
# AERIAL CABLE

## AR-1FADPE-ADSS
## 120M 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-1FADPE-ADSS-120M xxF-G652D | Self-supporting aerial installation |

120 represents the span.
xx represents the fibre count.

## 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 |
| 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 60794-4-20 | Aerial optical cables along electrical power lines – Family specification for ADSS (All Dielectric Self Supported) optical 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 ºC～+70 ºC |
| Installation temperature | -30 ºC～+60 ºC |
| Storage temperature | -40 ºC～+70 ºC |
| 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

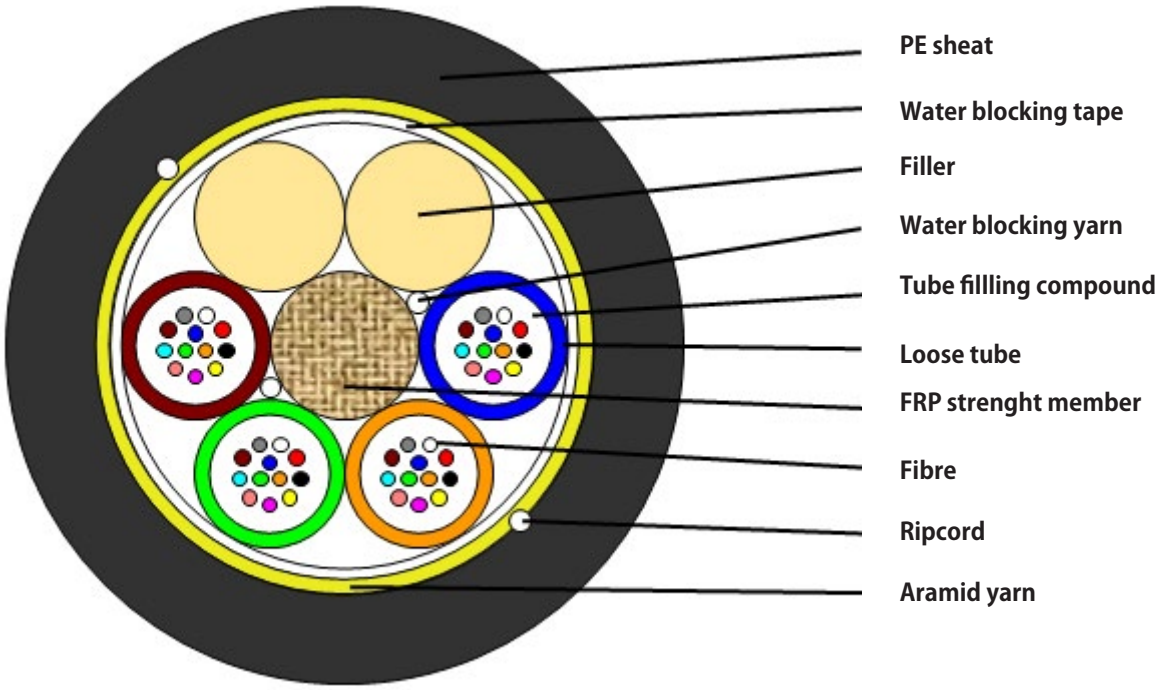
| Parameter | Specification |
|---|---|
| MFD (1310nm) | 9.1±0.4um |
| MFD (1550nm) | 10.3±0.5um |
| Cladding diameter | 125 ±1.0um |
| Fiber diameter | 245±10um, with UV coating, and colored to : 250±15um |
| Core/cladding concentricity error | ≤ 0.6um |
| Coating/cladding concentricity error | ≤ 12.0um |
| Cladding non circularity | ≤ 1% |
| Cut off wavelength | λ cc ≤1260nm |
| Attenuation coefficient | 1310nm: 0.35dB/km<br>1550nm: 0.21dB/km |
| Bending-loss performance of optical fiber @1550nm&1625nm | ≤0.05dB (100 turns around a mandrel of 60mm diameter) |
| 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.

