



AERIAL CABLE ANTI RODENT DIELECTRIC

AR-1FATDPE-ADSS-RP-120M-96F
G652D + 8F G655

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

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-1FATDPE-ADSS-RP-120M-96F G652D + 8F G655	Self-supporting aerial installation

120 represents the span.

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
ITU-T G.655	Characteristics of a non-zero dispersion-shifted single-mode optical fibre and cable
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-21	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fiber 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 60794-3-20	Optical fiber cables-part 3-20: Outdoor cables-Family specification for optical self-supporting aerial communication 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
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

Category	Description	Specification
Geometrical Characteristics	Cladding diameter	$125.0 \pm 1.0 \mu\text{m}$
	Cladding non-circularity	$\leq 1.0 \%$
	Core concentricity error	$\leq 0.6 \mu\text{m}$
	Coating diameter	235~255 μm (Before Colored)
	Coating/cladding concentricity error	250+/-15 μm (Colored)
Optical Characteristics	Mode field diameter at 1310 nm	$\leq 12.0 \mu\text{m}$
	Attenuation at 1310 nm	8.7 ~ 9.5 μm
	Attenuation at 1550 nm	$\leq 0.36 \text{ dB/km}$
	Point discontinuity at 1310nm and 1550nm	$\leq 0.22 \text{ dB/km}$
	Zero dispersion wavelength	$\leq 0.05 \text{ dB}$
	Zero dispersion slope	1300 ~ 1324 nm
	Cable cut-off wavelength (λ_{cc})	$\leq 0.092 \text{ ps}/(\text{nm}^2 \cdot \text{km})$
	Polarization mode dispersion individual fiber	$\leq 1260 \text{ nm}$
	Polarization mode dispersion design link value (M=20, Q=0.01%)	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$ $\leq 0.1 \text{ ps}/\sqrt{\text{km}}$
	Macro-bend loss (100 turns, 30mm radius)	1550&1625nm: $\leq 0.05 \text{ dB}$
Mechanical Characteristics	Proof stress level	$\geq 100 \text{ kpsi}$ (0.69 GPa)
	Coating strip force (peak value)	1.3~8.9N
	Dynamic Fatigue Parameter (nd)	≥ 20
	Fiber curl (Radius)	$\geq 2 \text{ m}$

Optical Fibres supplied in this specification meet the requirements of ITU-T G.655

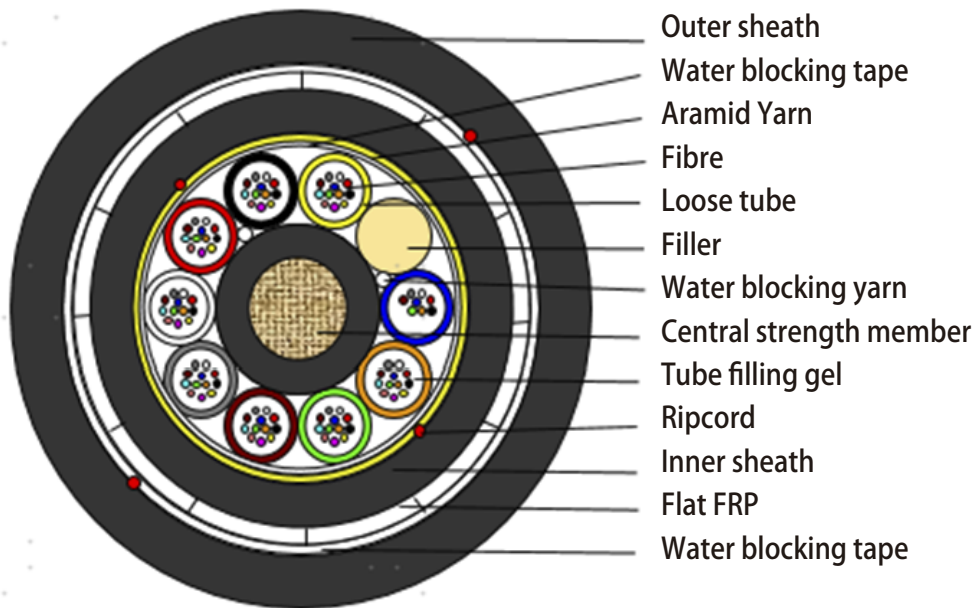
Category	Description	Specification
Geometrical Characteristics	Cladding diameter	$125.0 \pm 1.0 \mu\text{m}$
	Cladding non-circularity	$\leq 1.0 \%$
	Core concentricity error	$\leq 0.6 \mu\text{m}$
	Coating diameter	$245 \pm 10 \mu\text{m}$ (Before Colored) $250 \pm 15 \mu\text{m}$ (Colored)
Optical Characteristics	Coating/cladding concentricity error	$\leq 12.0 \mu\text{m}$
	Mode field diameter at 1550 nm	$9.1 \sim 10.1 \mu\text{m}$
	Attenuation coefficient at 1550nm	$\leq 0.24 \text{ dB/km}$ (after cable)
	Point discontinuity at 1550nm	$\leq 0.05 \text{ dB}$
	Zero-dispersion wavelength	$\leq 1520 \text{ nm}$
	Dispersion slope at 1550nm	$\leq 0.084 \text{ ps}/(\text{nm}^2 \cdot \text{km})$
	Cable cut-off wavelength (λ_{cc})	$\leq 1450 \text{ nm}$
	Polarization mode dispersion individual fiber	$\leq 0.2 \text{ ps}/\sqrt{\text{km}}$
	Polarization mode dispersion design link value (M=20, Q=0.01%)	$\leq 0.1 \text{ ps}/\sqrt{\text{km}}$ 1550&1625nm: $\leq 0.05 \text{ dB}$
	Macro-bend loss (100 turns, 30mm radius)	$\geq 100 \text{ kpsi}$ (0.69 GPa)
Mechanical Characteristics	Proof stress level	$1.3 \sim 8.9 \text{ N}$
	Coating strip force (peak value)	≥ 20
	Dynamic Fatigue Parameter (nd)	$\geq 2 \text{ m}$
	Fiber curl (Radius)	

