

# Optical Fiber Selection Chart

## Single Mode

PREMISES COPPER | PREMISES FIBER | OSP FIBER | OSP COMPOSITE | CENTRAL OFFICE COPPER | RDU/P/RUS OSP COPPER | BELL OSP COPPER | OSP COPPER WIRE | CANADIAN OSP COPPER | TECHNICAL INFO

Parameter	Performance Property Test Method/Standard	Units	Conditions	Fiber Description Fiber Type Designator Cable Type	Conventional	Reduced Water Peak	Zero Water Peak	TeraFlex® Bend Resistant	NZDS			
					9	3	2	K	8			
Maximum Attenuation	ANSI/TIA-455-78-B-2002	dB/km	1310 nm	Tight Buffer	0.70	0.70	0.70	0.70	-			
				Loose Tube	0.40	0.35	0.35	0.35	-			
				1383 nm	Tight Buffer	-	0.70	0.70	0.70	-		
					Loose Tube	-	0.35	0.35	0.35	-		
				1490 nm	Tight Buffer	0.70	0.70	0.70	0.70	0.70		
					Loose Tube	0.25	0.25	0.25	0.25	0.30		
			1550 nm	Tight Buffer	0.70	0.70	0.70	0.70	0.70			
				Loose Tube	0.30	0.25	0.25	0.25	0.30			
			Typical Attenuation	ANSI/TIA-455-78-B-2002	dB/km	1310 nm	Tight Buffer	N/A	0.41	0.41	0.41	-
							Loose Tube	0.34	0.34	0.34	0.34	-
						1383 nm	Tight Buffer	-	0.41	0.41	0.41	-
							Loose Tube	N/A	0.33	0.31	0.31	-
1550 nm	Tight Buffer	N/A				0.41	0.41	0.41	0.41			
	Loose Tube	0.19				0.19	0.19	0.19	0.25			
Nominal Group Refractive Index	-	-	1310 nm		1.467	1.467	1.467	1.467	1.467			
			1550 nm		1.468	1.468	1.468	1.468	1.468			
Maximum Individual Fiber Polarization Mode Dispersion	ANSI/TIA/EIA-455-113-96	ps/√km	-		0.2	0.2	0.2	0.2	0.2			
Cable Cutoff Wavelength	ANSI/TIA-455-80-C-2003	nm	-		1260	1260	1260	1260	1260			
Zero Chromatic Dispersion Wavelength	ANSI/TIA-455-175-B-2003	nm	-		1300 – 1324	1300 – 1324	1300 – 1324	1300 – 1324	N/A			
Typical Chromatic Dispersion Slope	ANSI/TIA-455-175-B-2003	ps/nm <sup>2</sup> -km	-		0.087	0.087	0.087	0.087	0.047			
Proof Strength	TIA/EIA-455-31	kpsi	On-line		100	100	100	100	100			
			GPa	On-line		0.69	0.69	0.69	0.69	0.69		
Mode Field Diameter	ANSI/TIA-455-191-B-2003	μm	1310 nm	Tight Buffer and Loose Tube	8.8 to 9.6	8.8 to 9.6	8.8 to 9.6	8.8 to 9.6	N/A			
			1550 nm		9.5 to 11.5	9.9 to 10.9	9.9 to 10.9	9.9 to 10.9	7.8 to 10.0			
Maximum Macrobend Attenuation Increase	ANSI/TIA-455-62-B-2003	dB	100 turns on 50 mm mandrel at 1310 nm		0.05	0.05	0.05	0.01	0.05			
Cladding Diameter	ANSI/TIA-455-176-A-2003	μm	-		125.0 ± 1.2	125.0 ± 0.9	125.0 ± 0.9	125.0 ± 0.7	125.0 ± 0.7			
Coating Diameter	ANSI/TIA-455-176-A-2003	micron	-		250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10			
Maximum Core/Clad Concentricity Error	ANSI/TIA-455-176-A-2003	μm	-		0.6	0.5	0.5	0.5	0.5			
Maximum Cladding Non-circularity	ANSI/TIA-455-176-A-2003	%	-		1	1	1	1	0.7			
Maximum Coating/Cladding Concentricity Error	ANSI/TIA-455-176-A-2003	μm	-		12	12	12	12	12			

Guaranteed Supportable Ethernet Distances	Protocol	Units	Conditions	Cable Type	Maximum Transmission Distances (km)				
					10	10	10	10	10
1 Gbps	1000BASE-LH, 1000BASE-LH-LX	km	1310 nm	Tight Buffer and Loose Tube	10	10	10	10	10
	1000BASE-ZX	km	1550 nm		70	70	70	70	70
10 Gbps	10GBASE-LR	km	1310 nm		25	25	25	25	25
	10GBASE-ER	km	1550 nm		40	40	40	40	40
	10GBASE-ZR	km	1550 nm	80	80	80	80	80	

