

All-Dielectric Self-Supporting Fiber Cable

OptoWire AS-L(A)-(1-24) FO-2KN

Fiber count	KN
1 - 24 FO	2 KN

Description

All-Dielectric Self-Supporting Fiber Cable, suitable for wall, pole and duct installation.

1.1 Scope

This listed specification covers the design requirements and performance standard for the supply of optical fiber cable in the industry. It also includes OptoWire premium designed cable with optical, mechanical and geometrical characteristics

1.2 Cable name

OptoWire AS-L(A) (1-24) FO - 2 KN

1.3 Cable description

OptoWire cable possesses high tensile strength and flexibility in compact cable sizes. At the same time, it provides excellent optical transmission and physical performance.

1.4 Quality

Excellent quality control is achieved through intense in-house quality check and stringent audit acceptance by ISO 9001.

1.5 Reliability

Initial and periodic product qualification tests for performance and durability are performed rigorously to ensure product reliability.

1.6 Reference

The cable which OptoWire offered are designed, manufactured and tested according to international standards as follows:

IEC 60793-1	Optical fiber Part 1: Generic specifications
IEC 60793-2	Optical fiber Part 2: Product specifications
IEC 60794-4-20	Optical fiber cables-Part 4-20: Aerial optical cables along electrical power lines-Family specification for ADSS (All Dielectric Self Supported) optical cables
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.657	Characteristics of a bending-loss insensitive single-mode optical fiber
EIA/TIA 598-C	Color code of fiber optic cables

Optical Fiber

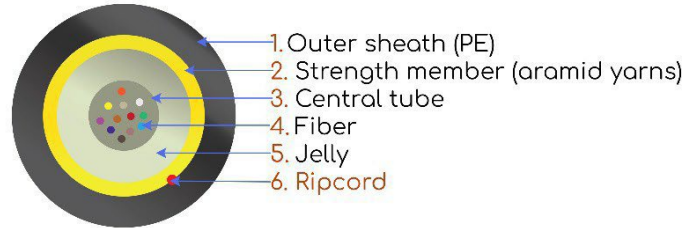
The optical fiber is made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating. The detail data of optical fiber performance are shown in the following table.

G. 657A2

Category	Description	Specifications	
		Before cable	After cable
Optical Specifications	Attenuation @1310nm	≤0.36 dB/km	≤0.40 dB/km
	Attenuation @1550 nm	≤0.22 dB/km	≤0.30 dB/km
	Zero Dispersion Wavelength	1300~1324 nm	
	Zero Dispersion Slope	≤0.092 ps/nm ² ·km	
	Cable Cutoff Wavelength (λ _{cc})	≤1260 nm	
	Macro bending Loss (10 turns; Φ30 mm) @1550 nm (10 turns; Φ30 mm) @1625 nm (1 turns; Φ20 mm) @1550 nm (1 turns; Φ20 mm) @1625 nm (1 turns; Φ15 mm) @1550 nm (1 turns; Φ15 mm) @1625 nm	≤ 0.03 dB ≤ 0.10 dB ≤ 0.10 dB ≤ 0.20 dB ≤ 0.50 dB ≤ 1.00 dB	
	Mode Field Diameter @1310 nm	8.6±0.4μm	
Dimensional Specifications	Cladding Diameter	125±1μm	
	Cladding Non Circularity	≤1.0%	
	Core/Clad Concentricity Error	≤0.5μm	
Mechanical Specifications	Proof Stress	≥0.69Gpa	

Cable structure

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Dimension and Properties

No.	1	2	3	4	5	6
Color	Blue	Orange	Green	Brown	Gray	White
No.	7	8	9	10	11	12
Color	Red	Black	Yellow	Violet	Pink	Aqua
No.	13	14	15	16	17	18
Color	Blue #	Orange #	Green #	Brown #	Gray #	White #
No.	19	20	21	22	23	24
Color	Red #	Natural #	Yellow #	Violet #	Pink #	Aqua #

Note: # means a black single tracer with interval of nominal 50mm.

