

# Differences between OM1, OM2, OM3, OM4, OS1, OS2 fiber optic cable nomenclatures

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## Abstract

This application note discusses differences between various types of Multimode and Single mode optical fiber cable nomenclatures mentioned in ISO/IEC and ANSI/TIA standards.

## Keywords

Fiber optic cable, Optical fiber, Multi-mode fiber, Single Mode fiber, Bandwidth, Attenuation





**Table 1- Bandwidth and attenuation comparison between different OM fiber optic cables**

Multimode Fiber			Bandwidth (MHz. km)			Attenuation (dB/km)	
Nomenclature	TIA Fiber Standard	Core Diameter (micron)	Overfilled Launch (OFL) at 850 nm	Overfilled Launch (OFL) at 1300 nm	Laser Launch at 850 nm	At 850 nm	At 1300 nm
OM1	492-AAAA	62.5	200	500	Not specified	3.5	1.5
OM2	492-AAAB	50	500	500	Not specified	3.5	1.5
OM3	492-AAAC	50	1500	500	2000	3.5	1.5
OM4	492-AAAD	50	3500	500	4700	2.5	0.8

**Table 2- Maximum channel length comparison between different OM fiber optic cables**

Ethernet Data Rate	Wavelength (nm)	Maximum channel length (meters)			
		OM1	OM2	OM3	OM4
100 Mbps	850	Up to 2000	Up to 2000	Up to 2000	Up to 2000
1 Gbps	850	275	550	550	1000
10 Gbps	850	33	82	300	550
40 & 100 Gbps	850	—	—	100	150
1 Gbps	1300	550	550	550	550
10 Gbps	1300	Up to 300	Up to 300	Up to 300	Up to 300

## Comparison between different types of OS fiber optic cables

The difference between OS1 and OS2 fiber optic cables is mainly in cable construction rather than optical fiber specifications. OS1 type cable is predominantly of a tight buffered construction whereas OS2 is a loose tube or blown cable construction where the cable designs applies less stress on the optical fibers. OS1 fiber optic cable is designed for premises where the maximum distance is 2,000 metres with transmission speeds of 1 to 10 gigabit Ethernet. OS2 fiber optic cable is designed for larger transmission distances in the range of 5,000 to 10,000 metres with similar transmission speed of 1 to 10 gigabit Ethernet. In Table 3 attenuation specifications of OS1 and OS2 fiber optic cables as mentioned in ISO/IEC and EN standards are summarized.

**Table 3- Attenuation comparison between different OS fiber optic cables**

Fiber Optic Cable Category	Maximum Attenuation (dB/km)		
	1310 nm	1383 nm	1550 nm
OS1(EN50173-1:Ed.2: 2010)	1.0	1.0	1.0
OS2(EN50173-1:Ed.2: 2010)	0.4	0.4	0.4
OS1(ISO/IEC11801Ed.2.2:2010)	1.0	Not Specified	1.0
OS2(ISO/IEC11801Ed.2.2: 2010)	0.4	0.4	0.4
OS2(ISO/IEC24702: 2006)	0.4	0.4	0.4

