

## Optical Fibre Cable Technical Specification

### **Figure 8 Aerial Cable**

### **GYFC8Y-12/24/48B1.3**

## 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
GYFC8Y-12/24/48B1.3	Figure 8 aerial installation

### 1.1 Cable Description

Optical fibres are housed in loose tubes that are made of high-modulus plastic and filled with waterproof compounds.

FRP is applied as central strength member.

Loose tubes are SZ stranded around the central strength member.

Water blocking yarn and tape are used in and over the cable core to prevent it from water ingress.

Stranding wire is used as the messenger wire.

Polyethylene sheath is applied as outer sheath.

### 1.2 Reference

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

ITU-T G.652	Characteristics of a single-mode optical fibre
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-2	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables
IEC 60794-3-20	Optical fiber cables-part 3-20: Outdoor cables-Family specification for optical self-supporting aerial communication 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-five (25) years without detriment to the operation characteristics of the cable.

## 2. Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G.652D

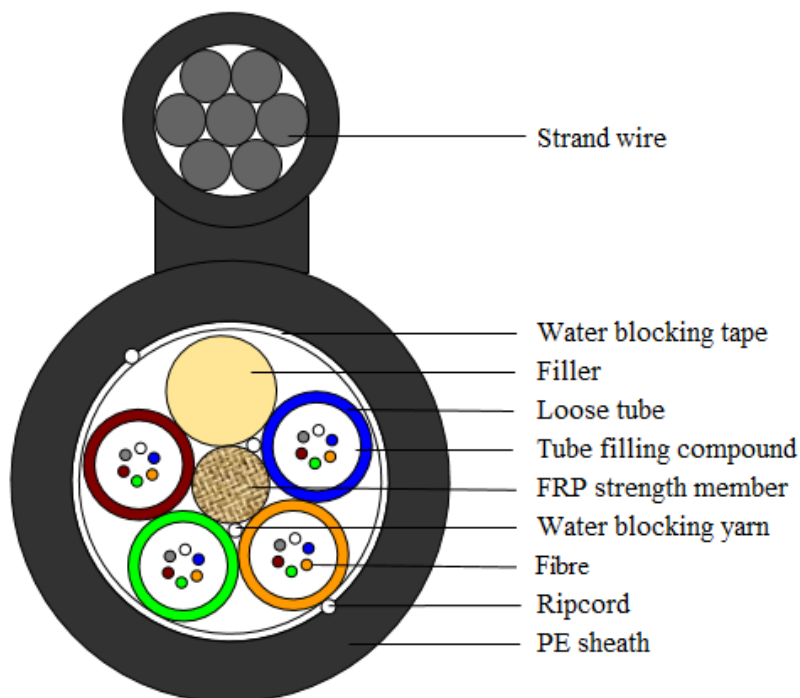
Parameters	Specification
MFD (1310nm)	9.2+/-0.4µm
MFD (1550nm)	10.4+/-0.5µm
Cladding diameter	125µm±1.0µm
Fiber diameter	245+/-7µm, with UV coating, and colored to : 250+/-15µm
Core/cladding concentricity error	≤ 0.6µm
Coating/cladding concentricity error	≤ 12.0µm
Cladding non circularity	≤ 1.0%
Cut off wavelength	$\lambda_{cc} \leq 1260\text{nm}$
Attenuation coefficient	1310nm: 0.36dB/km max after cabling
	1550nm: 0.22dB/km max after cabling
Bending-loss performance of optical fiber @ 1310nm&1550nm	≤0.05dB (100 turns around a mandrel of 50mm diameter)
Polarization mode dispersion link value	≤0.1ps/√km
Zero-dispersion wavelength	1312+/-12nm
Zero-dispersion slope	≤0.091ps/nm <sup>2</sup> .km

## 3. Optical Cable

### 3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable
- Accurate process control ensures good mechanical and temperature performance
- High quality raw material guarantees the long service life of cable

### 3.2 Cross Section of Cable



**GYFC8Y-24B1.3**

*Schematic for reference only*

### 3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence, other sequence also is available.

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

The color of the fillers will be natural.

### 3.4 Dimensions and Descriptions

The standard structure of GYFC8Y cable is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	Contents	Value		
		12	24	48
Loose tube	Number	2	4	4
	Outer diameter (mm)	1.9	1.9	2.1
Filler	Number	3	1	1
Max. fiber counts per tube	G.652D	6	6	12
Central strength member	Material	FRP		
	Diameter (mm)	1.5		
Water Blocking Material	Material	Water blocking yarn & tape		
Cable core part sheath	Material	HDPE		
	Color	Black		
	Thickness (mm)	Nominal: 1.5		
Messenger part sheath	Material	HDPE		
	Color	Black		
	Thickness (mm)	Nominal: 1.0		
Messenger wire	Material	7*1.2mm stranding wire		
Ripcord	Number	2		
Cable diameter(mm) Approx.		8.8×16.8	8.8×16.8	9.2×17.4
Cable weight(kg/km) Approx.		150	150	150

### 3.5 Main Mechanical and Environmental Performance

#### Main mechanical performance

Max. pole distance(M)	Tensile performance(N)	Crush(N/100mm)
80	5000	1500

#### Environmental and installation condition

Max. wind speed	Max. ice thickness	Initial Installation sag	Temperature
25m/s	0	1.5%	-40~+70°C

## 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.

Items	Test Method	Requirements
<b>Tension</b>	<b><u>IEC 60794-1-2-E1</u></b> Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min.	Additional attenuation: $\leq 0.1$ dB after test No damage to outer jacket and inner elements
<b>Crush</b>	<b><u>IEC 60794-1-2-E3</u></b> Load: According to 3.5 Duration of load: 1min	Additional attenuation: $\leq 0.1$ dB after test No damage to outer jacket and inner elements
<b>Impact</b>	<b><u>IEC 60794-1-2-E4</u></b> Radius: 300 mm Impact energy: 10 J Impact number: 1 Impact points: 3	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Bend</b>	<b><u>IEC 60794-1-2-E11A</u></b> Mandrel radius: $10 \cdot D$ Turns:4 Cycles:3	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Repeated bending</b>	<b><u>IEC 60794-1-2-E6</u></b> Bending radius: $20 \cdot D$ Cycles: 25 Load: 150N	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Torsion</b>	<b><u>IEC 60794-1-2-E7</u></b> Cycles:10 Length under test: 1m Turns: $\pm 180^\circ$ Load: 150N	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Water Penetration</b>	<b><u>IEC 60794-1-2-F5B</u></b> Time : 24 hours Sample length : 3m Water height : 1m	No water leakage, except the part of stranded wire
<b>Temperature cycling</b>	<b><u>IEC 60794-1-2-F1</u></b> Sample length: at least 1000m Temperature range: $-40^\circ\text{C} \sim +70^\circ\text{C}$ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.1dB/km.
<b>Other parameters</b>	According to <b><u>IEC 60794-1</u></b>	

## **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, the type of cable, cable number, length marking

Interval:  $1 \pm 0.2\%$  m

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

### **5.2 Reel Length**

Standard reel length: 2/3 km/reel, other length is also available.

### **5.3 Cable Drum**

The cables are packed in fumigated wooden drums.

### **5.4 Cable Packing**

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.