Standards					
ISO/IEC Tight Buffer	11801: OS1	11801: OS1	11801: OS1	11801: OS1	-
ISO/IEC Loose Tube	11801: OS1	24702: OS2	24702: OS2	24702: OS2	-
Telcordia	GR-20-CORE				
ITU-T	G.652.B	G.652.D	G.652.D	G.652.D G.657.A	G.655.C, E G.656
TIA492	CAAA	CAAB	CAAB	CAAB	N/A
IEC 60793-2-50 Type	B1.1	B1.3	B1.3	B1.3	-
ANSI/ICEA Tight Buffer	S-83-596				
ANSI/ICEA Loose Tube	S-87-640				

# Optical Fiber Selection Chart

Multimode

Parameter	Performance Property			Fiber Description Fiber Type Designator	TeraGain®	TeraGain	TeraGain			TeraFlex® Bend Resistant			
					62.5/125	50/125	Laser Optimized 50/125			Laser Optimized 50/125			
					6	5	10G/150	10G/300	10G/550	10G/150	10G/300	10G/550	
Test Method/Standard	Units	Conditions	Cable Type			A	B	F	M	N	P		
Maximum Attenuation	TIA/EIA-455-78	dB/km	850 nm	Tight Buffer and Loose Tube	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
	TIA/EIA-455-78	dB/km	1300 nm		Tight Buffer and Loose Tube	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Typical Attenuation	TIA/EIA-455-78	dB/km	850 nm	Tight Buffer	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
				Loose Tube	2.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
	TIA/EIA-455-78	dB/km	1300 nm	Tight Buffer	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
				Loose Tube	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Numerical Aperture	ANSI/TIA-455-177-B-2003	-	-	Tight Buffer and Loose Tube	0.275 ± 0.015	0.200 ± 0.015	0.200 ± 0.015			0.200 ± 0.015			
Nominal Group Refractive Index	OTDR	-	850 nm		1.496	1.483	1.483	1.483	1.483	1.483	1.483	1.483	1.483
		-	1300 nm		1.491	1.479	1.479	1.479	1.479	1.479	1.479	1.479	1.479
Macrobend Attenuation Change	ANSI/TIA-455-62-B-2003	dB	100 turns on 75 mm Mandrel		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Proof Strength	TIA/EIA-455-31	kpsi	On-line		100	100	100	100	100	100	100	100	100
		GPa	On-line		0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Cladding Diameter	ANSI/TIA-455-176-A-2003	micron	-		125 ± 2	125 ± 2	125 ± 2	125 ± 2	125 ± 2	125 ± 2	125 ± 2	125 ± 2	125 ± 2
Coating Diameter	ANSI/TIA-455-176-A-2003	micron	-		250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10	250 ± 10
Core/Clad Concentricity Error	ANSI/TIA-455-176-A-2003	microns	-		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Cladding Non-Circularity	ANSI/TIA-455-176-A-2003	%	-		1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Coating/Clad Concentricity Error	ANSI/TIA-455-176-A-2003	microns	-		12 µm	12 µm	12 µm	12 µm	12 µm	12 µm	12 µm	12 µm	12 µm
Min. Bandwidth: Overfilled Launch	TIA/EIA-455-124-2000	MHz-km	850 nm		220	500	700	1,500	3,500	700	1,500	3,500	
			1300 nm		600	500	500	500	500	500	500	500	
Min. Bandwidth: Laser Effective Modal Bandwidth	TIA-455-220-A	MHz-km	850 nm		N/A	N/A	950	2,000	4,700	950	2,000	4,700	
			1300 nm		N/A	N/A	500	500	500	500	500	500	

Guaranteed Supportable Ethernet Distances	Protocol	Units	Conditions	Cable Type	Maximum Transmission Distances (meters)								
					6	5	A	B	F	M	N	P	
10 Mbps	IEEE 10BASE-FL	meters	850 nm	Tight Buffer and Loose Tube	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
100 Mbps	IEEE 100BASE-SX	meters	850 nm		500	750	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	IEEE 100BASE-FX	meters	1300 nm		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
1 Gbps	IEEE 1000BASE-SX	meters	850 nm		300	750	1,000	1,000	1,040	1,000	1,000	1,040	
	IEEE 1000BASE-LX	meters	1300 nm		600*	600*	600	600	600	600	600	600	
10 Gbps	IEEE 10GBASE-SR	meters	850 nm		35	82	150	300	550	150	300	550	
	IEEE 10GBASE-LRM	meters	1300 nm		300	300	300	300	300	300	300	300	

\*Mode conditioning patch cord required

Standards	OM1	OM2	OM2	OM3	OM4	OM2	OM3	OM4
ISO/IEC 11801	OM1	OM2	OM2	OM3	OM4	OM2	OM3	OM4
Telcordia	GR-20-CORE							
ITU-T	G.651							
TIA492	AAAA-A	AAAB	AAAB	AAAC-A	AAAD	AAAB	AAAC-A	AAAD
IEC 60793-2-10 Type	A1b	A1a.1	A1a.1	A1a.2	A1a.3	A1a.1	A1a.2	A1a.3
ANSI/ICEA Tight Buffer	S-83-596							
ANSI/ICEA Loose Tube	S-87-640							