

## Laser Ultra-Fox™ Fiber Performance

Fiber Code	Industry Standard Designation	Core/Cladding Diameter (µm)	Numeric Aperture	Wavelength (nm)	Gigabit Ethernet Distance (m)	10-Gigabit Ethernet Distance (m)	Maximum Cabled Attenuation (dB/km)	Minimum Laser EMB Bandwidth* (MHz-km)	Minimum OFL LED Bandwidth** (MHz-km)
WLS	OM1 ISO/IEC 11801	62.5/125	0.275	850/1310	300/600	33/300 <sup>1</sup>	3.5/1.5	220/500	200/500
WLX	OM1+ ISO/IEC 11801	62.5/125	0.275	850/1310	500/1000	33/300 <sup>1</sup>	3.5/1.5	385/500	200/500
ALS	Laser Grade OM2+ Bend Insensitive ISO/IEC 11908	50/125	0.20	850/1310	600/600	82/300 <sup>1</sup>	3.5/1.5	510/500	500/500
ALX	Extended Length Laser Grade OM2+ Bend Insensitive ISO/IEC 11801	50/125	0.20	850/1310	750/600	150/300 <sup>2</sup>	3.0/1.0 <sup>3</sup>	950/500	700/500
ALT	Laser Optimized OM3 Bend Insensitive ISO/IEC 11801	50/125	0.20	850/1310	1000/600	300/300 <sup>2</sup>	3.0/1.0 <sup>3</sup>	2000/500	1500/500
ALE	Laser Optimized OM4 Bend Insensitive ISO/IEC 11801	50/125	0.20	850/1310	1040/600	550 <sup>1</sup> /300 <sup>2</sup>	3.0/1.0 <sup>3</sup>	4700/500	3500/500
ALW	Laser Optimized OM5 Bend Insensitive ISO/IEC 11801	50/125	0.20	850/1310	1040/600	550 <sup>1</sup> /300 <sup>2</sup>	3.0/1.0 <sup>3</sup>	4700/500	3500/500
SLX	Low Water Peak Single-Mode ITU-T G.652.D	9 <sup>6</sup> /125	—	1310/1550	5 km <sup>4</sup>	10 km <sup>5</sup>	0.5/0.5	—	—

SLA	Bend Insensitive Low Water Peak Single Mode ITU-T G.657.A1 and ITU-T G.652.D	9 <sup>6</sup> /125	—	1310/1550	5 km <sup>4</sup>	10 km <sup>5</sup>	0.5/0.5	—	—
SLB	Bend Insensitive Low Water Peak Single Mode ITU-T G.657.A2 and ITU-T G.652.D	9 <sup>6</sup> /125	—	1310/1550	5 km <sup>4</sup>	10 km <sup>5</sup>	0.5/0.5	—	—
SLC	Bend Insensitive Low Water Peak Single Mode ITU-T G.657.B3 and ITU-T G.652.D	9 <sup>6</sup> /125	—	1310/1550	5 km <sup>4</sup>	10 km <sup>5</sup>	0.5/0.5	—	—

\* Minimum Laser Effective Modal Bandwidth (EMB)

\*\* For backward compatibility to LED based systems, overfilled launch (OFL)

^ 1310 nm CWDM lasers (10GBASE-LX4)

1. Reach assuming 3.0 dB maximum cabled attenuation at 850 nm and 1.3 dB total connection and splice loss

2. Supports 220 meter 10GBASE-LRM distance, or 300 meter 10GBASE-LRM distance with 300 meter capable equipment

3. 3.5/1.5 dB/km maximum attenuation applies for all HC-Series cables, DX-Series cables greater than 36 fibers, and for all DX-Series cables with armor (corrugated steel tape or interlocked armor) or any other secondary outer jacketing

4. 10 km for 1310 nm 1000BASE-LH, and 5 km for 1310 nm 1000BASE-LX

5. 10 km for 1310 nm 10GBASE-LR, and 40 km for 1550 nm 10GBASE-ER

6. Typical Mode Field Diameter at 1310 nm

**Note:** Many other fiber types, fiber bandwidth, and attenuation performances are available.

## Ultra-Fox™ Plus Fiber Performance

Fiber Code <sup>5</sup>	Industry Standard Designation	Core/Cladding Diameter (µm)	Numeric Aperture	Wavelength (nm)	Gigabit Ethernet Distance (m)	10-Gigabit Ethernet Distance (m)	Maximum Cabled Attenuation (dB/km)	Minimum Laser EMB Bandwidth* (MHz-km)	Minimum OFL LED Bandwidth** (MHz-km)
WST	OM1 ISO/IEC 11801	62.5/125	0.275	850/1310	275/550	33/300 <sup>^</sup>	3.5/1.5	200/500	200/500
WLS	Laser Grade OM1 ISO/IEC 11801	62.5/125	0.275	850/1310	300/600	33/300 <sup>^</sup>	3.5/1.5	220/500	200/500
AST	OM2 ISO/IEC 11801	50/125	0.20	850/1310	550/550	82/300 <sup>^</sup>	3.5/1.5	500/500	500/500
ALS	Laser Grade OM2 ISO/IEC 11801	50/125	0.20	850/1310	600/600	82/300 <sup>^</sup>	3.5/1.5	510/500	500/500
ALT	Laser Optimized OM3 ISO/IEC 11801	50/125	0.20	850/1310	1000/600	300/300 <sup>^1</sup>	3.5/1.5	2000/500	1500/500
ALE	Laser Optimized OM4 ISO/IEC 11801	50/125	0.20	850/1310	1040/600	550/300 <sup>^</sup>	3.5/1.5	4700/500	3500/500
SLS	Low Water Peak Single-Mode ITU-T G.652.D <sup>6</sup>	9 <sup>2</sup> /125	—	1310/1550	5 km <sup>3</sup>	10 km <sup>4</sup>	0.5/0.5	—	—
SLA	Bend Insensitive Low Water Peak Single-Mode ITU-T G.657.A1 and ITU-T G.652.D	9 <sup>2</sup> /125	—	1310/1550	5 km <sup>3</sup>	10 km <sup>4</sup>	0.5/0.5	—	—

\* Minimum Laser Effective Modal Bandwidth (EMB)

\*\* For backward compatibility to LED-based systems, overfilled launch (OFL)

<sup>^</sup> 1310 CWDM lasers (10GBASE-LX4)

<sup>1</sup> Supports 220-meter 10GBASE-LRM distance or 300-meter 10 GBASE-LRM distance with 300-meter-capable equipment

<sup>2</sup> Typical Mode Field Diameter at 1310 nm = 9 microns

<sup>3</sup> 10 km for 1310 nm 1000BASE-LH, and 5 km for 1310 nm 1000BASE-LR

<sup>4</sup> 10 km for 1310 nm 10GBASE-LR, and 40 km for 1550 nm 10GBASE-ER

<sup>5</sup> Fiber Codes are available for composite cables containing a wide variety of mixed fiber types within the same cable. Call OCC Customer Service for the Fiber Code for your composite cable configuration.

<sup>6</sup> For certain specialty applications SLS fiber may be ITU-T G.652.A

Note: Other fiber bandwidth, and attenuation performances are available. Laser optimized fiber types available as special order. Contact Optical Cable Corporation for details.