® GYXTW

G652.D B1.3

1. Scope

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

Cable type	Application
GYXTW-12B1.3	Duct installation and aerial installation together with tension strand wire

1.1 Cable Description

Optical fibers are housed in the uni-tube that are made of high-modulus plastic and filled with waterproof compounds.

2 steel wires are used as strength member.

One steel tape is used in and over the cable core to protect it. Polyethylene sheath are applied as outer sheath.

1.2 Reference

The cable offered is, 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 60794-3-10	Optical fibre cables-part 3-10: Outdoor cables-Family specification for duct and direct buried optical communication 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

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 THIRTY (30) years without detriment to the operation characteristics of the cable.

2. Optical Fiber

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

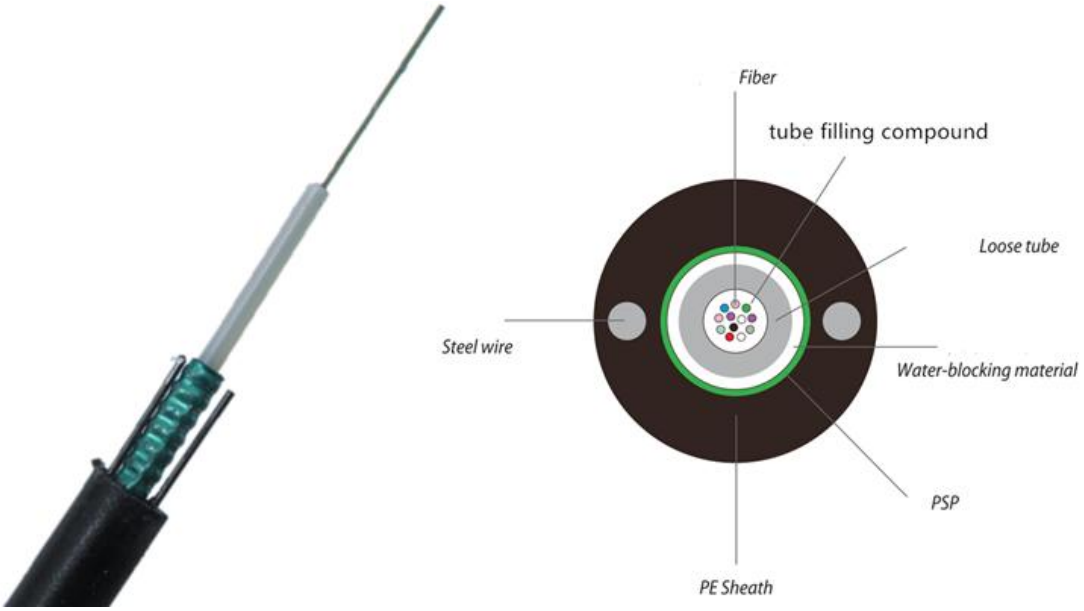
Characteristics	Conditions	Specified Values	Units
Optical characteristics			
Attenuation	1310 nm 1550 nm	<0.36 <0.22	[dB/km] [dB/km]
Chromatic Dispersion	1310 nm 1550 nm 1625 nm	≤3.5 ≤18 ≤22	[ps/(nm • km)] [ps/(nm • km)] [ps/(nm • km)]
Zero dispersion wavelength		1312±10	[nm]
Zero dispersion slope		≤0.092	[ps/(nm2 • km)]
PMD Maximum Individual Fibre Link Design Value (M=20,Q=0.01%)		 ≤0.1 ≤0.06	 [ps/km] [ps/km]
Cable cutoff wavelengthλ cc		≤1260	[nm]
Mode field diameter (MFD)	1310 nm 1550 nm	9.2±0.4 10.3±0.5	[μ m] [μ m]
Core-clad Concentricity		≤0.5	[μ m]
Cladding diameter		125±1	[μ m]
Cladding Non-circularity		≤0.8	[%]
Coating diameter		245±5	[μ m]
Proof test		≥0.69	[Gpa]

3. Optical Cable

3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibers with enough space and bending endurance, which ensure good optical property of the fibers 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



GYXTW-12B1.3
Schematic for reference only
Structure of other fibre counts refer to 3.4

3.3 Fibre and Loose Tube Identification

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

Fibre 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 tube will be white.

3.4 Dimensions and Descriptions

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

Item		Details
Fiber cores		12
Loose tube	Material	PBT
	Outer diameter (mm)	2.0±0.1
Tube filling compound		Jelly
Armoring		Corrugated steel tape
Ripcord		1pc
Strength member		Steel wire :2*0.5mm
Sheath	Thickness	1.4mm
	Material	PE
Outer diameter(mm)		7.5
Net weight (kg/km)		53

3.5 Main Mechanical and Environmental Performance

Item	Value
Tensile performance(N)	1000
Crush(N/100mm)	1000
Operation temperature:	-40℃～+70℃
Installation temperature	-40℃～+70℃
Storage temperature	-40℃～+70℃

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
Tension	**IEC 60794-1-2-E1** Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min.	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Crush	**IEC 60794-1-2-E3** Load: According to 3.5 Duration of load: 1min	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Impact	**IEC 60794-1-2-E4** Radius: 300 mm Impact energy: 10 J Impact number: 1 Impact points: 3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Bend	**IEC 60794-1-2-E11A** Mandrel radius: 10*D Turns:4 Cycles:3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Repeated bending	**IEC 60794-1-2-E6** Bending radius: 20*D Cycles: 25 Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Torsion	**IEC 60794-1-2-E7** Cycles:10 Length under test: 1m Turns: ± 180° Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Water Penetration	**IEC 60794-1-2-F5B** Time : 24 hours Sample length : 3m Water height : 1m	No water leakage.
Temperature cycling	**IEC 60794-1-2-F1** Sample length: at least 1000m Temperature range: -10℃~+70℃ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.1 dB/km.
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: the year of manufacture, the type of cable, cable number, length marking Interval:

1±0.2% m

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 fumigated wood 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.