



**SINGLE JACKET ARMORED
ANTI RODENT CABLE**

AR-1FDSPE-xxF-G652D

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

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-1FDSPE-xxF-G652D	Direct burial

xx represents the fiber count 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.652D	Characteristics of a single-mode optical fibre ARTIC
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.

1.4 Application

Item	Value
Operation temperature	-40 °C~+70 °C
Installation temperature	-30 °C~+60 °C
Storage temperature	-40 °C~+70 °C
Static bending radius	10 times the cable diameter
Dynamic bending radius	20 times the cable diameter

2. Optical Fibre

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

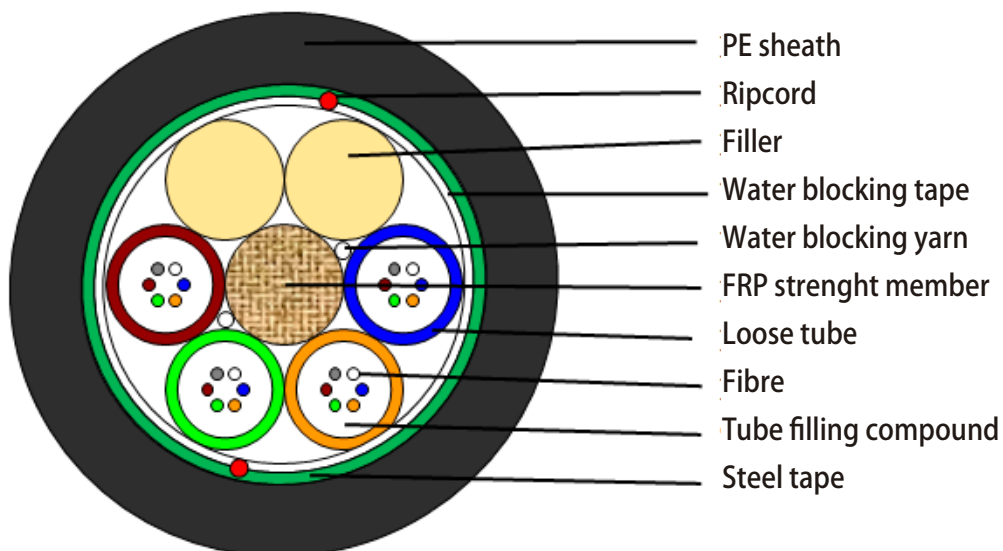
Parameter	Specification
MFD (1310nm)	$9.1 \pm 0.4 \mu\text{m}$
MFD (1550nm)	$10.4 \pm 0.5 \mu\text{m}$
Cladding diameter	$125 \pm 1.0 \mu\text{m}$
Fiber diameter	$245 \pm 10 \mu\text{m}$, with UV coating, and colored to : $250 \pm 15 \mu\text{m}$
Core/cladding concentricity error	$\leq 0.6 \mu\text{m}$
Coating/cladding concentricity error	$\leq 12.0 \mu\text{m}$
Cladding non circularity	$\leq 1.0\%$
Cut off wavelength	$\lambda_{cc} \leq 1260 \text{nm}$
Attenuation coefficient	1310nm: 0.35dB/km 1550nm: 0.21dB/km
Bending-loss performance of optical fiber @1550nm&1625nm	$\leq 0.05 \text{dB}$ (100 turns around a mandrel of 60mm diameter)
Polarization mode dispersion link value	$\leq 0.1 \text{ps/km-}1/2$
Zero-dispersion wavelength	$1300 \pm 1324 \text{nm}$
Zero-dispersion slope	$\leq 0.092 \text{ps/nm}^2 \cdot \text{km}$

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



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.

	1	2	3	4	5	6
Color code	 Blue	 Orange	 Green	 Brown	 Grey	 White
	7	8	9	10	11	12
	 Red	 Black	 Yellow	 Violet	 Pink	 Aqua

3.4 Dimensions and Descriptions

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

Item	contents	Value				
		12/24	48/72	96	120	144
Loose tube	Number	2/4	4/6	8	10	12
	Outer diameter	1.8	2.1	2.1	2.1	2.1
Filler	Number	4/2	2/0	0	0	0
Max. fiber count per tube	G. 652D	6	12	12	12	12
Central strength member	Material	FRP				
	Diameter (mm)	2.0	2.25	2.6	2.6	2.6
	PE layer diameter (mm)	-	-	3.5	4.8	6.1
Water barrier	Material	Water blocking yarn & tape				
Armor	Material	Steel tape				
Sheath	Material	HDPE				
	Color	Black				
	Thickness (mm)	Nominal: 1.8				
Ripcord	Number	2				
	Color	Red				
Cable diameter (mm) Approx.		11.5	12.3	13.4	14.8	16.0
Cable weight (kg/km) Approx.		120	130	160	190	220

3.5 Main Mechanical and Environmental Performance

Item	Tension (N)	Crush (N/100mm)	
		Short term	Long term
12/24	1800	1500	750
48/72	2000	1500	750
96	2400	1500	750
120/144	2700	1500	750

4. Main 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.

Item	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: ≤ 0.05 dB 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: ≤ 0.05 dB 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: ≤ 0.1 dB No damage to outer jacket and inner elements
Repeated bending	IEC 60794-1-2-E6 Bending radius: $20 \cdot D$ - Cycles: 25 Load: 150N	Additional attenuation: ≤ 0.05 dB No damage to outer jacket and inner elements
Torsion	IEC 60794-1-2-E7 Cycles:10 Length under test: 1m Turns: $\pm 180^\circ$ - Load: 150N	Additional attenuation: ≤ 0.1 dB 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: $-40^\circ\text{C} \sim +70^\circ\text{C}$ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.05 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 Length

Standard reel length: 2/4 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.