

FIGURE 8

AERIAL CABLE

CS-SWPE-0xx-S2-BK

1. General

1.1 Scope

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

APPLICATIONS

- Self-supporting aerial installation

1.2 Reference

The cable offered by Fibre Systems is 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 60794-1-21	Optical fibre cables - part 1-2 - Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fibre cables - part 1-2 - 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 fibre cables- part 3-20: Outdoor cables-Family specification for self-supporting aerial 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.

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

1.4 Application

ITEM	VALUE
Operation temperature	-40°C~+70°C
Installation temperature	-40°C~+70°C
Storage temperature	-40°C~+70°C (Short term 85 °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 (1310 nm)	8.7~9.5 μ m
Cladding diameter	125 $\pm$ 0.7 μ m
Fibre diameter	235~255 μ m, with UV coating, and coloured to: 250 $\pm$ 15 μ m
Core/cladding concentricity error	$\leq$ 0.6 μ m
Coating/cladding concentricity error	$\leq$ 12.0 μ m
Cladding non circularity	$\leq$ 1.0%
Cut off wavelength	$\lambda_{cc} \leq$ 1260 nm
Attenuation coefficient	1310 nm: 0.35 dB/km max after cabling 1550 nm: 0.21 dB/km max after cabling
Bending-loss performance of optical fibre @ 1550 nm & 1625 nm	$\leq$ 0.05dB (100 turns around a mandrel of 60 mm diameter)
Polarization mode dispersion maximum individual fibre	$\leq$ 0.2 ps/ $\sqrt$ km
Polarization mode dispersion link value	$\leq$ 0.1 ps/ $\sqrt$ km
Zero-dispersion wavelength	1300~1324 nm
Zero-dispersion slope	$\leq$ 0.092 ps/nm ² ·km

3. Optical Cable

3.1 Technical Characteristics

- The unique secondary coating and stranding technology provide the fibres with enough space and bending endurance, ensures 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.

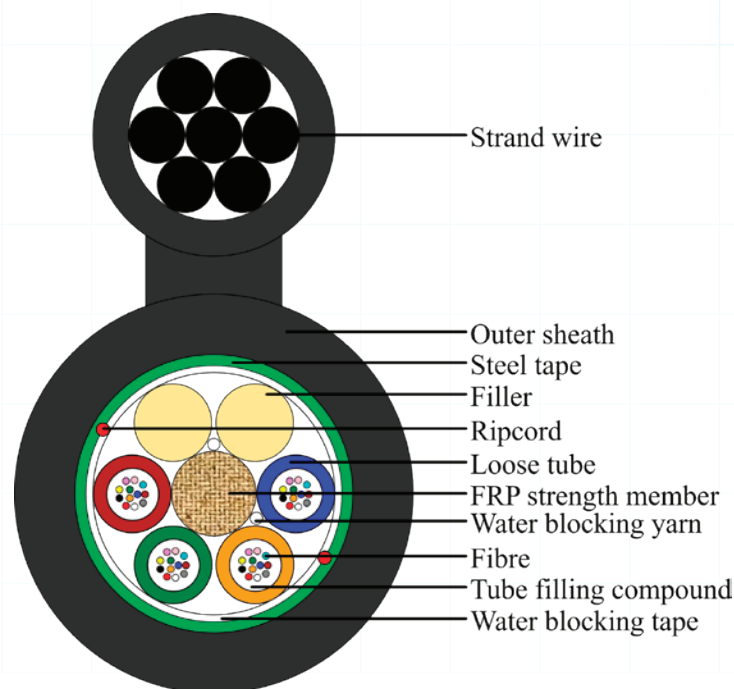


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OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

3.2 Cross Section of Cable



CS-SWPE-048-S2-BK

Structure of other fibre counts referred to 3.4

Schematic for reference only

3.3 Fibre and Loose Tube Identification

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

Colour code	1	2	3	4	5	6	7	8	9	10	11	12
	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Purple	Pink	Aqua

The colour of the fillers will be natural.



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OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

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		
		48	96	144
Structure	Type	1+6	1+8	1+12
Loose tube	Fibre count/tube		12	
	Outer diameter (mm)		2.2	
Central strength member	Material		FRP	
	Diameter (mm)	2.4	2.8	2.8
	PE layer diameter (mm)	/	3.7	6.8
Water blocking	Material	Water blocking yarn and tape		
Armor	Material	Steel tape		
Cable core part sheath	Material	HDPE		
	Colour	Black		
	Thickness (mm)	Nominal: 1.8		
Messenger wire	Material	Stranding wire		
	Type	7x1.6 mm		
Messenger part sheath	Material	HDPE		
	Colour	Black		
	Thickness (mm)	Nominal: 1.0		
Ripcord	Number	2		
	Colour	Red		
Cable diameter (mm) Approx.		12.0*21.2	13.3*22.5	16.4*25.6
Cable weight (kg/km) Approx.		265	295	360

3.5 Main Mechanical Performance

ITEM	TENSION(N)		CRUSH(N/100MM)	
	Short term	Long term	Short term	Long term
48/96/144	9000	4000	3000	1000



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OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

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 1550 nm.

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-E3A Load: According to 3.5 Duration of load: 1 min	Additional attenuation: ≤ 0.1 dB after test No damage to outer jacket and inner elements
Impact	IEC 60794-1-21-E4 Radius: 300 mm Impact energy: 10J Impact number: 1 Impact points: 3	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements
Repeated bending	IEC 60794-1-21-E6 Bending radius: 20 *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: 2 m Turns: $\pm 180^\circ$ Load: 150N	Additional attenuation: ≤ 0.1 dB No damage to outer jacket and inner elements
Water Penetration	IEC 60794-1-22-F5 Time: 24 hours Sample length: 3m Water height: 1m	No water leakage, except the part of stranded wire.
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	

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

5. Packaging and Drum

5.1 Cable Sheath Marking

Unless otherwise specified, the cable sheath marking shall be as follows:

Colour	white
Contents	Fibre Systems CoreSpan, the year of manufacture, the type of cable, cable number, length marking
Interval	1m

5.2 Reel Length

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.

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