

Optical Fibre Cable Technical Specification

Indoor Cable GJPFJH-12G.657A1

Yangtze Optical Fibre and Cable Joint Stock Limited Company

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1. General

1.1 Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. YOFC ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and OHS.

1.2 Reference

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

ITU-T G.657	Characteristics of a single-mode optical fibre;
TIA/EIA-455	Generic specification-Basic optical cable test procedure
ANSI/ICEA S-83-596	STANDARD FOR INDOOR OPTICAL FIBER CABLE

1.3 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty (20) years without detriment to the operation characteristics of the cable.

1.4 Application

Item	Value	
Installation temperature	-25 °C~+60 °C	
Operation temperature	-20 °C~+70 °C	
Storage temperature	-20 °C~+70 °C	
Min.Bend Radius	Without tension	10D(D: Cable diameter)
	Under tension	20D(D: Cable diameter)

2. Optical Fibre

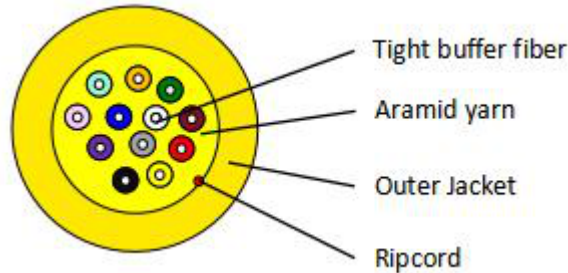
Optical properties of the SM fiber are achieved through a germanium doped silica based core with a pure silica cladding which meets ITU-T G.657A1, UV curable acrylate protective coating is applied over the glass cladding to provide the necessary maximum fiber lifetime.

Geometrical, optical, and mechanical characteristics of fiber in cable as the following table:

Category	Description	Specification	
		Before cable	After cable
Geometric characteristic	Cladding diameter	125.0 ±0.7 μm	
	Cladding non-circularity	≤ 0.7 %	
	Core-cladding concentricity error	≤ 0.5 μm	
	Coating diameter (uncoloured)	245±10 μm	
	Coating diameter (coloured)	250±15 μm	
	Coating-cladding concentricity error	≤ 12 μm	
Transmission characteristic	Attenuation Coefficient at 1310 nm	≤ 0.35 dB/km	≤ 0.4 dB/km
	Attenuation Coefficient at 1383 nm	≤ 0.35 dB/km	≤ 0.35dB/km
	Attenuation Coefficient at 1490 nm	≤ 0.24 dB/km	≤ 0.3 dB/km
	Attenuation Coefficient at 1550 nm	≤ 0.20 dB/km	≤ 0.3 dB/km
	Attenuation Coefficient at 1625 nm	≤ 0.23 dB/km	≤ 0.3 dB/km
	Mode field diameter at 1310nm	8.4~9.2μm	
	Mode field diameter at 1550nm	9.3~10.3μm	
	Cable cutoff wavelength (λ _{cc})	≤ 1260 nm	
	Zero Dispersion Wavelength (λ ₀)	1300 ≤ λ ₀ ≤ 1324 nm	
	Zero Dispersion Slope (S ₀)	≤ 0.092 ps/(nm ² .km)	
	Polarization Mode Dispersion(PMD)	≤ 0.2ps/√Km	
	Group Index of Refraction at 1310nm	1.466	
	Group Index of Refraction at 1550nm	1.467	
	Dispersion coefficient at (1285nm-1330nm)	≤ 3.5ps/(nm.km)	
	Dispersion coefficient at 1550 nm	≤ 18ps/(nm.km)	
	Dispersion coefficient at 1625 nm	≤ 22ps/(nm.km)	
Macro-bend loss (10 turns, 15mm,radius)	≤0.25 dB at 1550nm ≤ 1.0 dB at 1625nm		
Macro-bend loss (1 turns, 10mm radius)	≤0.75dB at 1550nm ≤ 1.5 dB at 1625nm		
Mechanical characteristic	Proof stress level	≥ 100kpsi (0.69Gpa)	
	Fibre curl radius	≥4 m	
Other Characteristics	Conform to IEC 60793-2-50		

3. Optical Cable

3.1 Cross Section of Cable



GJPFJH-12G.657A1
Schematic for reference only

3.2 Color code

The color code of tight buffer fiber will be identification in accordance with the following color sequence, other sequence also is available.

Tight buffer fiber color code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Violet	Pink	Aqua

3.3 Dimensions and Descriptions of Cable Constructions

The standard optical cable structure is shown in the following table, other structure and fiber count are also available according to customer requirements.

Item	Contents	Value
		12
Fiber	Color	Natural
Tight buffer	Material	LSZH
	Color	According to 3.2
	Diameter($\pm 0.05\text{mm}$)	0.9
Outer Jacket	Strength member	Aramid yarn
	Material	LSZH
	Color	Yellow(Pantone Yellow U, $\Delta E \leq 4$)
Ripcord		One
Cable diameter($\pm 0.2\text{mm}$)		6.0
Cable weight(kg/km)		34

4. Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table.

Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

No.	Items	Test Method	Requirements
4.1	Tensile performance	FOTP-33 Short term load: 1320N Long term load: 440N Sample length: $\geq 50\text{m}$ Duration: 30min	The maximum increase in attenuation is less than 0.4dB. No damage to the cable elements.
4.2	Crush	FOTP-41 Load: 1000N Duration of load: 10min	The maximum increase in attenuation is less than 0.4dB. No damage to the cable elements.
4.3	Impact	FOTP-25 Impact energy: 0.74J; Number of cycles: 2 at each of three locations separated at least 150 mm apart;	The maximum increase in attenuation less than 0.4dB during and after test; No damage to the cable elements.
4.4	Cyclic flexing	FOTP-104 Mandrel radius: 20*D Cycles: 25	The maximum increase in attenuation is less than 0.4dB. No damage to the cable elements.
4.5	Temperature cycling	FOTP-3 Sample length: at least 1000m Temperature range: -20°C~+70°C Cycles: 2 Temperature cycling test dwell time: 12hours	The maximum increase in attenuation is less than 0.4dB/km. No damage to the cable elements.
4.6	Other parameters	According to ANSI/ICEA S-83-596	

5. Packaging and Drum

5.1 Cable Sheath Marking

Unless otherwise specified, the cable sheath marking shall be as follows:

Color: Black

Contents: YOFC, the year of manufacture, the type of cable, cable number, length marking

Interval: 1 m

Outer sheath marking legend can be changed according to user's requests.

5.2 Reel Length

Standard reel length: 2 km/reel, other length is also available.

5.3 Cable Drum

The cables are packed in plywood drums.