

A hand silhouette is shown holding a fiber optic cable against a sunset background. The sun is low on the horizon, creating a bright glow and lens flare effect. The hand is positioned on the right side of the frame, with the fingers holding the cable. The background is a gradient of blue and orange, suggesting a sunset or sunrise.

CORNING

Ultra bendable.  
Ultra compatible.

# Ultra

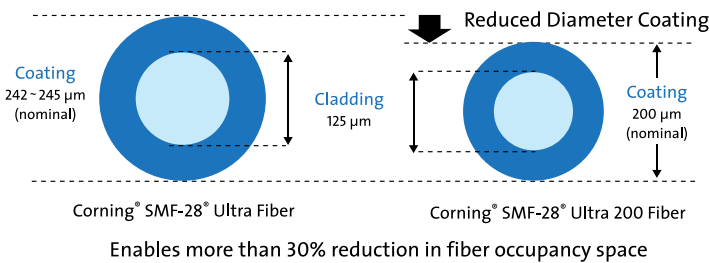
small.

Now bend insensitive, low loss and backwards compatibility come together in a smaller size. Introducing SMF-28® Ultra 200 fiber, the 200 micron fiber that provides the performance you expect and enables higher fiber density in cable—optimizing space, reducing cost, and simplifying deployment. It's the only 200 micron fiber that combines bend, loss, and compatibility in one convenient package.

# Ultra Goes Small.

The miniaturization of cables and associated hardware is a major trend in optical fiber cabling and the telecommunications industry in general. This was born out of a necessity to improve installation efficiency and to accelerate the penetration of optical fiber-based bandwidth service coverage. To help make optical fiber cables smaller and easier to deploy deeper into the network where space is at a premium, Corning has developed a new generation of single-mode fiber with a smaller coating diameter.

Corning's new SMF-28 Ultra® 200 optical fiber maintains the same industry leading optical performance as SMF-28 Ultra fiber, while retaining the conventional 125 micron glass cladding diameter of legacy single-mode fibers, but features a smaller 200 micron diameter coating to allow for tighter fiber packing densities and further miniaturization of cables.

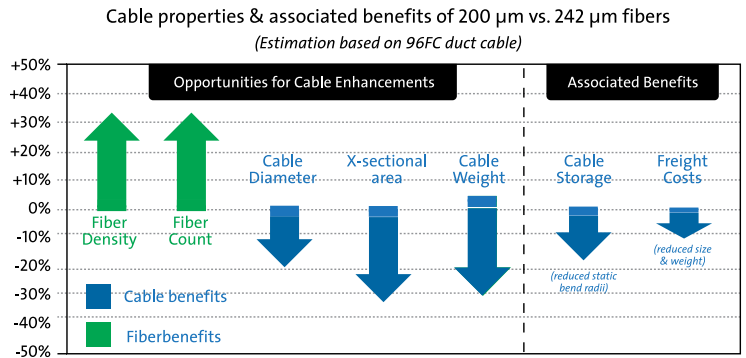


SMF-28 Ultra 200 fiber is the industry's first 200 micron fiber which provides low loss, meets and exceeds ITU-T G.652.D and ITU-T G.657.A1 industry standards, and features a 9.2 micron nominal mode field diameter (MFD) at 1310 nm for full backwards compatibility with legacy networks. Corning's CPC® coating technology provides the necessary optical and mechanical resilience required for outside plant cabling applications.

## Space Matters

SMF-28 Ultra 200 fiber enables higher fiber density and smaller cross-sectional area cable designs which reduce packaging, storage, and weight. In duct applications, smaller form factor cables can be deployed quickly and

more efficiently by blowing into smaller duct sizes while maximizing duct utilization. Smaller, lighter, more fiber-dense cables also enable the use of smaller ducts, or a higher fiber count cable in the same duct.



## Compatibility Matters

The adoption of ITU-T G.657 category fibers in high fiber count outside plant cables has been deferred by some network operators due to concerns over splice compatibility with the existing network installed base of legacy ITU-T G.652 fibers. Conventional ITU-T G.652 fibers derive some enhanced optical bending resistance from their smaller MFD, which is typically 8.6 ~ 8.8 microns, and is smaller than most legacy ITU-T G.652 fibers that have a nominal MFD of 9.2 microns. SMF-28 Ultra 200 fiber has a MFD specification that is based on well-established industry international standards (ITU-T G.652.D) and has a nominal MFD of 9.2



microns which maintains MFD consistency with legacy ITU-T G.652.D fibers to provide backwards compatibility during fiber joining and termination in the field.

