

G.652 Single-Mode Fiber

BACKGROUND

This specification applies to fiber in cables for which “G.652 Single-Mode” fiber has been selected. This fiber type is fully compliant with the ITU-T G.652 Recommendations for Standard Single-Mode Fiber. This fiber is designated by the letter “G” in the 5th character of the product code. The attenuation of the cabled fiber is designated by the 6th character. A typical example is as follows:

Fiber Count **1** **2** **Cable Design** where **1** and **2** represent the 5th and 6th characters, respectively.
XXXX □ □ XXXXXXXXX

These values are specified at the time of order and are used to indicate fiber type and attenuation as follows:

1 Fiber Type

G = G.652.D Single-Mode Low Water Peak

2 Attenuation

B = 0.35/0.25 dB/km @ 1310/1550 nm

C = 0.40/0.30 dB/km @ 1310/1550 nm

Thus, a cable with Part Number XXXXGCXXXXXXXXXX would contain G.652 Single-Mode fiber as described by this specification with a maximum cabled attenuation of 0.40/0.30 dB/km.

PERFORMANCE SPECIFICATIONS

General Parameters

Reference Standard	ITU-T G.652.B
Fiber Type	Standard Single-Mode
Refractive Index Profile	Matched-Clad, Step-Index

Dimensional Parameters

Fiber Coating	Dual-Layer Acrylate
Cladding Diameter	125 ± 0.7 μm
Outer Coating Diameter	245 ± 5 μm
Core-Clad Concentricity	≤ 0.5 μm
Cladding Non-Circularity	≤ 1%
Fiber Curl	≥ 2.0m radius

Mechanical Parameters

Minimum Proof Test	100 kpsi
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OTDR Settings

IOR @ 1310 nm	1.467
IOR @ 1550 nm	1.468

Optical Parameters

Mode Field Diameter @ 1310 nm	9.2 ± 0.4 μm
Mode Field Diameter @ 1550 nm	10.4 ± 0.5 μm
Cabled Cut-off Wavelength	≤ 1260 nm
Zero Dispersion Wavelength (λ ₀)	1302 nm ≤ λ ₀ ≤ 1322 nm
Dispersion (1285-1330 nm)	≤ 3.5 ps/(nm*km)
Dispersion (1550 nm)	≤ 18.0 ps/(nm*km)
Zero Dispersion Slope	≤ 0.092 ps/(nm ² *km)
Attenuation (α) vs. Wavelength	
1285 nm to 1330 nm	= α ₁₂₈₅₋₁₃₃₀ ± 0.05 dB/km
1525 nm to 1575 nm	= α ₁₅₂₅₋₁₅₇₅ ± 0.05 dB/km
Attenuation at Water Peak (1383 nm)	≤ 1.0 dB/km
Point Discontinuity	≤ 0.08 dB
Attenuation with Bending	
1 turn on a 32mm mandrel	≤ 0.05 dB @ 1550 nm
100 turns on a 50mm mandrel	≤ 0.05 dB @ 1550 nm
PMD Coefficient	
Max. Value in uncabled fiber	≤ 0.2 ps/km ^{1/2}
Link Design Value	≤ 0.08 ps/km ^{1/2}

APPLICATION DATA

- > Prysmian’s G.652 Standard Single-Mode fiber specification is fully compliant with the ITU-T G.652 Recommendations for Standard Single-Mode fiber. G.652 fiber is the most widely deployed fiber category in the world today. It is also the category most widely supported by equipment manufacturers.
- > Attenuation calculations should be based on the cabled fiber attenuation specified at the time of order. This value is designated by the sixth character in the product code as shown in the example above. The range of available attenuation cells varies with cable design. Please see the appropriate cable datasheet for details.
- > Prysmian’s G.652 Single-Mode fiber specification is performance-based to ensure the reliable operation of your network. It is a manufacturer-independent specification.
- > RDUP listings are for complete cables. RDUP-listed cable designs are identified in their respective datasheets.

THE RIGHT CHOICE

Fiber Code Addendum

ADDITIONAL FIBER CODES FOR USE WHEN ORDERING PRYSMIAN CABLES

BACKGROUND

In the interest of simplicity, only the most commonly specified fiber types are listed on Prysmian's cable datasheets. However, a wide variety of optical fibers is available. This addendum provides the Fiber and Attenuation codes necessary to specify most of these fibers.

