

TECHNICAL SPECIFICATION

Optical Fiber Cable

1. GENERAL

1) SCOPE

This specification covers the general requirements and performance of optical fiber cable which TGG offered including optical characteristics, electrical characteristics, mechanical characteristics, geometrical characteristics.

2) REFERENCES

The optical fiber cable which TGG offered shall be designed, manufactured and tested according to international standards as follows:

ISO 9001	Quality Management Systems
ISO 14001	Environmental Management Systems
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-21	Optical fibre cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fibre cables- part1-2-Generic specification-Basic optical cable test procedure-Environmental test methods
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables
IEC 60794-3-11	Optical fibre cables-Part 3-11: Outdoor cables-Detailed specification for duct and directly buried single-mode optical fibre telecommunication cables
EIA/TIA 598	Color code of fiber optic cables
ITU-T G.652	Characteristics of a single-mode optical fiber cable

2. OPTICAL FIBER

G. 652D Type

The optical fiber shall be made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating.

The detail data of optical fiber performance are shown in the following table:

Category	Description	Specifications
Optical Characteristics	Attenuation Coefficient: at 1310 nm Max : at 1550 nm Max :	≤ 0.35 dB/km ≤ 0.21 dB/km
	Chromatic Dispersion: at 1310nm at 1550nm	≤ 3.5 ps/nm·km ≤ 18 ps/nm·km
	Attenuation Non-uniformity: at 1310nm at 1550 nm	≤ 0.03 dB ≤ 0.03 dB
	Point Discontinuity: at 1310nm at 1550 nm	≤ 0.1 dB ≤ 0.1 dB
	Polarization Mode Dispersion (PMD)	≤ 0.2 ps/ $\sqrt{\text{km}}$
	Cable Cut off Wavelength (λ_{cc})	≤ 1260 nm
Geometrical Characteristics	Mode Field Diameter : at 1310nm at 1550 nm	9.2 ± 0.4 μm 10.4 ± 0.5 μm
	Cladding Diameter	125 ± 1.0 μm
	Coating Non-Circularity	$\leq 6.0\%$
	Cladding Non-Circularity	$\leq 1.0\%$
	Coating Diameter	242 ± 5 μm
	Mode field (Core/clad) concentricity error	≤ 0.6 μm
	Coating-Cladding Concentricity error	≤ 12 μm
	Effective Group Index of Refraction: at 1550 nm	1.467
Mechanical Characteristics	Proof Test	$\geq 1.0\%$, 1 sec. ≥ 0.69 Gpa (100kpsi)
Environmental Characteristics	Temperature Cycling Induced Attenuation: at 1550nm and 1625 nm (-60°C to +85°C)	0.05dB/km
	Macro bending Loss : at 1550nm and 1625 nm (100 turns; Φ 60 mm)	≤ 0.1 dB

3. Drawing and Datasheet of optical fiber cable

1) Cable drawing

Cable type:GYTY53	12F
	1.MDPE outer sheath
	2.Steel tape
	3.MDPE inner sheath
	4.Filler
	5.PBT Loose tube(with Jelly)
	6.Steel wire
	7.Filling compound
	8.Fiber

Cable type:GYTY53	24F
	1.MDPE outer sheath
	2.Steel tape
	3.MDPE inner sheath
	4.Filler
	5.PBT Loose tube(with Jelly)
	6.Steel wire
	7.Filling compound
	8.Fiber

2) Dimensions and Descriptions

Item	Contents	Value	
		12	24
Structure	Type	1+5	1+5
Loose tube	fibre counts/tube	6	6
	Outer diameter (mm)	2.0	2.0
Central strength member	Material	Steel wire	
	Diameter (mm)	1.5	1.5
Water blocking	Material	Jelly & Filling compound	
Armor	Material	Steel tape	
Inner&Outer Sheath	Material	MDPE	
	Color	Black	
	Inner&Outer Thickness (mm)	Nominal:0.8& 1.6	
Cable diameter(mm) Approx.		11.5	11.5
Cable weight(kg/km) Approx.		141	141

4. Fibre and Loose Tube Identification

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

Loose tubes	No.	1	2	3	4	5	6
	Color	blue	orange	green	brown	grey	white
fibres	No.	1	2	3	4	5	6
	Color	blue	orange	green	brown	grey	white

The color of the fillers will be natural.

