Version GYGXH-4,8,12,24OM3 V1.0

Optical Fibre Cable Technical Specification

GYGXH-4,8,12,24OM3

U-DQ(ZN)H

Yangtze Optical Fibre and Cable Joint Stock Limited Company

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.

Cable type	Application
GYGXH-4,8,12,24OM3	Universal cable

1.2 Reference

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

ITU-T G.651.1	Characteristics of a 50/125um multi-mode graded index optical fibre cable for the optical access network
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-21	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Environmental test methods
IEC 60794-2	Optical fibre cables-part 2: Sectional specification-Indoor cables
IEC 60794-2-20	Optical fibre cables-part 2-20: Indoor cables- Family specification for multi-fibre optical distribution cables

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	-10 ºC～+50 ºC
Operation temperature	-40 ºC～+70 ºC
Storage temperature	-10ºC～+50 ºC

2. Optical Fibre

Optical properties of the MM fiber are achieved through a germanium doped silica based core with a pure silica cladding which meets ITU-T G651.1, 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	Core diameter	50 ± 2.5 μm	
	Core Non-Circularity	≤5%	
	Cladding diameter	125±1.0μm	
	Cladding non-circularity	≤ 0.6%	
	Core-cladding concentricity error	≤ 1.0 μm	
	Coating diameter (uncolored)	245±7 μm	
	Coating-cladding concentricity error	≤ 10 μm	
Transmission characteristic	Attenuation coefficient at 850 nm	≤2.4dB/km	≤ 3.5 dB/km
	Attenuation coefficient at 1300 nm	≤ 0.6dB/km	≤ 1.5 dB/km
	Overfilled bandwidth at 850nm	≥1500 MHz.km	
	Overfilled bandwidth at 1300nm	≥500 MHz.km	
	Effective mode bandwidth at 850nm	≥2000 MHz.km	
	Numerical Aperture	0.200±0.015	
	Effective Group Index of Refraction at 850nm	1.482	
	Effective Group Index of Refraction at 1300nm	1.477	
	Zero Dispersion Wavelength (λ 0)	1295-1340 nm	
	Zero Dispersion Slope (S0) 1295nm≤λ0≤1310nm	≤0.105 ps/（nm^2.km）	
	Zero Dispersion Slope (S0) 1310nm≤λ0≤1340nm	≤0.000375（1590-λ0） ps/（nm^2.km）	
	Macro-bend loss (2turns, 15mm radius)	≤0.1 dB at 850nm ≤ 0.3 dB at 1300nm	
	Macro-bend loss (2turns, 7.5mm radius)	≤0.2 dB at 850nm ≤ 0.5 dB at 1300nm	
	Proof stress level	≥100 kpsi ≥9N ≥1%	
Mechanical characteristic	Dynamic Stress Corrosion Susceptibility Parameter（n_d, typical）	20	
	Coating strip force(Typical Average value)	1.5N	
	Temperature Cycling Induced Attenuation (-60℃ to +85℃)	≤0.1 dB/km	

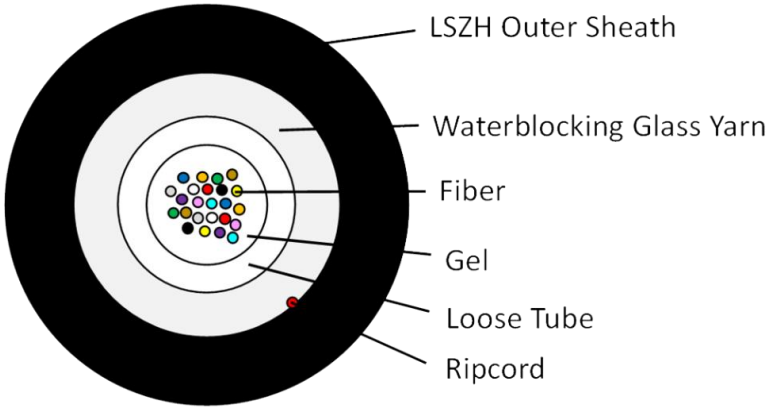
Environmental characteristic	Temperature Humidity Cycling Induced Attenuation (-10℃ to +85℃, 98% RH)	≤0.1 dB/km
	Water Immersion Induced Attenuation (23℃, for 30 days)	≤0.1 dB/km
	Damp Heat Dependence Induced Attenuation (85℃ and 85% RH, for 30days)	≤0.1 dB/km
	Dry Heat Dependence Induced Attenuation (85℃ and 85% RH, for 30days)	≤0.1 dB/km

