

## RadHard 62.5 µm OM1 MMF with High Temperature Acrylate coating (Dose levels up to 10 KGy and Optimized for temperature range -60°C to 150°C)



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Prysmian Group's OM1 RadHard MMF can be used in moderate irradiative environments (ex. Gamma rays, X-flash, Neutrons, and other high energy charged particles) up to a dose of 10 KGy. The 62.5 µm core is doped with Germanium. The HTA coating protects the fiber in applications exposed to high temperatures, up to 150°C.

The OM1 RadHard fibre can be used in all cable constructions designed for high temperature environments, including loose tube, tight buffered, and central tube designs.

### Applicable Standards

- IEC / EN 60793-2-10: type A1-OM1
- ISO / IEC 11801: Category OM1
- TIA / EIA 492 AAAF

### Optical Specifications

#### Radiation Induced Attenuation (RIA)

Test Conditions	Units	RIA at 1300 nm
Dose = 10 kGy Dose Rate = 1.67 Gy/s Temperature ≈ 28°C	dB/100m	< 7 (typical)

#### Attenuation

Attribute	Units	Specified Values
Attenuation coefficient at 850 nm	dB/km	≤ 3.0
Attenuation coefficient at 1300 nm	dB/km	≤ 0.7

#### Bandwidth (OFL)

Attribute	Units	Specified Values
Overfilled Modal Bandwidth at 850 nm	MHz•km	≥ 200
Overfilled Modal Bandwidth at 1300 nm	MHz•km	≥ 500

## Numerical Aperture

Numerical aperture	0.275 ± 0.015
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## Macrobending Loss

Conditions	Wavelength	Units	Specified Values
Mandrel Radius = 37.5 mm, 100 Turns	850 / 1300 nm	dB	≤ 0.5 / ≤ 0.5

## Chromatic Dispersion

Attribute	Units	Specified Values
Zero Dispersion Wavelength, $\lambda_0$	nm	1320 ≤ $\lambda_0$ ≤ 1365

## Backscatter characteristics <sup>1</sup>

Attribute	Conditions	Units	Specified Values
Point Discontinuity <sup>2</sup>	850 nm, 1300 nm	dB	≤ 0.1
Irregularities over fibre length	850 nm, 1300 nm	dB	≤ 0.1
Reflections	-	-	Not allowed
Group Index of Refraction	850 nm	(Typical)	1.496 (typical)
Group Index of Refraction	1300 nm	-	1.491 (typical)

<sup>1</sup> OTDR measurement with 0.5  $\mu$ s pulse width.

<sup>2</sup> Mean of bi-directional measurement

## Geometrical Specifications

### Glass Geometry

Attribute	Units	Specified Values
Core Diameter	$\mu$ m	62.5 ± 2.5
Core non-Circularity	%	≤ 5
Core-Cladding Concentricity Error	$\mu$ m	≤ 1.5
Cladding Diameter	$\mu$ m	125.0 ± 1.0
Cladding non-Circularity	%	≤ 1

### Coating Geometry

Attribute	Units	Specified Values
Coating Diameter	$\mu$ m	242 ± 7
Coating non-Circularity	%	≤ 5
Coating-Cladding Concentricity Error	$\mu$ m	≤ 10

## Mechanical Specifications

### Proof Test <sup>3</sup>

The entire spool length is subjected to a tensile proof stress  $\geq 0.7$  GPa (100 kpsi) ; 1% strain equivalent

<sup>3</sup> Higher proof test available upon request

### Coating Performance

Attribute	Units	Typical Values
Average Coating Strip Force, unaged and aged <sup>4</sup>	N	1 to 3
Peak Coating Strip Force, unaged and aged <sup>4</sup>	N	1.3 to 8.9

<sup>4</sup> Aging at 23°C, 30 days

### Fibre Strength

Attribute	Units	Specified Values
Dynamic Tensile Strength (0.5 meter gauge length), unaged and aged <sup>5</sup>	GPa	median > 3.8 (550 kpsi)
Dynamic Fatigue, unaged and aged <sup>5</sup>	-	$n_d \geq 18$

<sup>5</sup> Aging at 85°C, 85% RH, 30 days

### Environmental Specifications (Operating Temperature: -60°C to +150°C)

Environmental test	Test Conditions	Induced attenuation at 850, 1300 nm (dB/km)
Temperature Cycling	-60°C to +150°C	$\leq 0.2$
Temperature - Humidity Cycling	-10°C to +85°C, 4-98% RH	$\leq 0.2$
Water Immersion	30 days; 23°C	$\leq 0.2$
Dry Heat	3000 h ; 150°C	$\leq 0.2$
Damp Heat	30 days; 85°C; 85% RH	$\leq 0.2$

### Others

Length	Multiples of 2.2 km per spool
Coating	High Temperature Resistant Acrylate Coating (Clear)

All measurements in accordance with ITU-T G650 recommendations