Technical Specifications

For

Air Blown Mini Cable

2~24F,ITU-T G.657.A1 Fibers

Spec. No.: HYHJX 2025-008

Technical Specifications for Optical Fiber Cable

1. General

1.1 This specification covers the requirements of Micro Unit-tube blown cable to be supplied to customer for installation by blowing.

1.2 The optical fiber cable shall comply with the requirements of this specification and generally meet or better latest standards:

ITU-T G.650: Definitions and test methods for linear, deterministic attributes of single-mode fiber and cable

ITU-T G.657: Characteristics of a bending loss insensitive single mode optical fibre and cable for the access network

IEC 60794-1-2: Optical Fiber Cables, Part 2, Generic Specifications-Basic optical cable test procedures.

IEC 60794-5-10: Optical fiber cables – Part 5.10: Family specification for outdoor micro-duct optical-fiber cables, micro-ducts and protected micro-ducts for installation by blowing

IEC 60794-1-21: Optical fiber cables, Part 1-21, Generic specification - Basic optical cable test procedures - Mechanical tests methods

IEC 60794-1-22: Optical fiber cables, Part 1-22, Generic specification - Basic optical cable test procedures - Environmental test methods

2. Optical Fiber Characteristics

The optical, geometrical, mechanical and environment characteristics of the ITU-T G.657A1 optical fiber shall be accordance with below table:

Characteristics		**Specified Values**	**Units**
Optical Characteristics			
Mode field diameter	at 1310nm	8.6±0.6	μm
	at 1550nm	9.8 ± 0.8	μm
Attenuation coefficient	at 1310nm	≤0.40	dB/km
	at 1550nm	≤0.30	dB/km
Zero dispersion wavelength (λ_0)		1300 ～1324	nm
Max zero dispersion slope (S_{0max})		≤0.092	ps/(nm^2·km)
Polarization mode dispersion coefficient（PMD_Q）		≤0.2	$ps/\sqrt{km}$
Cut-off wavelength (λ_{cc})		≤1260	nm
Effective group index of refraction (N_{eff})	at 1310nm	1.466	—
	at 1550nm	1.467	—
Geometric characteristic			
Cladding diameter		125.0±1.0	μm

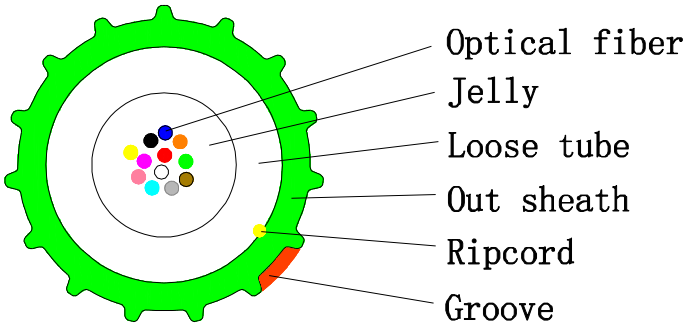
Cladding non-circularity			≤1.0	%
Coating diameter			245.0±10.0	μm
Coating-cladding concentricity error			≤12.0	μm
Coating non-circularity			≤6.0	%
Core-cladding concentricity error			≤0.8	μm
Mechanical characteristic				
Curling			≥4	m
Proof stress			≥0.69	GPa
Coating strip force	Average value		1.0-5.0	N
	Peak value		1.3-8.9	N
Macro bending loss	Φ20mm, 1 circles	at 1550nm	≤0.75	dB
		at 1625nm	≤1.5	dB
	Φ30mm, 10 circles	at 1550nm	≤0.25	dB
		at 1625nm	≤1.0	dB

3. Characteristics of Cable

3.1 Cable Construction and Parameter

Items		Descriptions					
Optical fiber	Number	2F	4F	6F	8F	12F	24F
Outer sheath	Material	Green HDPE					
Cable nominal diameter（±0.2mm）		2.5mm					2.8mm
Cable approx. weight (kg/km)		5.4kg/km					6.8kg/km
Max. tensile strength	Short time	60N					
Max. crush resistance	Short time	600N/100mm					
Minimum Bending radius	Dynamic	20 times of cable diameter					
	Static	15 times of cable diameter					
Temperature range	Installation	-10℃～+40℃					
	Storage	-30℃～+50℃					
	Operation	-20℃～+50℃					

3.2 Cross-section of Cable



4. Fiber and Loose Tube Color Identification

The individual fiber and loose tubes shall accordance with standard TIA/EIA-598-A and the color code as below.

