ofs

A Furukawa Company

Single-Mode Optical Fiber Selection Guide

Terrestrial Applications

Full Product Portfolio

The Fiber is the Network™

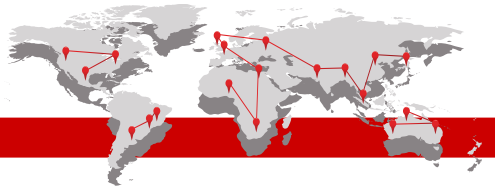
Welcome to the OFS Single-mode Optical Fiber Selection Guide for terrestrial applications including transcontinental, regional, metropolitan, home/business access, and in-building fiber optic systems. This document is a quick reference guide for general understanding OFS single-mode fiber types and applications. This guide describes several families of OFS fiber and provides recommendations for single-mode fibers used in Outside Plant (OSP) as well as Indoor (Premises, Enterprise) applications.

Selecting the right fiber for your application can help lower system costs. Characteristics such as lower loss, larger effective area, optimized dispersion, and tight bend performance can provide economic benefits compared to using a standard G.652D single-mode fiber. Please contact OFS for more thorough explanations of the various fiber value propositions to assist with the selection process.

OFS product portfolio includes the following families of optical fiber:

- **TeraWave® Optical Fibers** - ITU-T G.654 long haul fiber with optimized large effective area designed especially to support coherent systems.
- **TrueWave® Optical Fibers** – ITU-T G.655 and/or G.656 Non-Zero Dispersion fibers (NZDF) that have reduced chromatic dispersion characteristics to simplify dispersion compensation.
- **AllWave® Optical Fibers** – ITU-T G.652.D standard single-mode fibers. AllWave Fibers provide seamless splicing and are zero water peak (ZWP) and can be used everywhere from long haul to shorter reach in-building applications. Some of these fibers are also G.657 compliant.
- **AllWave® *FLEX*** and **EZ-Bend® Optical Fibers** are ITU-T G.657 Bend insensitive single-mode fibers

OSP Cable Applications



Long Haul

>1000 km*

Fiber	Application Benefits	ITU-T Category
TeraWave ULL Fiber	Optimized for coherent transmission systems. The combination of ultra-low loss and increased nonlinear power limit lowers system costs and simplifies the upgrade path to 400G and 1T in the C and L band.	ITU-T G.654.E
TeraWave Fiber	Lower system cost for >10 G enabled by avoiding or reducing signal regeneration, longer spans between amplifiers. C and L band performance. Optimized for coherent transmission systems	ITU-T G.654.E
AllWave One Fiber	Lower system cost for 100G enabled by longer spans between amplifiers. Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave LL Fiber	Lower system cost for 100G enabled by longer spans between amplifiers. Full-spectrum zero water peak performance.	ITU-T G.652.D
AllWave Fiber	Full-spectrum zero water peak performance.	ITU-T G.652.D
TrueWave RS Fiber	Optimized for passive dispersion compensation to help lower system costs at 10G and 40G. Lower dispersion slope simplifies wide-band operation. Full-spectrum low water peak performance.	ITU-T G.655.C
TrueWave LA Fiber	Optimized for passive dispersion compensation to help lower system costs at 10G and 40G. Fully compatible with existing LEAF networks. Full-spectrum low water peak performance.	ITU-T G.655.C and D
TrueWave *REACH* Fiber	Optimized for passive dispersion compensation to help lower system costs at 10G and 40G. Medium dispersion for optimized 40G performance and Raman pumping. Full-spectrum low water peak performance.	ITU-T G.655. E/ ITU-T G.656

Regional, Metro, Utility, Wireless Backhaul

60 to 1000 km*

Fiber	Application Benefits	ITU-T Category
TeraWave ULL Fiber	Best choice for long (300-400 km) unamplified span.	ITU-T G.654.E
AllWave One Fiber	Lower system cost. Extended reach with fiber bend radius down to 10 mm. Extended reach applications. Full-spectrum zero water peak performance.	ITU-T G.652.D/ ITU-G G.657.A1
AllWave + Fiber	Lower system cost for 100G. Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance. **Optimum choice for most networks.**	ITU-T G.652.D/ ITU-T G.657.A1
AllWave Fiber	Full-spectrum zero water peak performance.	ITU-T G.652.D
TrueWave RS Fiber	Optimized for passive dispersion compensation to help lower system costs at 10G and 40G. Lower dispersion slope.	ITU-T G.655.C
TrueWave LA Fiber	Optimized for passive dispersion compensation to help lower system costs at 10G and 40G. Fully compatible with existing LEAF networks.	ITU-T G.655.C and D
TrueWave *REACH* Fiber	Medium dispersion for optimized 40G performance and Raman pumping.	ITU-T G.655. E/ ITU-T G.656

*Above comparisons are relative to standard G.652.D fiber. Choosing the right fiber for ultra-high speed, long haul networks can be complex. Contact OFS for expert consultative support.