Structure parameter

Item	Contents	Unit	Value						
Fiber count	Number	/	1	2	4	8	12	16	24
Cable structure	/	/	Central loose tube						
Tube diameter	Nominal Diameter	mm	2.0			2.8		3.6	
Strength members	Material	/	Aramid yarns						
Outer sheath	Thickness	mm	Nom. 1.0						
Cable diameter	±5%	mm	5.6					6.3	
Cable weight	±10%	kg/km	25					31	
Weather condition	/	/	Max. wind speed:25m/s and no ice						
Max. span	/	m	60						
Installation sag	/	%	1.5						

Note: Sheath thickness not consider ripcord portion, sizes and values without tolerances are nominal values. It's advised to notch the cable before splitting the sheath for better ripping.

Mechanical & Environmental Performance

Item	Contents	Value
Max. tensile load	Short term	2000N
Max. crush resistance	Short term	1000N/100mm
Min. bending radius	Installation	20 x cable diameter
	Operation	10 x cable diameter
Temperature range	Operation	-20°C ~ +70°C
	Installation	-10°C ~ +40°C
	Storage/transportation	-20°C ~ +70°C

Mechanical & Environmental Performance

Item	Test Method	Acceptance Condition
Tensile Strength IEC 60794-1-21-E1	- Load: Short term tension - Length of cable: ≥ 50m - Load time: 1min	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Crush Test IEC 60794-1-21-E3	- Load: Short term crush - Load time: 1min	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Impact Test IEC 60794-1-21-E4	- Radius: 300 mm - Points of impact: 3 - Times of per point: 1 - Impact energy: 1J	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Repeated Bending IEC 60794-1-21-E6	- Bending radius: 20 x OD - No. of cycle: 25	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Torsion IEC 60794-1-21-E7	- Length: 2m - Twist angle: ±180° - No. of cycle: 10	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Cable bend IEC 60794-1-21-E11	- Diameter of mandrel: 40 x OD - Number of turns:4 - Number of cycles:3	- Loss change ≤ 0.1dB@1550nm after test. - No fiber break and no sheath damage.
Water Penetration IEC 60794-1-22-F5	- Height of water: 1m - Sample length: 3m - Time: 24h	- No water leak from the cable core.
Temperature Cycling IEC 60794-1-22-F1	- Temperature: -20°C~+70°C - Time of each step: 12h - Number of cycle: 2	- Loss change ≤ 0.1dB/km@1550nm. - No fiber break and no sheath damage.

Optical fiber

G657A2 Characteristic of Optical Fiber

Item	Contents	Value	
		Before cable	After cable
Attenuation	@1310nm	≤0.36dB/km	≤0.40dB/km
	@1550nm	≤0.22dB/km	≤0.30dB/km
Dispersion	@1288nm~1339nm	≤3.5ps/(nm·km)	
	@1550nm	≤18ps/(nm·km)	
	@1625nm	≤22ps/(nm·km)	
Zero-Dispersion wavelength		1300nm~1324nm	
Zero-Dispersion slope		≤0.092ps/(nm ² ·km)	
Mode field diameter (MFD)	@1310nm	8.6±0.4μm	
	@1550nm	9.6±0.8μm	
Cable cutoff wavelength λ _{cc} (nm)		≤1260nm	
Bending loss	1550nm (10 turn; Φ30mm)	≤0.03dB	
	1625nm (10 turn; Φ30mm)	≤0.1dB	
	1550nm (1 turn; Φ20mm)	≤0.1dB	
	1625nm (1 turn; Φ20mm)	≤0.2dB	
	1550nm (1 turns; Φ15mm)	≤0.5dB	
	1625nm (1 turns; Φ15mm)	≤1.0dB	
Cladding diameter		125±1.0μm	
Cladding non-circularity		≤1%	
Core/cladding concentricity error		≤0.5μm	
Proof stress		≥0.69GPa	

Other parameters meet standard **ITU-T G.657**