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A Furukawa Company

Single-Mode Optical Fiber Selection Guide

Terrestrial Applications

[OEM Fiber]

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 a general understanding of 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 a more thorough explanation of the various fiber value propositions to assist in the selection process.

The OFS single-mode product portfolio includes the following families of optical fiber:

- **TeraWave™ Optical Fibers** - ITU-T G.654 long haul fiber with an 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 optimum chromatic dispersion characteristics to simplify and reduce the cost of dispersion compensation.
- **AllWave® Optical Fibers** – ITU-T G.652.D standard single-mode fibers. AllWave Zero Water Peak (ZWP) Fibers provide seamless splicing 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*

ITU-T Category	Application Benefits	Fiber
ITU-T G.654.B	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.	TeraWave ULL Fiber
ITU-T G.654.B	Lower system costs for >10 G enabled by avoiding or reducing signal regeneration, longer spans between amplifiers. C and L band performance. Optimized for coherent transmission systems.	TeraWave Fiber
ITU-T G.652.D/ ITU-T G.657.A1	Lower system costs for 100G enabled by longer spans between amplifiers. Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance.	AllWave One Fiber
ITU-T G.652.D	Lower system costs for 100G enabled by longer spans between amplifiers. Full-spectrum zero water peak performance.	AllWave LL Fiber
ITU-T G.652.D	Full-spectrum zero water peak performance.	AllWave Fiber
ITU-T G.655.C	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.	TrueWave RS Fiber
ITU-T G.655.C and D	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.	TrueWave LA Fiber
ITU-T G.655. E/ ITU-T G.656	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.	TrueWave *REACH* Fiber

Regional, Metro, Utility, Wireless Backhaul

60 to 1000 km*

ITU-T Category	Application Benefits	Fiber
ITU-T G.654.B	Preferred choice for long (300-400 km) unamplified span.	TeraWave ULL Fiber
ITU-T G.652.D/ ITU-G G.657.A1	Lower system costs. Extended reach with fiber bend radius down to 10 mm. Extended reach applications. Full-spectrum zero water peak performance.	AllWave One Fiber
ITU-T G.652.D/ ITU-T G.657.A1	Lower system costs for 100G. Fiber bend radius down to 10 mm. Full-spectrum zero water peak performance. **Preferred choice for most networks.**	AllWave + Fiber
ITU-T G.652.D	Full-spectrum zero water peak performance.	AllWave Fiber
ITU-T G.655.C	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.	TrueWave RS Fiber
ITU-T G.655.C and D	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.	TrueWave LA Fiber
ITU-T G.655. E/ ITU-T G.656	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.	TrueWave *REACH* Fiber

*Comparisons above 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.

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

High Density Applications

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

*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*		
ITU-T Category	**Application Benefits**	**Fiber**
ITU-T G.652.D/ ITU-T G.657.A1	Fiber bend radius down to 10 mm.	AllWave *FLEX* Fiber
ITU-T G.652.D/ ITU-T G.657.A1	Fiber bend radius down to 10 mm.	AllWave + Fiber
ITU-T G.652.D/ ITU-T G.657.A2	Fiber bend radius down to 7.5 mm.	AllWave *FLEX* + Fiber
ITU-T G.657 B3/ ITU-T G.652.D	Fiber bend radius down to 5 mm.	AllWave *FLEX* Max Fiber

Drop and in the Living Unit*			
ITU-T Category	**Application**	**Application Benefits**	**Fiber**
ITU-T G.657.B3	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.	EZ-Bend Fiber
ITU-T G.657 B3/ ITU-T G.652.D	All drop cables	Fiber bend radius down to 5 mm. Full-spectrum performance.	AllWave *FLEX* Max Fiber
ITU-T G.652.D/ ITU-T G.657.A2	OSP Drops	Fiber bend radius down to 7.5 mm. Full-spectrum performance.	AllWave *FLEX* + Fiber
ITU-T G.652.D/ ITU-T G.657.A1	OSP Drops	Fiber bend radius down to 10 mm. Full-spectrum performance.	AllWave *FLEX* Fiber
ITU-T G.652.D/ ITU-T G.657.A1	OSP Drops	Fiber bend radius down to 10 mm. Full-spectrum performance.	AllWave + Fiber

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For additional information please contact your sales representative.
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