

# All-Dielectric, Self Supporting (ADSS) Aerial Loose Tube Fiber Optic Cable

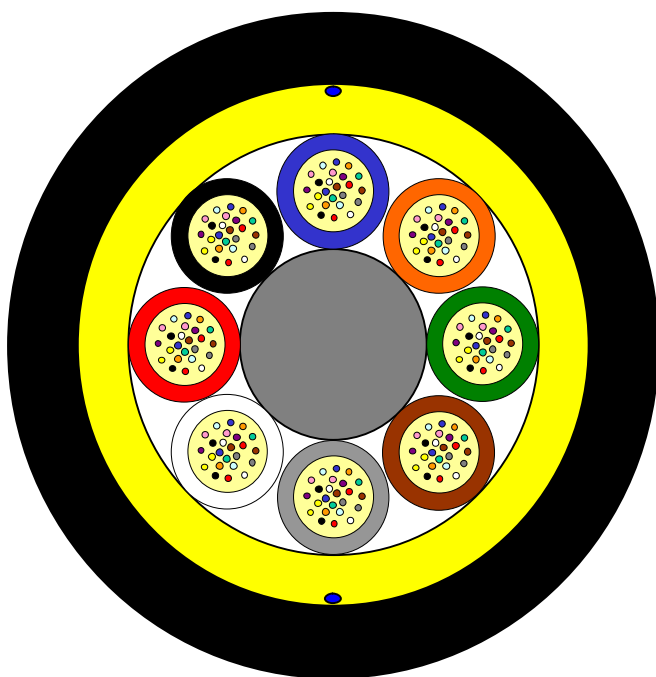
Dry core design

## PowerGuide<sup>®200</sup> SkyLight



Issue May 2018

according to **OFS Generic Specification**



### Application

Optimized for Aerial- and Duct Installation with fiber counts up to 192 fibers

### Design

- Optical fibers
- Gel-filled buffer tubes
- Non-metallic central member
- Water blocking threads
- Non-metallic aramid strength elements
- Ripcords
- Outer PE-jacket

### Benefits

- Excellent, cost- effective option for short aerial cable spans
- Outstanding optical performance, durability and field reliability
- Fast, one-step installation for valuable time and cost savings
- Small cable diameter and bend radius for easy deployment in aerial- to- underground installation
- Easily strippable sheath for quick, convenient cable preparation

**Version illustrated is the 192 Fiber 8 Element Cable**

Fiber Count	Tubes	Core Design	Outer Diameter [mm]	Cable Weight [kg/km]	AT-Code**
168	7 (24F)	1+8 (1 Filler*)	11.9	120	AT-[ ][ ]17UF-168-CLGB
192	8 (24F)	1+8	11.9	120	AT-[ ][ ]17UF-192-CLGB

This table shows nominal diameter and weight values which may differ in shipments.

\*Fillers are natural colored

\*\*Please refer to the OFS AT- Code. The blanks specify the fiber type.

### Identification

#### Tube Color Code:

1	Blue	2	Orange	3	Green	4	Brown
5	Grey	6	White	7	Red	8	Black

#### Fibre Color Code:

1	Blue	2	Orange	3	Green	4	Brown	5	Grey	6	White
7	Red	8	Black	9	Yellow	10	Violet	11	Rose	12	Aqua
13	Blue*	14	Orange*	15	Green*	16	Brown*	17	Grey*	18	White*
19	Red*	20	Nature	21	Yellow*	22	Violet*	23	Rose*	24	Aqua*

\* Black ring

Alternative tube and fiber color code available on request.

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### Sheath Marking:

### OFS OPTICAL ADSS CABLE [ID] [MM/YYYY] [Handset Sign] xxxF [Meter Marking]

Alternative sheath printing available on request.

In case of order the exact sheath printing text will be clarified with the customer.

### Shipping Information

Cable Length	Drum Dimensions (approx.)		Shipping Weight (calc.)	
	Diameter(battened)	Width	Without lagging	With lagging
2 Km	1050 mm	790 mm	300 kg	320 kg
4 Km	1450 mm	790 mm	590 kg	630 kg
6 Km	1600 mm	1055 mm	850 kg	910 kg
8 Km	1750 mm	1055 mm	1110 kg	1170 kg

The shipping information are given for one-way reels. Reusable reels are available on request.

