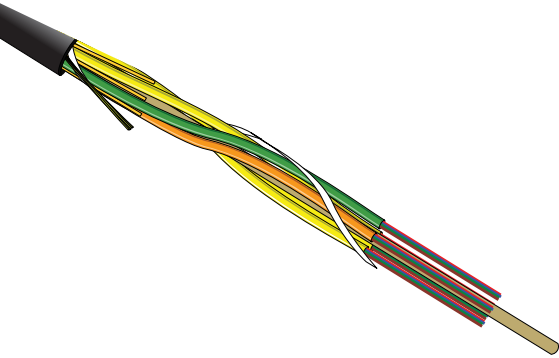




A Furukawa Company

MiDia^{® 200} Micro FX Cable

New Generation Cable Helps Maximise Fibre Capacity, Cost Effectiveness and Performance for Metropolitan Fibre Access



MiDia²⁰⁰ Micro FX Cable

Features and Benefits

- Helps maximise fibre capacity and performance
- OFS 200 micron bend-optimized fibres for a smaller diameter, high-performance microcable (fibres meet or exceed ITU-T G.657.A1/A2 and IEC 60793-2-50 B6_a1/a2 standards)
- Helps to lower deployment costs and eliminate the need for excavation and procuring costly rights-of-way
- Fibre counts of 144, 192 and 288
- May help reduce the number of fibre optic cables needed
- Helps to achieve longer air-blown installation distances
- Meets IEC 60794-1-2 and IEC 60794-5 for reliable performance

Product Description

OFS developed the MiDia²⁰⁰ Micro FX Cable to help meet the challenges of an ever-increasing demand for higher bandwidth and fibre capacity along with the growing physical congestion in underground duct systems. This latest-generation cabling solution can help take metro networks to the next level with increased fibre density, enhanced performance and significantly greater deployment cost savings.

The MiDia²⁰⁰ Micro FX Cable capitalizes on OFS enhancements in optical fibre, leading to the development of 200 micron bend-optimised fibres. These bend-optimised AllWave[®] FLEX ZWP and AllWave[®] FLEX+ ZWP Fibres require 36 percent less area than conventional 250 micron coated fibres, enabling reduced diameter cables with a higher fibre count per tube.

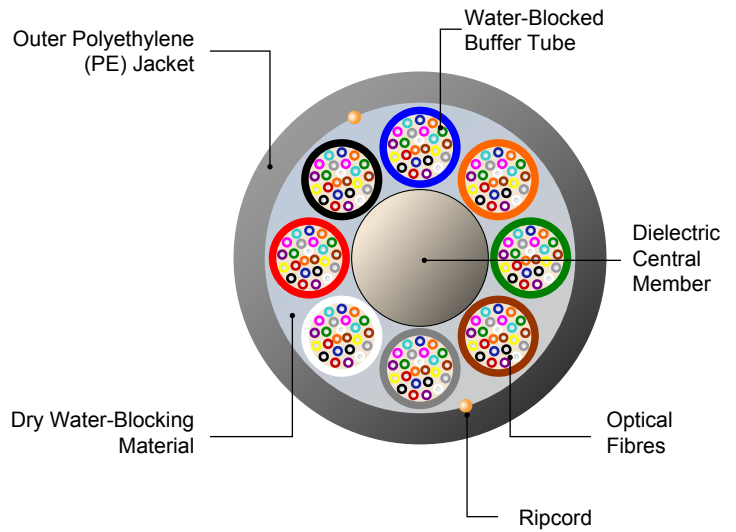
Why the MiDia²⁰⁰ Micro FX Cable?

With the tremendous increase in fibre density in a single, reduced diameter cable, providers can maximize the use of their network duct systems and infrastructure, using a single cable in one microduct instead of two cables in two microducts. This capability makes it easier to increase fibre counts, even in highly congested ducts, while helping to save on material and installation costs and retaining space for future upgrades or lease.

The lighter weight, more compact MiDia²⁰⁰ Micro FX Cable also helps customers achieve longer air-blown installation distances. This ability reduces the number of splice points and setups required, potentially saving both time and money. In addition, this reduced diameter microcable allows the use of smaller, more cost-efficient microducts and other accessories, helping to further lower costs for a faster return on investment.

Design

To construct the MiDia²⁰⁰ Micro FX Cable, 200 micron AllWave *FLEX* ZWP or AllWave *FLEX+* ZWP bend-optimized single-mode optical fibres are placed in water-blocked buffer tubes to protect the fibres from external forces. The optical fibres and buffer tubes are color coded for ready identification. The buffer tubes are then stranded around a dielectric central member using the reverse oscillating lay (ROL) stranding technique and dry, water-blocking materials are applied. In the final step, a ripcord and a durable polyethylene (PE) jacket are added to complete the cable construction.



