

# Premium Low Water-Peak Fiber

## OVERVIEW

This specification applies to fiber in cables for which “G.652.D Single-Mode Low Water-Peak” fiber has been selected. This fiber is a Premium grade of Standard Single-Mode Fiber (SSMF) featuring low attenuation around the Water-Peak (1383 nm). Premium LWP Fiber is top-quality fiber produced with Corning™ technology, in state-of-the-art facilities, to meet the requirements of the world’s leading network operators. Because it is backward-compatible with older SSMF standards, Premium LWP Fiber can be used to extend legacy SSMF networks. Because it provides low attenuation from 1270 to 1625 nm, Premium LWP Fiber is particularly well suited to new networks designed to operate throughout that range. Prysmian’s Premium LWP Fiber specification meets or exceeds all applicable International Standards and assures seamless interoperability with other top-tier SSMF designs.

## FEATURES AND BENEFITS

### Low Water-Peak Attenuation

- > Provides dramatically lower attenuation for wavelengths around 1383 nm
- > Permits system operation in the Water-Peak region
- > Allows operation over the entire 1270-1625 nm spectrum, thereby enabling FTTH, CWDM and/or DWDM on a single fiber.
- > Fully compliant with all fiber categories in the ITU-T G.652 Recommendations (A through D)

### Long-Term Attenuation Stability

- > Attenuation at the Water-Peak remains low, even after Hydrogen aging
- > Provides steady performance across the full spectrum of transmission wavelengths

### Precise Glass Geometry

- > The industry’s best geometry specs
- > Consistent, low-loss splices and connectors
- > High yields in mass fusion splicers and low-end hand-held fusion splicers

### International Standards Compliance

- > Compatible with all other G.652 fibers, regardless of their Water-Peak attenuation
- > Compatible with all equipment designed for G.652 fibers
- > Meets or exceeds the world’s most stringent Low Water-Peak Standard (G.652.D)
- > Suitable for expansion of legacy networks
- > Designed with future network expansions and upgrades in mind

### World-Class Performance

- > Meets or exceeds all applicable standards
- > Ensures the performance and stability of your network
- > Maximizes returns on network investment, both today and into the future

## APPLICATION DATA

- > Premium LWP fiber is fully compliant with ITU-T G.652 Recommendations. 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.
- > Premium LWP fiber is also fully compliant with the ITU-T G.652.D attributes. G.652.D is the world’s most stringent Industry Standard for Low Water-Peak Fiber.
- > Please note that network performance is determined by *cabled* (not bare or uncabled) fiber attenuation values. This value is designated by the sixth character in our cable part numbers, as explained on the back of this datasheet. The range of available attenuation cells varies with cable design. Please see the appropriate cable datasheet for details.
- > Prysmian’s Premium LWP fiber specification is performance-based to ensure the reliable operation of your network. It is a manufacturer-independent specification.
- > Prysmian’s Premium LWP fiber provides the industry’s best specs for glass geometry and bending losses in a G.652 fiber. These features make it ideal for FTTH applications, where frequent access and splicing are required.

THE RIGHT CHOICE

## PERFORMANCE SPECIFICATIONS

### General Parameters

Manufacturing Process	Corning™ OVD Technology
Fiber Type	LWP Standard Single-Mode
Refractive Index Profile	Matched-Clad, Step-Index
Fiber Coating	Dual-Layer Acrylate
Minimum Proof Test	100 kpsi

### Dimensional Parameters

Outer Coating Diameter	245 ± 5 μm
Coating/Cladding Concentricity Error	≤ 12 μm
Cladding Diameter	125 ± 0.7 μm
Cladding Non-Circularity	≤ 0.7%
Core-Clad Concentricity	≤ 0.5 μm
Nominal Core Diameter	8.2 μm
Fiber Curl	≥ 4.0 m radius

### 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 ( $\lambda_0$ )	1302 nm < $\lambda_0$ < 1322 nm
Chromatic Dispersion	
1285-1330 nm	≤ 3.3 ps/(nm*km)
1550 nm	≤ 18.0 ps/(nm*km)
1625 nm	≤ 22.0 ps/(nm*km)
Zero Dispersion Slope	≤ 0.089 ps/(nm <sup>2</sup> *km)
Typical Zero Dispersion Slope	0.086 ps/(nm <sup>2</sup> *km)
Point Discontinuity (1310 & 1550 nm)	≤ 0.05 dB

### Attenuation 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
1383 nm (Post Hydrogen Aging)	≤ attenuation @ 1310 nm

### Environmental Performance

Temperature Cycling (-60°C to +85°C)	≤ 0.05 dB/km
Temperature Humidity Cycling (-10°C to +85°C, up to 98% RH)	≤ 0.05 dB/km
Water Immersion (23°C ± 2°C)	≤ 0.05 dB/km
Accelerated Heat Aging (85°C ± 2°C)	≤ 0.05 dB/km

### Macrobend Loss

1 turn on a 32mm mandrel	≤ 0.03 dB @ 1550 nm
100 turns on a 50mm mandrel	≤ 0.03 dB @ 1310 nm
100 turns on a 50mm mandrel	≤ 0.03 dB @ 1550 nm
100 turns on a 60mm mandrel	≤ 0.03 dB @ 1625 nm

### Polarization Mode Dispersion (PMD)

Max. Value in uncabled fiber	≤ 0.1 ps/km <sup>1/2</sup>
Link Design Value	≤ 0.06 ps/km <sup>1/2</sup>

### OTDR Settings

IOR @ 1310 nm	1.467
IOR @ 1550 nm	1.468

Prysmian's Premium LWP fiber is manufactured with Corning™ technology and meets or exceeds all attribute tables (A through D) of the ITU-T G.652 Recommendations for Standard Single-Mode Fiber (including Low Water-Peak types).

## ORDERING INFORMATION

Fiber Type is specified for each cable at the time of order. Premium LWP fiber is designated by the letter "H" in the 5th position of the cable product code. The attenuation of the cabled fiber is designated by the character in the 6th position. 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:

<b>1</b> <b>Fiber Type</b>	<b>2</b> <b>Attenuation</b>
H = G.652.D Single-Mode Low Water Peak	B = 0.35/0.35/0.25 dB/km @ 1310/1383/1550 nm
Z = Corning™ SMF-28e+ Fiber	C = 0.40/0.40/0.30 dB/km @ 1310/1383/1550 nm

Thus, a cable with Part Number XXXXHCXXXXXXXXXX would contain Premium LWP fiber as described by this specification, with a maximum cabled attenuation of 0.40/0.40/0.30 dB/km.

Note: If you require other fiber types, please refer to the Fiber Code Addendum, or contact us for help.

### 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