### Temperatures

IEC 60794-1-22-F1	Operation	-40°C to +70°C
	Installation	-15°C to +60°C
	Storage/Shipping	-40°C to +70°C

### Sag and Tension Calculation

AT-[ ][ ]17UF-192-CLGB

### NESC Heavy Loading Conditions

Ice Thickness	12,7 mm
Wind Pressure	19,53 kg/m <sup>2</sup> (60 km/h)
Low Temperature	- 17,8 °C
Safety Factor	0.45 kg/m

### Tension @ Maximum Span for 1,5 % Installation Sag

Short Term	4800 N
Long Term	680 N

Maximum Span	70 m
Cable Weight	120 kg/km
Cable Diameter	11.9 mm
Installation Temperature	23 °C
Cable Modulus	882,3 kg/mm <sup>2</sup>
CTE (C <sup>-1</sup> )	1.46E- 05

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### Recommended hardware for spans up to 150m

#### Dead End Assembly:

PLP FIBERLIGN® Dielectric Dead-end for ADSS,  
2872003C1E1, Max. Tension: 2500 lbs. (1135 kg)

#### Fixed Tangent Support:

PLP FIBERLIGN® Aluminum Support for ADSS, 4450099

#### Suspended Support:

PLP FIBERLIGN® Aluminum Suspension for ADSS, 4450199

#### Slack Storage Devices:

FIBERLIGN® In-Span Storage System, FIS12A

#### Down Lead Cushion:

FIBERLIGN® Download Cushion for ADSS,  
8003041

#### Vibration Dampers:

FIBERLIGN® Dielectric Damper for ADSS Cable,  
50502272

### Pertinent installation information

**Maximum rated cable load (MRCL)**

**4,8 kN**

**Bending Performance: (IEC 60794-1-21-E11)**

**Handling fixed installed** - No attenuation increase\*

**Bend radius: 120 mm**

**During installation (under Load)** - No changes in attenuation before versus after load

**Bend radius: 240 mm**

\*No changes in attenuation means that any changes in measurement value, either positive or negative within the uncertainty of measurement shall be ignored. The total uncertainty of measurement shall be less than or equal to 0.05 dB.

### When to use hardware

#### Dead End Assembly

- Used whenever a cable should not slip
  - Cable start and end points
  - Where line angles exceed 20°
  - Road, river, railroad crossings
  - Closure locations
- Different types available dependent upon cable design and application
- Most attachment hardware is used with 5/8" pole line hardware



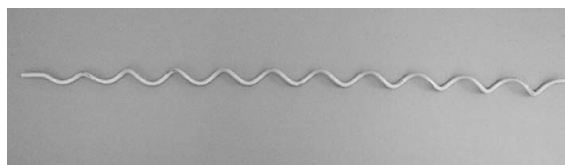
#### Tangent and Suspension Supports

- Typically used in small line angle (<20°, depending on type) situations
- Provides vertical support, not designed to support cable tension
- Multiple types depending span length and application
- Allows cable slippage during imbalanced load situations



#### Vibration Dampers

- ADSS cables can experience Aeolian vibration under certain circumstances
- Circumstances conducive to Aeolian vibration
- Laminar wind flow, Wide open spaces, Light winds, High tensions
- Vibration dampers minimize the effects of this vibration



### Installation document references

**IP 014 PowerGuide® Installation**

**IP 014A PowerGuide® ADSS CABLE Installation Guideline Distribution Line Applications**

**IP 006 PowerGuide® Sheath Removal**

**IP 017 PowerGuide® Hardware Installation**

**AN-101 Maximum Rated Cable Loads & Minimum Bending Diameter**

**AN-203 Space Potential Calculation for PowerGuide® ADSS Cable**

*Installation documents available upon request*

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### PowerGuide SkyLight Cable Ordering Information

