

# 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 manufactured with Corning™ technology and 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

XXXX □ □ XXXXXXXX where **1** and **2** represent the 5th and 6th characters, respectively.

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 Single-Mode

H = 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 XXXXGCXXXXXXXXX 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

Manufacturing Process	Corning™ OVD Technology
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	10.5 ± 1.0 μm
Cabled Cut-off Wavelength	≤ 1260 nm
Zero Dispersion Wavelength ( $\lambda_0$ )	1302 nm ≤ $\lambda_0$ ≤ 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 <sup>2</sup> *km)
Attenuation ( $\alpha$ ) vs. Wavelength	
1285 nm to 1330 nm	= $\alpha_{1310} \pm 0.05$ dB/km
1525 nm to 1575 nm	= $\alpha_{1550} \pm 0.05$ 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 <sup>1/2</sup>
Link Design Value	≤ 0.08 ps/km <sup>1/2</sup>

- 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.
- RUS listings are for complete cables. RUS listed cable designs are identified in their respective datasheets.

# 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**  
XXXX   XXXXXXXXX where **1** and **2** represent the 5th and 6th characters, respectively.

## Fiber Codes by Category

It is important to note that the meaning of the attenuation code changes according to fiber category (SSMF, MMF, NZDS, etc.). Please select the desired fiber category, then choose the appropriate fiber and attenuation codes from the same category. Tables are organized by fiber category below.

### Standard Single Mode Fiber (SSMF)

<b>1</b> Fiber Code	Description
H	Premium LWP SSMF ( $\leq 0.35$ dB/km @1383* nm)
U	Premium ZWP SSMF ( $\leq 0.31$ dB/km @1383* nm)
Z	Corning™ NexCor™ ( $\leq 0.35$ dB/km @1383* nm)
C	SMF/MMF mix (refer to order notes)
X	Other Mixed Fiber Types (refer to order notes)

\*post hydrogen aging (uncabled) attenuation value

<b>2</b> Attenuation Code	Attenuation (dB/km)	
	@ 1310 nm	@ 1550 nm
A	0.35	0.20
B	0.35	0.25
C	0.40	0.30
E	0.7	0.7

### Non-Zero Dispersion-Shifted Fiber (NZDSF)

<b>1</b> Fiber Code	Description
E	Corning™ LEAF™ ( $\leq 0.35$ dB/km @1383* nm)
V	Corning™ VistaCor™
X	Other (non MMF) Mixed Fiber Types (refer to order notes)

\*post hydrogen aging (uncabled) attenuation value

<b>2</b> Attenuation Code	Attenuation (dB/km)	
	@ 1310 nm	@ 1550 nm
A	--	0.25

### Multi-Mode Fiber (MMF)

<b>1</b> Fiber Code	Description
L	62.5/125 (200/600 MHz Bandwidth)
M	50/125 (500/500 MHz Bandwidth)
T	50/125 Laser-Optimized (10 Gigabit/s)
C	SMF/MMF mix (refer to order notes)

<b>2</b> Attenuation Code	Attenuation (dB/km)	
	@ 850 nm	@ 1310 nm
B	3.5	1.5
C	3.0	1.0

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.