



GENERAL DESCRIPTION

R&M offers the full range of multimode fibers for all its cables, whether for installations or assemblies.

Apart from the OM1 type, all of them are bending-optimized fiber incorporating technology to deliver enhanced macro-bending performance produced by a unique Plasma Chemical Vapor Deposition (PCVD) process..

All fibers are designed for use at 850 nm and/or 1300 nm. In addition, the fibers are suitable for use in premises wiring application like LAN's with video, data and or voice services using LED, VCSEL and Fabry-Perot laser sources and are thus compliant with all relevant network standards.

OM1 Fiber 62.5/125

This fiber is a graded-index multimode fiber suitable for transmission speeds of up to 10 Gb/s. It has a 62.5 µm core diameter and a 125 µm cladding diameter.

OM2 Fiber 50/125

This fiber is a bend-insensitive, graded-index multimode fiber designed for transmission speeds of 1 Gbps but also appropriate for transmission speeds of up to 10 Gb/s.

OM3 Fiber 50/125

This fiber is a laser-optimized, bend-insensitive, graded-index multimode fiber designed for transmission speeds of 10 Gb/s and beyond.

OM4 Fiber 50/125

This fiber is a laser-optimized, bend-insensitive, graded-index multimode fiber designed for transmission speeds of 10 Gb/s and beyond.

OM5 Fiber 50/125

This fiber is a laser-optimized, bend-insensitive, graded-index multimode fiber designed for transmission speeds of 10 Gb/s and beyond. OM5 is backwards compatible with OM4 and supports single wavelength or multi-wavelength transition systems in the vicinity of 850 nm to 950 nm.

MINIMUM SYSTEM REACH – TRANSMISION DISTANCE

IEEE Standard	OM1	OM2	OM3	OM4	OM5
100BASE-FX	2'000 m	2'000 m	2'000 m	2'000 m	2'000 m
1000BASE-SX	275 m	550 m	550 m	550 m	550 m
10GBASE-SR	33 m	82 m	300 m	550 m	550 m
25GBASE-SR			70 m	100 m	100 m
40GBASE-SR4 ¹			100 m	150 m	150 m
100GBASE-SR4			100 m	100 m	100 m
400GBASE-SR4.2			70 m	100 m	100 m
40G-BiDi			100 m	150 m	200 m
100G-BiDi			70 m	100 m	150 m
40G SWDM4				350 m	400 m
100G SWDM4				100 m	150 m

¹ Indicated link distances require total connector loss = 1.0 dB, and VCSEL spectral bandwidth of = 0.45 nm

OPTICAL SPECIFICATION

Designation		Units	OM1	OM2	OM3	OM4	OM5 ²
Overfilled Modal Bandwidth	850nm	MHz x km	≥ 200	≥ 500	≥ 1650	≥ 3850	≥ 3850
	1300 nm	MHz x km	≥ 500	≥ 500	≥ 550	≥ 550	≥ 550
Effective Modal Bandwidth	850nm	MHz x km			≥ 2200	≥ 5170	≥ 5170
	953 nm	MHz x km					≥ 2710
Cabled Fiber Attenuation (maximum)	850nm	dB/km	≤ 3.5	≤ 3.0	≤ 3.0	≤ 3.0	≤ 3.0
	1300 nm	dB/km	≤ 1.5	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Numerical aperture			0.275 ± ^{0.015}	0.200 ± ^{0.015}	0.200 ± ^{0.015}	0.200 ± ^{0.015}	0.200 ± ^{0.015}
Group Index of Refraction	850nm		1.496	1.482	1.482	1.482	1.482
	1300 nm		1.491	1.477	1.477	1.477	1.477
Macro bending loss, r = 7.5 mm, 2 turns	850nm	dB		≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
	1300 nm	dB		≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Macro bending loss, r = 15 mm, 2 turns	850nm	dB		≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1
	1300 nm	dB		≤ 0.3	≤ 0.3	≤ 0.3	≤ 0.3
Macro bending loss, r = 37.5 mm, 100 turns	850nm	dB	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
	1300 nm	dB	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Bending-optimized fiber				yes	yes	yes	yes

DIMENSIONAL SPECIFICATION

Designation	Units	OM1	OM2	OM3	OM4	OM5
Core Diameter	µm	62.5 ± 2.5	50 ± 2.5			
Core non-Circularity	%	≤ 5				
Core-Cladding Concentricity Error	µm	≤ 1.5				
Cladding Diameter	µm	125.0 ± 1.0				
Cladding non-Circularity	%	≤ 1.0				
Coating Diameter	µm	242 ± 7				
Coating non-Circularity	%	≤ 5				
Coating-Cladding Concentricity Error	µm	≤ 10				

² with specified fiber parameters for wavelength multiplexing between 850 nm and 950 nm.

MECHANICAL SPECIFICATION

Designation	Units	OM1	OM2	OM3	OM4	OM5
Tensile proof test at fiber elongation = 1 %	GPa	≥ 0.7 (100 kpsi)				
Dynamic Tensile Strength	GPa	median > 3.8 (550 kpsi)				
Dynamic Fatigue, unaged and aged ³	-	$n_d \geq 20$				
Average Coating Strip Force	N	$1 \leq F_{\text{avg-strip}} \leq 3$				
Peak Coating Strip Force	N	$1.3 \leq F_{\text{peak-strip}} \leq 8.9$				

ENVIRONMENTAL SPECIFICATION

Designation	Induced attenuation	OM1	OM2	OM3	OM4	OM5
Temperature Cycling,	$\Delta\alpha \leq 0.1$ dB/km 850/1300 nm	-60°C to +85°C				
Temperature - Humidity Cycling	$\Delta\alpha \leq 0.1$ dB/km 850/1300 nm	-10°C to +85°C, 4-98% RH				
Water Immersion	$\Delta\alpha \leq 0.1$ dB/km 850/1300 nm	30 days; 23°C				
Dry Heat	$\Delta\alpha \leq 0.1$ dB/km 850/1300 nm	30 days ; 85°C				
Damp Heat	$\Delta\alpha \leq 0.1$ dB/km 850/1300 nm	30 days; 85°C; 85% RH				

OTHERS

Designation	OM1	OM2	OM3	OM4	OM5
Coating material	Acrylate				

STANDARDS

Designation	OM1	OM2	OM3	OM4	OM5
IEC / EN 60793-2-10	Type A1-OM1	Type A1-OM2	Type A1-OM3	Type A1-OM4	Type A1-OM5
ISO / IEC 11801	Category OM1	Category OM2	Category OM3	Category OM4	Category OM5
TIA / EIA 492	AAAF (formerly AAAA)	AAAF (formerly AAAB)	AAAF (formerly AAAC)	AAAF (formerly AAAD)	AAAF (formerly AAABE)
ITU-T	G.651.1				

³ aging at 85°C, 85% RH, 30 days