Specifications

Fibre Count	144	192	288
Cable Outer Diameter - mm	6.3	7.6	9.6
Cable Weight - kg/km	40	55	90

Performance Standard

The MiDia²⁰⁰ Micro FX Cable meets IEC 60794-1-2 and IEC 60794-5 for reliable performance.

The 200 micron bend-optimized AllWave[®] *FLEX* ZWP and AllWave[®] *FLEX+* ZWP Fibres meet or exceed ITU-T G.657.A1/A2 and IEC 60793-2-50 B6_a1/a2 standards.

Handling

Fibre Count	144	192	288
Tensile Performance (short-term) N	800	1100	1700
Crush Performance (short-term) N	1000	1000	1000
Bending Performance (radius) mm, Installed	75	125	150
During Installation	150	250	250

Temperature

Installation: -15°C to 40°C

Operation: -30°C to 70°C

Storage: -40°C to 70°C

Standard Microcable Lengths

The MiDia²⁰⁰ Micro FX Cable is available in 2,000, 4,000, 6,000 and 8,000 metre lengths.

Contact OFS Order Management for information on other cable variations, including additional fiber types, attenuation and custom cable print. For additional information, please contact your sales representative.

You can also visit our website at www.ofsoptics.com or call +49 (0) 288 7489 201 or e-mail to cableinfo@ofsoptics.com.



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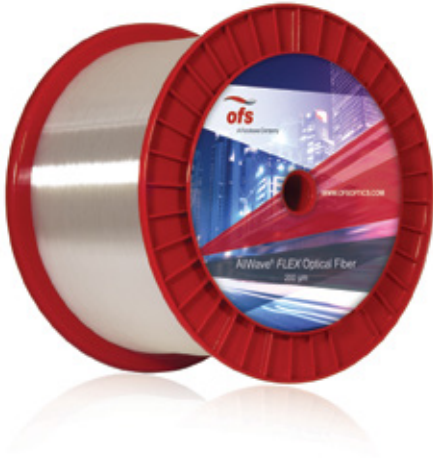
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A Furukawa Company

AllWave® FLEX 200 μm 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 μm 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 μm 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 μm 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 or call **1-888-fiberhelp** (1-888-342-3743) USA or **1-770-798-5555** outside the USA.

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Product Specifications		200 μm AllWave FLEX Fiber	
Physical Characteristics			
Clad Diameter	125.0 \pm 0.7 μm		
Clad Non-Circularity	\leq 1 %		
Core/Clad Concentricity Error (Offset)	\leq 0.5 μm , < 0.2 μm typically		
Coating Diameter (Uncolored)	190 \pm 10 μm		
(Colored)	200 \pm 10 μm		
Coating-Clad Concentricity Error (Offset)	\leq 12 μm		
Tensile Proof Test (Other proof test levels available on request)	100 kpsi (0.69 GPa)		
Coating Strip Force	Range: \geq 0.5 N < 8.9 N		
Standard Reel Lengths	50.4 km		
Optical Characteristics			
Attenuation	Maximum	Typical	
at 1310 nm	\leq 0.35 dB/km	\leq 0.34 dB/km	
at 1385 nm	\leq 0.31 dB/km	\leq 0.28 dB/km	
at 1490 nm	\leq 0.24 dB/km	\leq 0.21 dB/km	
at 1550 nm	\leq 0.21 dB/km	\leq 0.19 dB/km	
at 1625 nm	\leq 0.24 dB/km	\leq 0.20 dB/km	
Attenuation vs. Wavelength Range (nm)	Reference (nm) λ	α	
	1310	0.03	
	1385	0.04	
	1550	0.02	
	1550	0.04	
	1550	0.04	
	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	\leq 0.05 dB		
Chromatic Dispersion			
Zero Dispersion Wavelength (λ_0)	1302 – 1322 nm		
Zero Dispersion Slope (S_0)	\leq 0.092 ps/nm ² -km		
Typical Dispersion Slope	0.088 ps/nm ² -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_{cc})	\leq 1260 nm		
Polarization Mode Dispersion (PMD) ¹			
Fiber PMD Link Design Value (LDV) ²	\leq 0.06 ps/ $\sqrt{\text{km}}$		
Maximum Individual Fiber	\leq 0.1 ps/ $\sqrt{\text{km}}$		
Typical Fiber LMC PMD	\leq 0.02 ps/ $\sqrt{\text{km}}$		
¹ 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.			
² 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)	\leq 0.05 dB/km		
High Temperature Aging (85 \pm 2 °C)	\leq 0.05 dB/km		
Temperature & Humidity Cycling (at -10 °C to +85 °C and 95% RH)	\leq 0.05 dB/km		
Water Immersion (23 \pm 2 °C)	\leq 0.05 dB/km		