3. Optical Cable

3.1 Technical Characteristics

- Several fibres are housed in a loose tube.
- Water blocking glass yarns are applied as strength member.
- LSZH is applied over the cable core as outer sheath.

3.2 Cross Section of Cable



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Schematic for reference only

3.3 Fibre Identification

Color Code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Purple	Pink	Aqua
	13	14	15	16	17	18
	Blue*	Orange*	Green*	Brown*	Grey*	White*
	19	20	21	22	23	24
	Red*	Natural	Yellow*	Purple*	Pink*	Aqua*

The color code of fibre will be identification in accordance with the following color sequence.

3.4 Cable Structure and Relevant Properties

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

3.4.1 Dimensions and Descriptions of Cable Constructions

Item	Contents	Value			
		4	8	12	24
Fibre	color	According to 3.3			
Loose tube	Water blocking material	Gel			
	Material	PBT&PC			
	Diameter(±0.1mm)	2.0			2.8
	Color	Natural			
Outer sheath	Strength member	Water blocking glass yarn			
	Material	LSZH			
	Color	Black(UV resistance)			
	No. of ripcord	1			
Cable diameter(mm)		5.4±0.5			6.2±0.5
Cable weight(kg/km) Approx.		38			47

3.5 Main Mechanical and Environmental Performance

Item	Value	
Tensile performance(N)	T_S：1200	T_L：900
Crush(N/100mm)	1500	
Minimum bend radius	Dynamic:20D	Static:10D
Installation temperature	-10 ºC～+50 ºC	
Operation temperature	-40 ºC～+70 ºC	
Storage temperature	-10ºC～+50 ºC	

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 1300nm.

Items	Test Method	Requirements
Tension	**IEC 60794-1-21-E1** Load: 1200N Cable length under tension: Not less than 50m. Duration of load sustain: 10 min. Velocity of transfer device: either 100 mm/min	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Crush	**IEC 60794-1-21-E3A** Load: According to 3.5 Duration of load: 10min Point: 3	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Impact	**IEC 60794-1-21-E4** Radius: 300mm Impact energy: 10J Impact points: 3 Impact number: once each point	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Torsion	**IEC 60794-1-21-E7** Sample length:1m Angles:±180° Cycles：10	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Repeated bending	**IEC 60794-1-21-E6** Bend radius: 20D number of cycles: 25 Speed:30C/min	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Temperature cycling	**IEC 60794-1-22-F1** Sample length: 1000m Temperature range:-40℃~+70℃ Cycles: 2 Dwell time: 8 hours	The change in attenuation coefficient shall be less than 0.15 dB/km.
Water penetration	**IEC 60794-1-22-F5B** Sample length: 3m Water height: 1m Times: 24H	No water leakage
Other parameters	According to **IEC 60794-1**	

5. Packaging and Drum

5.1 Cable Sheath Marking

- Unless otherwise specified, the cable sheath marking shall be as follows:
- Color: White
- Contents: YOFC, the year of manufacture, Number of fibers, Type of fiber, Roof type, length marking,etc.
- Interval：1m（+1.0%~0.0%）
- Outer sheath marking legend can be changed according to user's requests.

5.2 Reel Length

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

5.3 Cable Drum

The cables are packed in plywood drums.