Example: **AT-8EE17UF-NNN<sup>1</sup>-CMCB**

Fiber <sup>2</sup> Sheath Core Fiber Count Custom <sup>3</sup>		
Part Number: AT- <u>S1</u> <u>S2</u> <u>SF</u> <u>S3</u> <u>S4</u> <u>S5</u> <u>S6</u> - <u>NNN</u> - <u>CMCB</u>		
<b>S1= Fiber Selection</b> 8= 1310/1550 nm (AllWave <sup>®</sup> FLEX 200µm ZWP Fiber) 9= 1310/1550 nm (AllWave <sup>®</sup> FLEX + 200µm ZWP Fiber)	<b>S2= Fiber Transmission Performance</b> E= 0.36/0.31/0.27/0.25/0.27 dB/km @ 1310/1385/1490/1550/1625 nm (AllWave <sup>®</sup> FLEX 200µm ZWP Fiber) (AllWave <sup>®</sup> FLEX + 200µm ZWP Fiber)	<b>SF= Fiber Type</b> E= AllWave <sup>®</sup> ZWP Single Mode  <b>S3= Sheath Construction</b> 1= All-Dielectric single jacket  <b>S4= Tensile Load</b> 7= ADSS
<b>S5= Core Type</b> U= Dry Core Loose Tube	<b>S6= Fibers per Tube</b> F= 24 Fibers	<b>NNN= Fiber Count</b>

- <sup>1</sup> Part Number shown is for PowerGuide ADSS Cable with 200 µm Single Mode AllWave<sup>®</sup>FLEX 200µm ZWP Fiber with maximum attenuation: 0.36/0.31/0.27/0.25/0.27 dB/km @ 1310/1385/1490/1550/1625 nm .
- <sup>2</sup> Contact OFS sales representative for information on other cable variations, including additional fiber types, composite cables and attenuation.
- <sup>3</sup> Consult with us regarding your application, span lengths and loading conditions to complete the custom design and part number of your complete sheath strengths system.

The information is believed to be accurate at time of issue.  
OFS reserves the right to improve, enhance and modify the features and specifications of OFS products without prior notification.  
Please ensure you have the latest version of the data sheet.  
This data sheet is property of OFS.  
For additional information please contact your sales representative.  
You can also visit our website at <http://www.ofsoptics.com>.  
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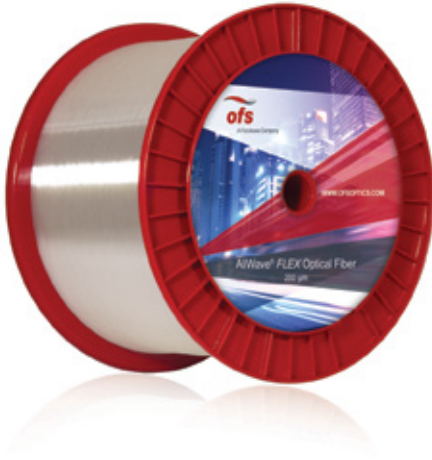




A Furukawa Company

## AllWave® FLEX 200 $\mu$ m Fiber

Reliable Bend-Optimized Performance for Smaller Diameter, Higher Density Cable Applications



### Features and Benefits

- Bend optimized design for tight, low loss bends without risking fiber strength and long-term reliability
- 36% less area than conventional 250  $\mu$ m coated fiber enabling smaller diameter cables and a greater number of fibers per tube
- Ideally suited for high fiber count cables and microcables where cable diameter needs to be minimized
- Zero Water Peak fiber provides a 50% increase in usable optical spectrum, enabling 16-channel CWDM and DWDM support
- Proof-tested to 100 kpsi to improve long term reliability and simplify cabling
- Ultra-low Polarization Mode Dispersion (PMD) enables speed and distance upgrades

### Applications

- FTTx
- High count fiber cables
- High power applications
- Microcables
- Closures
- At the customer premises
- Any application with transmission speeds of 40 Gb/s and beyond

### Overview

OFS offers AllWave FLEX Bend-Optimized Single-Mode Optical Fiber with a 200  $\mu$ m coating diameter for use in cables with higher fiber counts per tube and in microcables where cable diameters must be minimized. The fibers offer all the other performance advantages and 30-year reliability of standard AllWave FLEX products.

### Product Description

AllWave FLEX 200  $\mu$ m Optical Fiber supports higher density and lower diameter cables, providing outstanding macrobend and microbend performance for Access, Fiber-to-the-Home (FTTH), enterprise networks, or any application where small bend diameters may be encountered. This G.657.A1 fiber maintains very low bending loss across the full usable spectrum of wavelengths from 1260 to 1625 nm. It can be coiled into a 20 mm diameter loop with < 0.5 dB incurred loss at 1625 nm and < 0.2 dB incurred loss at 1550 nm – five times better bending performance than conventional single-mode and leading LWP fibers.