Fiber Colors

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

One black tracer (100mm pitch)

NO.	13	14	15	16	17	18	19	20	21	22	23	24
Color	Blue	Orange	Green	Brown	Grey	White	Red	Natural	Yellow	Violet	Pink	Aqua

Loose Tube Color

Loose tube color is natural.

5. Mechanical and Environmental Test.

Item	Details
Tensile loading test	Test Method: Accordance with IEC60794-1-21-E1 Tensile force : 60N Length: 50m Holding time : 1 minutes Diameter of mandrel: 30 x cable diameter Test result: After test the fiber and cable no damage and no obvious change in attenuation
Crush / Compression test	Test Method: Accordance with IEC 60794-1-21-E3 Test Length: 100 mm Load: 600 N Holding time: 1 minutes Test result:After test additional attenuation ≤0.1dB at 1550nm. After test no sheath cracking and no fiber breakage.
Impact resistance test	Test Method: Accordance with IEC 60794-1-21-E4 Impact energy : According to Table 1 of EIA/TIA-455-25C Radius of hammer head: 12.5 mm Number of impacts: 5 cycles Test result: After test additional attenuation ≤0.1dB at 1550nm. After test no sheath cracking and no fiber breakage.
Flexing / Repeated Bending test	Test Method: Accordance with IEC 60794-1-21- E8/E6 Mass of the weight : 2 kg Bending diameter : 20 x diameter of cable Impact rate : ≤ 2 sec / cycle Number of cycles : 20 Test result: After test additional attenuation ≤0.1dB at 1550nm. After test no sheath cracking and no fiber breakage.
Twisted/ Torsion test	Test Method: Accordance with IEC 60794-1-22-E7 Sample length : 2 m Number of turn : ± 180 degrees

	Mass of the weight : 2.0 kg Number of cycles : 10 Test result: After test additional attenuation ≤0.1dB at 1550nm. After test no sheath cracking and no fiber breakage.
Temperature cycling test	Test Method: Accordance with IEC 60794-1-22-F1 Variation of temperature : -20℃ to + 50℃ Number of cycles : 2 Holding time per each step : 12 hours Test result: After test additional attenuation ≤0.1dB/km at 1550nm.
Water penetration test	Test Method: Accordance with IEC 60794-1-2-F5 Sample length: 3 m Water height : 1 m Holding time : 24 hours No water leak from end of cable.

6. Cable Marking

Unless otherwise required the sheath will be use inkjet marked at intervals of 1m, containing:

- Customer name
- Manufacture's name
- Date of manufacture
- Type and number of fiber cores
- Length marking
- Other requirements

7. Environmentally

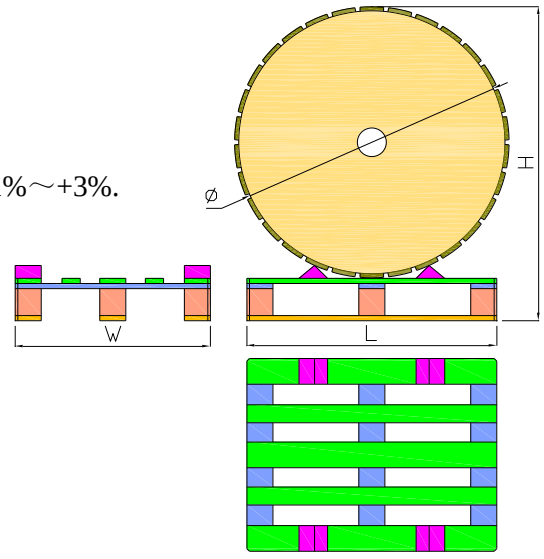
Full comply with **ISO14001, RoHS**

8. Cable Packing

Wooden or plywood drums with protection.

Standard delivery lengths are 4km, 6km with a tolerance of -1%～+3%.

Fiber Count	Drum Length（m）	Drum Size Φ×W (mm)	Packing Size L×W×H (mm)
2-12fibers	4000	Φ500×360	500×370×645
	6000	Φ540×360	540×370×705
24fibers	4000	Φ540×360	540×370×705
	6000	Φ540×540	540×550×705



——End of specifications——