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



AR-1FATDPE-ADSS-RP-120M-96F G652D + 8F G655

Schematic for reference only

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. The color of the tube will be natural.

	1	2	3	4	5	6
Color code	● Blue	● Orange	● Green	● Brown	● Grey	○ White
	● Red	● Black	● Yellow	● Violet	● Pink	● Aqua
Tube Color code	1 (8G655)	2 (12G652D)	3 (12G652D)	4 (12G652D)	5 (12G652D)	6 (12G652D)
	● Blue	● Orange	● Green	● Brown	● Grey	○ White
	7 (12G652D)	8 (12G652D)	9 (12G652D)			
	● Red	● Black	● Yellow			

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
		8G655+96G652D
Structure	Type	1+6
Loose tube	Max Fiber counts/tube	9
	Outer Diameter (mm)	2.4
Central Strength member	Material	FRP
	Diameter (mm)	3.5
	PE layer diameter (mm)	5.6
Water Barrier	Material	Water blocking yarn & tape
Additional strength member	Material	Aramid Yarn
Inner sheath	Material	HDPE
	Color	Black
	Thickness (mm)	Minimum: 1.0
Armor (anti rodent)	Material	Flat FRP
	Diameter (mm)	Nominal: 1.0
Outer sheath	Material	HDPE
	Color	Black
	Thickness (mm)	Minimum:1.5
Ripcord	Number	2+2
Cable diameter(mm) Approx.		18.6
Cable weight(kg/km) Approx.		313

3.5 Mail Mechanical and Environmental Performance

Main mechanical performance

Item	Tension (N)		Crush (N/100mm)	
	Short term	Long term	Short term	Long term
48	8000	3000	4000	2000

Environmental and installation condition

Max. pole distance (M)	Max. wind speed	Max. ice thickness	Initial Installation sag	Temperature
120	27m/s	0	1.0%	-40 °C~+70 °C

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 60794-1-21-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 60794-1-21-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 60794-1-21-E4 Radius: 300 mm. Impact energy: 4.5J Impact number: 1. Impact points: 3	Additional attenuation: ≤ 0.05 dB No damage to outer jacket and inner elements.
Bend	IEC 60794-1-21-E11A Bending radius: $10 \cdot D$ Turns: 4 Cycles: 3	Additional attenuation: ≤ 0.05 dB No damage to outer jacket and inner elements.
Repeated bending	IEC 60794-1-21-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 60794-1-21-E7 Cycles:10. Length under test: 1m Turns: $\pm 180^\circ$. Load: 150N	Additional attenuation: ≤ 0.05 dB No damage to outer jacket and inner elements.
Water Penetration	IEC 60794-1-22-F5B Time : 24 hours. Sample length : 3m. Water height : 1m	No water leakage.
Temperature cycling	IEC 60794-1-22-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.
- Content: ARTIC, the year of manufacture, the type of cable, cable number, length marking.
- Interval: 1m.
- 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.