DUCT CABLE

AR-1-CTD-PE-xxF G652D

1. GENERAL

1.1. SCOPE

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

Cable type	Application
AR-1-CTD-PE-xxF G652D	Duct installation

xx represents the fibre counts of the cable.

1.2. REFERENCE

The cable offered by ARTIC 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 60794-3-10	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 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.652.D

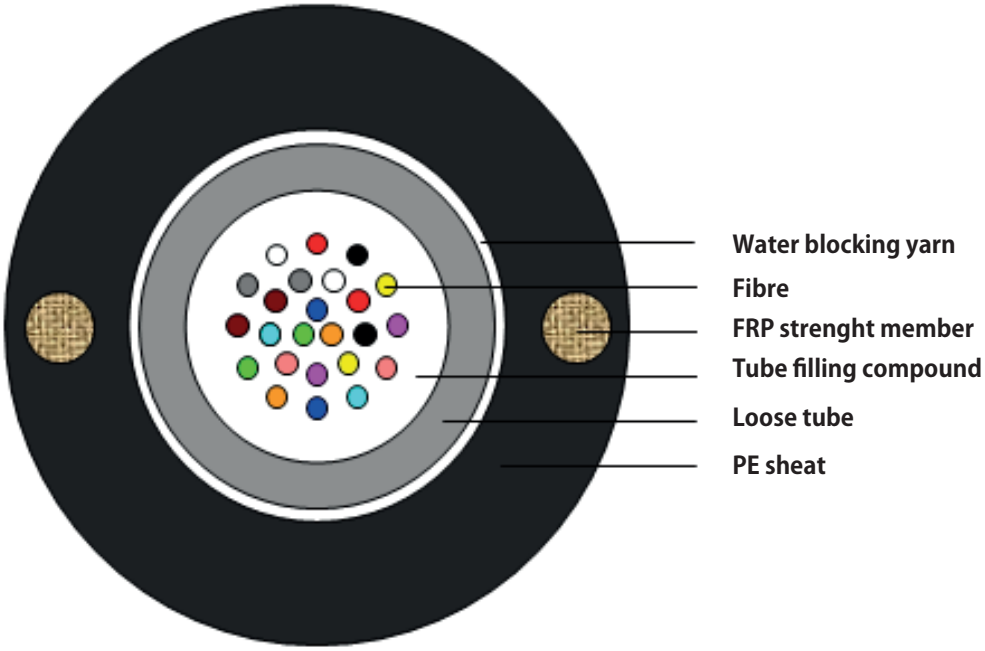
Parameter	Specification
MFD (1310nm)	8.7±9.5um
Cladding diameter	125 ±1.0um
Fiber diameter	235~255um, with UV coating, and colored to : 250±15um
Core/cladding concentricity error	≤ 0.6um
Coating/cladding concentricity error	≤ 12.0um
Cladding non circularity	≤ 1.0%
Cut off wavelength	λ cc ≤1260nm
Attenuation coefficient	1310nm: 0.35dB/km 1550nm: 0.21dB/km
Bending-loss performance of optical fiber @1310nm&1550nm	≤0.05dB (100 turns around a mandrel of 60mm diameter)
Polarization mode dispersion maximum individual fibre	≤0.2ps/ √km
Polarization mode dispersion link value	≤0.1ps/ √km
Zero-dispersion wavelength	1300~1324nm
Zero-dispersion slope	≤0.092ps/nm2*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 CABLE



3.3. 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 is also available. The color of fillers will be natural.

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
	13	**14**	**15**	**16**	**17**	**18**
	Blue with black ring	Orange with black ring	Green with black ring	Brown with black ring	Grey with black ring	White with black ring
	19	**20**	**21**	**22**	**23**	**24**
	Red with black ring	Natural	Yellow with black ring	Violet with black ring	Pink with black ring	Aqua with black ring

3.4. DIMENSIONS AND DESCRIPTIONS

The standard structure of AR-1-CTD-PE-xxF G652D cable is shown in the following table, other structure and fibre count are also available according to customer requirements.

Parameter	Contents	Value	
		2~12	24
Loose tube	Outer diameter (mm)	2.0	2.8
	Color	Natural	
Strenght member	Material	FRP	
	Type	2*1.0 mm	2*1.2 mm
Sheat	Material	MDPE	
	Thickness (mm)	Nominal: 2.0	Nominal: 2.2
	Color	Black	
Cable diameter(mm) Approx.		6.2	7.4
Cable weight(kg/km) Approx.		35	45

3.5. MAIN MECHANICAL AND ENVIRONMENTAL PERFORMANCE

Item	Value
	2~24
Tensile performance(N)	400
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
Repeated Bending	**IEC 60794-1-2-E6** Bending radius: 20*D Cycles: 25 Load: 150 N	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: 150 N	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:-40 ºC~+70 ºC Cycles:2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.05 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: ARTIC, 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 LENGHT

Standard reel length: 2/3/4 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.