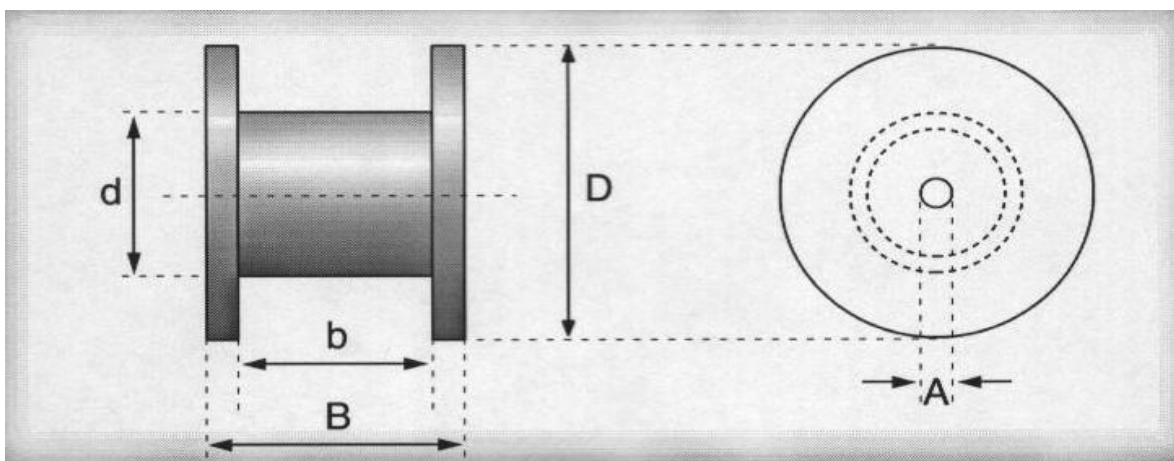
5. Mechanical, Physical and Environmental Test Characteristics

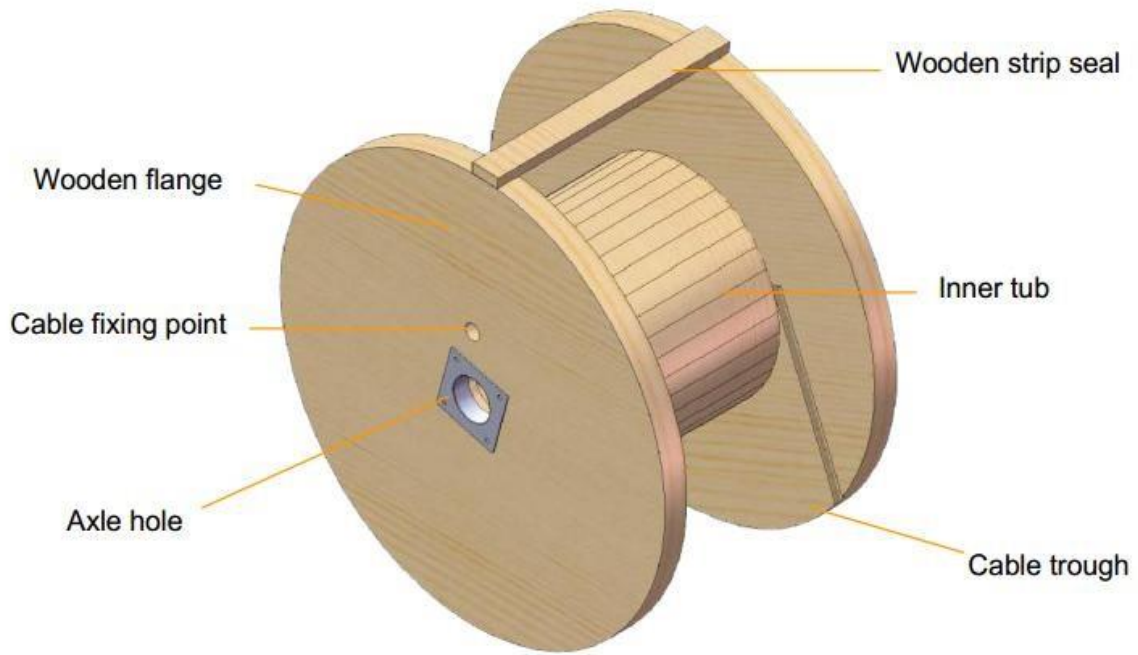
Optical fiber cable shall be accordance with applicable standard of optical fiber cable and requirement of customer. The following test items shall be carried out according to corresponding reference.

Tests of completed optical fiber cable		
1	Tension	IEC-60794(fiber strain<0.33%)
2	Crush test	IEC-60794
3	Impact test	IEC-60794
4	Repeated bending	IEC-60794
5	Torsion	IEC-60794
6	Water penetration(0.1bar/24h)	IEC-60794
7	Temperature cycling	IEC-60794
Other parameters		According to IEC 60794-1

6. PACKING AND DRUM FOR OPTICL FIBER CABLE

Optical fiber cable shall be wound on a non-returnable wooden drum or metal drum. Both ends of optical fiber cable shall be securely fastened to drum and sealed with a shrinkable cap. The required marking shall be printed with a weather-proof material on the outsides of drum according to customer's requirement.





Cable Diameter (mm)	Drum Length (m)	Drum Dimensions & Weights				
		D cm	b cm	d cm	A cm	weight kg
11.5	4000	135	61	60	8	122