



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 – TRANSMISSION DISTANCE

IEEE Standard	OM1	OM2	OM3	OM4	OM5
100BASE-FX	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

DATA SHEET

Multimode Fiber

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.

DATA SHEET

Multimode Fiber

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 AAAE)
ITU-T	G.651.1				

³ aging at 85°C, 85% RH, 30 days