FTTX: Home, Business, Cell Site

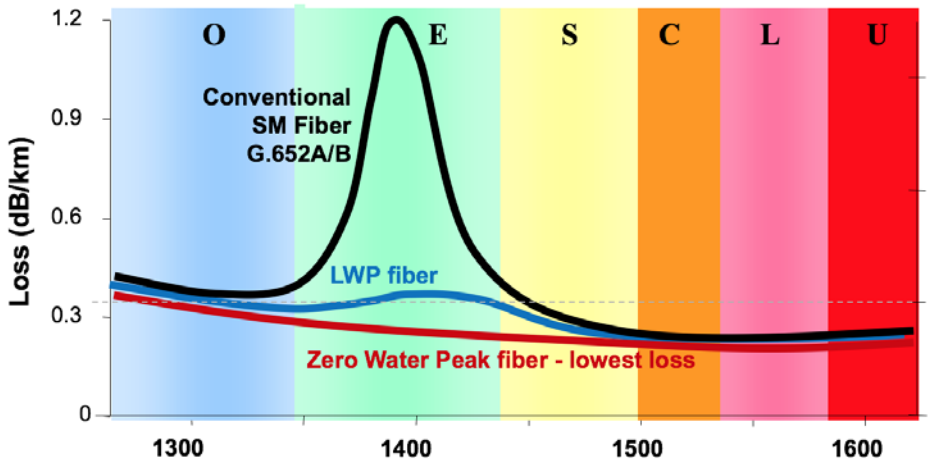
Up to 60 km - All types and data rates of PON and single-mode point to point networks.

Fiber	Application Benefits	ITU-T Category
AllWave One Fiber	Extended reach applications. Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave + Fiber	Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance. **Optimum choice for most FTTX Networks.**	ITU-T G.652.D/ ITU-T G.657.A1
AllWave Fiber	Full-spectrum zero water peak performance.	ITU-T G.652.D
AllWave *FLEX* Fiber	Fiber bend radius down to 10 mm. Full-spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave *FLEX* + Fiber	Fiber bend radius down to 7.5 mm. Full-spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A2

High Density Applications

Fiber	Application Benefits	ITU-T Category
AllWave *FLEX* Fiber	Fiber bend radius down to 10 mm. Full spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave *FLEX* + Fiber	Fiber bend radius down to 7.5 mm. Full spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A2
AllWave *FLEX* Fiber 200 Micron*	Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance. Superior microbend performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave *FLEX* + Fiber 200 Micron*	Tighter fiber bend radius down to 7.5 mm. Full-spectrum zero water peak performance. Superior microbend performance.	ITU-T G.652.D/ ITU-T G.657.A2
AllWave + Fiber 200 Micron*	Fiber bend radius down to 10 mm with a 9.2 µm mode field diameter for seamless splicing. Full spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave *FLEX* MAX Fiber	Fiber bend radius down to 5 mm. Full spectrum performance.	ITU-T G.657 B3/ ITU-T G.652.D

* 200 micron coated fibers are 36% smaller than conventional 250 micron fibers and can be used for ultra-high density cables when existing duct space is limited. These fibers are often used in cables to avoid expensive digging by doubling up the fiber count in existing duct.



Premises, Drop, Cabinet and Connectivity Applications

Central Office, Head End, Data Center, Cabinets, Fiber to the Antenna, General in-Building		
Fiber	**Application Benefits**	**ITU-T Category**
AllWave *FLEX* Fiber	Fiber bend radius down to 10 mm.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave + Fiber	Fiber bend radius down to 10 mm.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave *FLEX* + Fiber	Fiber bend radius down to 7.5 mm.	ITU-T G.652.D/ ITU-T G.657.A2
AllWave *FLEX* Max Fiber	Fiber bend radius down to 5 mm.	ITU-T G.657 B3/ ITU-T G.652.D

Drop and in the Living Unit			
Fiber	**Application**	**Application Benefits**	**ITU-T Category**
EZ-Bend® Fiber	In-home and building drops. Indoor/Outdoor Drops.	Lowest bend loss for tight, unmanaged fiber bends down to 2.5 mm radius enabling easy routing around corners. Full-spectrum performance.	ITU-T G.657.B3
AllWave *FLEX* Max Fiber	All drop cables	Fiber bend radius down to 5 mm. Full-spectrum performance.	ITU-T G.657 B3/ ITU-T G.652.D
AllWave *FLEX* + Fiber	OSP Drops	Fiber bend radius down to 7.5 mm. Full-spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A2
AllWave *FLEX* Fiber	OSP Drops	Fiber bend radius down to 10 mm. Full-spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A1
AllWave + Fiber	OSP Drops	Fiber bend radius down to 10 mm. Full-spectrum performance.	ITU-T G.652.D/ ITU-T G.657.A1

ofs
A Furukawa Company

FURUKAWA ELECTRIC GROUP

For additional information please contact your sales representative.
You can also visit our website at **www.ofsoptics.com**
or call 1-888-FIBER-HELP (1-888-342-3743) from inside the USA
or 1-770-798-5555 from outside the USA.
EMEA Specific: +49 (0) 228 7489 201

RoHS Compliant
EU Directive 2002/95/E

OFS
Marketing Communications
DOC: fap-164 1/2018