Prysmian Elite

MIL RadHard 62.5 µm OM1 Multimode Fibre

(MIL-PRF-49291/6-03)

APPLICABLE STANDARDS

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

Issue Date: September 2024
Supersedes: January 2023

Prysmian Group's OM1 MIL RadHard MMF can be used in moderate irradiative environments (ex. Gamma rays, X-flash, Neutrons, and other high energy charged particles). The 62.5 µm core is doped with Germanium. The product is qualified and approved by the U.S. Defense Supply Center (DSCC) in accordance with the U.S. Military MIL-PRF-49291/6-03 specification. Prysmian Group's fibre plant Draka Comteq Fibre B.V. in Eindhoven, Netherlands is MIL-STD-790 certified. The OM1 RadHard fibre can be used in all cable constructions, including loose tube, tight buffered, ribbon and central tube designs.

IRRADIATION TEST CONDITIONS – MIL 49291/6-03

Temperature	Dose Rate	Total Dose
-28°C / 25°C / 85°C	0.50 Gy/s	CLASSIFIED

IRRADIATION TEST REQUIREMENTS – MIL 49291/6-03

Max. induced attenuation at 1300 nm	Attenuation at specified recovery time	Specified recovery time
< 50 dB/km (Total dose classified)	≤ 15 @ -28°C ≤ 5 @ 25°C ≤ 5 @ 85°C	1000 s

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)
Dose = 20 kGy Dose Rate = 2.5 Gy/s Temperature ≈ 25°C	dB/100m	< 8 (typical)

ATTENUATION

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

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BANDWIDTH (OFL)

Attribute	Units	At 850 nm	At 1300 nm
Overfilled Modal Bandwidth	MHz·km	≥ 300	≥ 600
RML Bandwidth	MHz·km	≥ 385	≥ 700

Numerical Aperture	
Numerical aperture	0.275 ± 0.015

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, λ_0	nm	$1320 \leq \lambda_0 \leq 1365$

BACKSCATTER CHARACTERISTICS [1]

Attribute	Conditions	Units	Specified Values
Point Discontinuity [2]	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)

[1] OTDR measurement with 0.5 µs pulse width.
[2] Mean of bi-directional measurement

GEOMETRICAL SPECIFICATIONS
GLASS GEOMETRY

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

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COATING GEOMETRY

Attribute	Units	Specified Values (MIL 49291/6-03)
Coating Diameter	µm	245 ± 10
Coating non-Circularity	%	≤ 5
Coating-Cladding Concentricity Error	µm	≤ 10

MECHANICAL SPECIFICATIONS

Proof Test [3]
The entire spool length is subjected to a tensile proof stress ≥ 0.7 GPa (100 kpsi) ; 1% strain equivalent

[3] Higher proof test available upon request

COATING PERFORMANCE

Attribute	Units	Typical Values
Average Coating Strip Force, unaged and aged [4]	N	1 to 3
Peak Coating Strip Force, unaged and aged [4]	N	1.8 to 13.2

[4] Aging at 23°C, 30 days

FIBRE STRENGTH

Attribute	Units	Specified Values
Dynamic Tensile Strength (0.5 meter gauge length), unaged and aged [5]	GPa	median > 3.8 (550 kpsi)
Dynamic Fatigue, unaged and aged [5]	-	$n_d \geq 20$

[5] Aging at 85°C, 85% RH, 30 days

ENVIRONMENTAL SPECIFICATIONS

Environmental test	Test Conditions	Induced attenuation at 850, 1300 nm (dB/km)
Temperature Cycling	-60°C to +85°C	≤ 0.1
Temperature - Humidity Cycling	-10°C to +85°C, 4-98% RH	≤ 0.1
Water Immersion	30 days ; 23°C	≤ 0.1
Dry Heat	30 days ; 85°C	≤ 0.1
Damp Heat	30 days; 85°C; 85% RH	≤ 0.1

OTHERS

Attribute	Specification
Length	Multiples of 2.2 km per spool
Coating	Standard Acrylate Coating (Clear)

All measurements in accordance with ITU-T G650 recommendations

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