## Bend Matters

By utilizing the same glass technology, both SMF-28 Ultra and Ultra 200 optical fibers also deliver up to ten times better macrobend loss compared to the ITU-T G.652.D standard for 30 mm radii bends and up to 33% better macrobend loss compared to the ITU-T G.657.A1 standard for 10 mm radii bends. Despite the reduction in coating diameter, the combination of Corning's innovative glass design and advanced coating technology also provides the microbend resilience required to make smaller-diameter cables suitable for use in outside plant cabling applications.

## Loss Matters

Fiber signal loss – or attenuation – is integral to optical performance, transmission speed and overall network cost. SMF-28 Ultra 200 fiber offers up to 10% lower attenuation than typical ITU-T G.652.D fibers to extend the reach of a network. Furthermore, this reach advantage can yield up to 20% greater subscriber coverage from a central office and can raise the possibility of central office

consolidation in access networks. The preservation of low loss performance is also integral to network capability, especially at the extreme ends of the transmission wavelength spectrum that can be susceptible to bending. The low loss of SMF-28 Ultra 200 fiber, combined with the superior macrobend performance provides greater optical resilience and an upgrade path to the next generation of passive optical networks.

## Corning® CPC® Coating

SMF-28 Ultra 200 fiber surpasses all international standards requirements established for legacy fibers with conventional coating diameters. The 200 micron diameter CPC coating can be removed for single fiber jointing using the same tools, practices and procedures that are used with conventional diameter single-mode fibers. This provides network operators with the option of integrating SMF-28 Ultra 200 fibers into parts of their current fiber network build outs as well as new networks without any changes to fiber handling methods, installation practices or testing procedures.



## Key Specifications

Attribute	Units	Corning® SMF-28® Ultra 200 fiber	ITU-T G.652.D / IEC 60793-2-50, type B1.3	ITU-T G.657.A1 / IEC 60793-2-50, type B6_a1
<b>Coating diameter</b>				
200 micron fibers		200 ± 5	200 ± 10*	200 ± 10*
Conventional diameter fibers		–	(235 – 255)	(235 – 255)
Coating-cladding concentricity error	microns	≤ 10	≤ 10*	≤ 10*
<b>Attenuation</b>				
1310 nm	dB/km	≤ 0.32	≤ 0.4	≤ 0.4
1383 ± 3 nm	dB/km	≤ 0.32	≤ 0.4	≤ 0.4
1550 nm	dB/km	≤ 0.18	≤ 0.3	≤ 0.3
1625 nm	dB/km	≤ 0.20	≤ 0.4	≤ 0.4
<b>Macrobend Loss (dB)</b>				
100 turns, 30 mm radius at 1625 nm	dB	≤ 0.01	≤ 0.1	≤ 0.1
1 turn, 10 mm radius at 1550 nm	dB	≤ 0.50	Not specified	≤ 0.75
1 turn, 10 mm radius at 1625 nm	dB	≤ 1.5	Not specified	≤ 1.5
Mode Field Diameter at 1310 nm	microns	9.2 ± 0.4	8.6-9.5 ± 0.4	8.6-9.5 ± 0.4
<b>Polarization mode dispersion (PMD)</b>				
Link Design Value (ps/√km)	(ps/√km)	≤ 0.04	≤ 0.20	≤ 0.20
Maximum Individual Fiber PMD	(ps/√km)	≤ 0.1	Not specified	Not specified

\*Published specified limits for 200 micron fibers. The values shown above are for un-colored fibers.

## Conclusion

Optical fibers with reduced coating diameters have a pivotal role to play in the telecommunications industry's pursuit of cable and hardware miniaturization. The smaller, higher density cable designs that 200 micron fibers enable can provide significant benefits to network operators, but until now, these have come with a compromise in terms of fiber compatibility. Corning's latest optical fiber innovation is a true industry first. With SMF-28 Ultra 200 fiber you can now have the same low loss, bend resilience and full backwards compatibility of SMF-28 Ultra fiber, in one smaller package.

## CORNING

### Corning Incorporated

One Riverfront Plaza

Corning, NY 14831 U.S.A

Ph: +1 607-248-2000

Email: cofic@corning.com

Corning and SMF-28 are registered trademarks of Corning Incorporated, Corning, NY.

© 2015 Corning Incorporated. All Rights Reserved.