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 |

## 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.

| Parameter | Contents | Value | | | | | |
|---|---|---|---|---|---|---|---|
| | | 6/12 | 24/36 | 48 | 72 | 96 | 144 |
| Loose tube | Fiber counts/tube | 1/2 | 4/6 | 4 | 6 | 8 | 12 |
| | Outer diameter (mm) | 2.1 | 2.1 | 2.4 | 2.4 | 2.4 | 2.4 |
| Filler | Number | 5/4 | 2/0 | 2/0 | 0 | 0 | 0 |
| Max. fiber count per tube | G.652D | 6 | 6 | 12 | 12 | 12 | 12 |
| Central strength member | Material | FRP | | | | | |
| | Diameter (mm) | 2.25 | 2.25 | 2.6 | 2.6 | 3.0 | 3.5 |
| | PE layer diameter (mm) | - | - | - | - | 4.2 | 7.2 |
| Water barrier | Material | Water blocking yarn & tape | | | | | |
| Peripheral strength member | Material | Aramid yarn | | | | | |
| Sheat | Material | HDPE | | | | | |
| | Color | Black | | | | | |
| | Thickness (mm) | Nominal：1.5 | | | | | |
| Ripcord | Number | 2 | | | | | |
| | Color | White | | | | | |
| Cable diameter(mm) Approx. | | 10.2 | 10.2 | 11.0 | 11.0 | 12.6 | 15.6 |
| Cable weight(kg/km) Approx. | | 80 | 80 | 95 | 95 | 125 | 190 |

## 3.5. MAIN MECHANICAL AND ENVIRONMENTAL PERFORMANCE

**Main mechanical performance**

| Item | Span (M) | Tension (N) | Crush(N/200mm) | |
|---|---|---|---|---|
| | | | Short term | Long term |
| 6/12 | 120 | 2000 | 1500 | 750 |
| 24/36 | | 2000 | 1500 | 750 |
| 48 | | 2500 | 1500 | 750 |

| Item | Span (M) | Tension (N) | Crush(N/200mm) | |
|---|---|---|---|---|
| | | | Short term | Long term |
| 72 | 120 | 2500 | 1500 | 750 |
| 96 | | 3000 | 1500 | 750 |
| 144 | | 3500 | 1500 | 750 |

**Environmental and installation condition**

| Max. wind speed | Max. ice thickness | Initial Installation sag | Temperature |
|---|---|---|---|
| 25 m/s | 0 | 1.5% | -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**<br>Load:According to 3.5<br>Sample length: Not less than 50m.<br>Duration time: 1min. | Additional attenuation: ≤0.05dB after test<br>No damage to outer jacket and inner elements |
| **Crush** | **IEC 60794-1-2-E3**<br>Load: According to 3.5<br>Duration of load: 1min | Additional attenuation: ≤0.05dB after test<br>No damage to outer jacket and inner elements |
| **Impact** | **IEC 60794-1-2-E4**<br>Radius: 300 mm<br>Impact energy: 10 J<br>Impact number: 1<br>Impact points: 3 | Additional attenuation: ≤0.1dB<br>No damage to outer jacket and inner elements |
| **Repeated Bending** | **IEC 60794-1-2-E6**<br>Bending radius: 20*D<br>Cycles: 25<br>Load: 150 N | Additional attenuation: ≤0.05dB<br>No damage to outer jacket and inner elements |
| **Torsion** | **IEC 60794-1-2-E7**<br>Cycles:10<br>Length under test: 1m<br>Turns: +/-180°<br>Load: 150 N | Additional attenuation: ≤0.1dB<br>No damage to outer jacket and inner elements |

| | | |
|---|---|---|
| **Water Penetration** | **IEC 60794-1-2-F5B**<br>Time : 24 hours<br>Sample length : 3m<br>Water height : 1m | No water leakage |
| **Temperature cycling** | **IEC 60794-1-2-F1**<br>Sample length: at least 1000m<br>Temperature range: -40 ºC~+70 ºC<br>Cycles:2<br>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 ±0.2%

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

## 5.2 REEL LENGHT

Standard reel length: 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.