### Outstanding Macrobend Performance

- **100 turns on a 25 mm radius mandrel**  
< 0.01 dB @ 1550 nm  
< 0.05 dB @ 1625 nm
- **10 turns on a 15 mm radius mandrel**  
< 0.2 dB @ 1550 nm  
< 0.5 dB @ 1625 nm
- **1 turn on a 10 mm radius mandrel**  
< 0.2 dB @ 1550 nm  
< 0.5 dB @ 1625 nm

For additional information please contact your sales representative.

You can also visit our website at [www.ofsoptics.com](http://www.ofsoptics.com) or call **1-888-fiberhelp** (1-888-342-3743) USA or **1-770-798-5555** outside the USA.

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## 200 $\mu$ m AllWave® FLEX Fiber

Product Specifications		200 μm AllWave FLEX Fiber	
Physical Characteristics			
Clad Diameter		125.0 ± 0.7 μm	
Clad Non-Circularity		≤ 1 %	
Core/Clad Concentricity Error (Offset)		≤ 0.5 μm, < 0.2 μm typically	
Coating Diameter	(Uncolored) (Colored)	190 ± 10 μm 200 ± 10 μm	
Coating-Clad Concentricity Error (Offset)		≤ 12 μm	
Tensile Proof Test (Other proof test levels available on request)		100 kpsi (0.69 GPa)	
Coating Strip Force		Range: ≥ 0.5 N < 8.9 N	
Standard Reel Lengths		50.4 km	
Optical Characteristics			
Attenuation		Maximum	Typical
at 1310 nm		≤ 0.35 dB/km	≤ 0.34 dB/km
at 1385 nm		≤ 0.31 dB/km	≤ 0.28 dB/km
at 1490 nm		≤ 0.24 dB/km	≤ 0.21 dB/km
at 1550 nm		≤ 0.21 dB/km	≤ 0.19 dB/km
at 1625 nm		≤ 0.24 dB/km	≤ 0.20 dB/km
Attenuation vs. Wavelength Range (nm)		Reference (nm) λ	α
1285 – 1330		1310	0.03
1360 – 1480		1385	0.04
1525 – 1575		1550	0.02
1460 – 1625		1550	0.04
*The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength (λ) by more than the value α.			
Attenuation Uniformity / Point Discontinuities at 1310 nm and 1550 nm		≤ 0.05 dB	
Chromatic Dispersion			
Zero Dispersion Wavelength (λ <sub>0</sub> )		1302 – 1322 nm	
Zero Dispersion Slope (S <sub>0</sub> )		≤ 0.092 ps/nm <sup>2</sup> -km	
Typical Dispersion Slope		0.088 ps/nm <sup>2</sup> -km	
Group Refractive Index			
at 1310 nm		1.467	
at 1550 nm		1.468	
Mode Field Diameter			
at 1310 nm		8.5 - 9.3 μm	
at 1550 nm		9.4 - 10.4 μm (typical)	
Cut-off Wavelength (λ <sub>cc</sub> )		≤ 1260 nm	
Polarization Mode Dispersion (PMD) <sup>1</sup>			
Fiber PMD Link Design Value (LDV) <sup>2</sup>		≤ 0.06 ps/√km	
Maximum Individual Fiber		≤ 0.1 ps/√km	
Typical Fiber LMC PMD		≤ 0.02 ps/√km	
<sup>1</sup> As measured with low mode coupling (LMC) technique in fiber form, value may change when cabled. Check with your cable manufacturer for specific PMD limits in cable form.			
<sup>2</sup> The PMD Link Design Value complies with IEC 60794-3, September 2001 (N = 20, Q = 0.01%). Details are described in IEC 61282-3 TR Ed 2, October 2006.			
Environmental Characteristics (at 1310, 1550 & 1625 nm)			
Temperature Cycling (-60° + 85 °C)		≤ 0.05 dB/km	
High Temperature Aging (85 ± 2 °C)		≤ 0.05 dB/km	
Temperature & Humidity Cycling (at -10 °C to +85 °C and 95% RH)		≤ 0.05 dB/km	
Water Immersion (23 ± 2 °C)		≤ 0.05 dB/km	