The location of these codes in the Prysmian product code is shown in the example below:

Fiber Count **1** **2** **Cable Design** where **1** and **2** represent the 5th and 6th characters, respectively.
 XXXX □ □ XXXXXXXXXXX

FIBER CODES BY CATEGORY

Single-Mode Fiber in Standard OSP Cables

1 2	FiberType	Test Wavelengths	Max. Attenuation
GB	G.652 Single-Mode Fiber	1310/1550 nm	0.35/0.25 dB/km
HB	G.652.D Premium Low Water Peak Standard SM Fiber	1310/1383/1550 nm	0.35/0.35/0.25 dB/km
ZB	Corning SMF-28e+™ G.652.D Standard SM Fiber	1310/1383/1550 nm	0.35/0.35/0.25 dB/km
RB	ClearCurve® XB G.657.A1 Bend-Optimized SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.35/0.35/0.25 dB/km
RL	ClearCurve® LBL G.657.A2/B2 Low Bend Loss SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.35/0.35/0.25 dB/km
RK	ClearCurve® ZBL G.657.B3 Ultra-Low Bend Loss SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.35/0.35/0.25 dB/km
EA	Corning LEAF™ G.655-Compliant (NZDS) Fiber	1550 nm	0.25 dB/km

Single-Mode Fiber in Premises Cables

1 2	FiberType	Test Wavelengths	Max. Attenuation
SE	G.652 Single-Mode Fiber	1310/1550 nm	0.70/0.70 dB/km
HE	G.652.D Premium Low Water Peak Standard SM Fiber	1310/1383/1550 nm	0.70/0.70/0.70 dB/km
ZE	Corning SMF-28e+™ G.652.D Standard SM Fiber	1310/1383/1550 nm	0.70/0.70/0.70 dB/km
RH	ClearCurve® XB G.657.A1 Bend-Optimized SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.50/0.50/0.50 dB/km
RL	ClearCurve® LBL G.657.A2/B2 Low Bend Loss SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.50/0.50/0.50 dB/km
RK	ClearCurve® ZBL G.657.B3 Ultra-Low Bend Loss SM fiber (also complies with G.652.D)	1310/1383/1550 nm	0.50/0.50/0.50 dB/km

Multimode Fiber (all cable types)

1 2	FiberType	Test Wavelengths	Max. Attenuation	MM Bandwidth (MHz*km)	Maximum Link Length (850/1300 nm)
LN	62.5 mm MMF	850/1300 nm	3.0/1.0 dB/km	200/500	300/600 @ 1GbE
MN	50 mm MMF	850/1300 nm	3.0/1.0 dB/km	500/500	500/1000 @ 1GbE
LC	Corning InfiniCor™ 300 -- 62.5 mm MMF (OM1)	850/1300 nm	3.0/1.0 dB/km	200 (220 RML)/500	300/600 @ 1GbE
LD	Corning InfiniCor™ CL1000 -- 62.5 mm MMF - Enhanced (OM1)	850/1300 nm	3.0/1.0 dB/km	385 (RML)/500	500/1000 @ 1GbE
MC*	Corning InfiniCor™ 600 -- 50 mm MMF (OM2)	850/1300 nm	3.0/1.0 dB/km	500/500	600/600 @ 1GbE
MD	Corning ClearCurve® OM2 50 mm MMF	850/1300 nm	3.0/1.0 dB/km	700*/500	150 @ 10GbE (850nm), 750/600 @ 1GbE
TC	Corning ClearCurve® OM3 50 mm MMF	850/1300 nm	3.0/1.0 dB/km	2000*/500	300 @ 10GbE, 1000 @ 1 GbE (850nm only)
TE	Corning ClearCurve® OM4 50 mm MMF	850/1300 nm	3.0/1.0 dB/km	4700*/500	550 @ 10GbE, 1200 @ 1 GbE (850nm only)

*Type MC fiber has been replaced by type MD, which has superior performance. However, the MC code continues to be listed for the convenience of customers who wish to retain their old Part Numbers.

Please note that other fiber types and attenuation cells are available upon request. If you have questions, or if you cannot find the fiber you require, please contact Prysmian.

To place an order, contact us in one of the following ways:

700 Industrial Drive, Lexington SC 29072 - (800) 669-0808 (Inside Sales) - Fax (800) 951-5040 - comm.cables@prysmian.com