Overall diameter (Approx.)	Weight (Approx.)
				Mm	mm	kg/km
24	12	2	2	0.5	≤5.6	25

*Note: The minimum thickness of the sheath is 0.3mm

Fiber Counts	24
OD of Loose Tube (mm)	1.5
Max Fiber Counts/tube	12
FRP	1.6
Water Blocking Material	Water Blocking Tape/Yarn
Outer Sheath Thickness	0.5mm
Outer Sheath Material	Black HDPE
OD of Cable	5.6
Net weight (kg/km)	22
Operating temperature	- 40°C~+70°C
Store/Transport temperature	- 30°C~+70°C
Installation temperature	- 20°C~+60°C

3.3 Performance

NO	ITEM	TEST METHOD	SPECIFICATION
1	Tensile performance IEC60794-1-21-E1	- Short-term load: 1000N - Time: 1 minute	Loss change ≤ 0.15 dB@1550 nm (after test) - No sheath damage
2	Crush test IEC60794-1-21-E3	- Load: 1000 N /100mm - Time: 1 minute - Length: 100 mm	- No fiber break - No sheath damage
3	Repeated bending IEC60794-1-21-E6	- Bending radius.: $20 \times D$ - Load: 50N - Flexing rate: 3sec/cycle - No. of cycle: 35	- No fiber break - No sheath damage
4	Water penetration IEC60794-1-22-F5	- Height of water: 1m - Sample length: 3 m - Time: 24 hr	- No drip through the cable core assembly
5	Twist IEC60794-1-21-E7	- Length: 1 m - Load: 100N - Twist rate: 6sec/cycle - Twist angle: $\pm 180^\circ$ - No. of cycle: 10	- No fiber break - No sheath damage
6	Temperature Cycling IEC60794-1-22-F1	- Temperature step: $+20^\circ\text{C} \rightarrow -20^\circ\text{C} \rightarrow +70^\circ\text{C} \rightarrow +20^\circ\text{C}$ - Number of cycle: 2 turns - Time per each step: 6 hrs	- Loss change $\leq 0.05\text{dB/km@1550 nm}$ (90%) - Loss change $\leq 0.15\text{dB/km@1550 nm}$ (100%) - No sheath damage

D*: Cable diameter

3.4 Color Coding of Loose Tubes and Fibers

Fiber color code

Position	Fiber Color
1	Blue
2	Orange
3	Green
4	Brown
5	Grey
6	White
7	Red
8	Black
9	Yellow
10	Violet
11	Pink

12

Aqua

Color codes for Loose Tube

Position	Loose Tube Color
1	Blue
2	Orange
3	Green
4	Brown
5	Grey
6	White
7	Red
8	Black
9	Yellow
10	Violet
11	Pink
12	Aqua

4. Sheath marking

