SMF-28® Contour Fibers

The shape of things to come

As networks rapidly grow and boundaries for connection expand, SMF-28® Contour fibers will shape them.

The SMF-28® Contour optical fiber portfolio is Corning's platform for density with improved bend resilience and 9.2 micron standard mode field diameter. These optical fibers bring more bend and more reach to more places.

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SMF-28® Contour fibers

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The ideas that flow over the communication networks of today drive the modern world and allow us to make human connections, even when separated by distance. The need for effective delivery of communication networks has never been greater as bandwidth demands from users grow and the services connected to communication infrastructures increase in diversity. The principal drivers of efficiency in networks are the reduction of errors in installation and operation and the efficient use of the existing infrastructure during upgrades. Optical fiber is a fundamental component of signal transport in the network, and it must support delivery of these efficiencies. Fibers must have a combination of features that support these goals.

Corning's SMF-28® Contour fibers deliver on all the features needed to increase network efficiency and reduce network errors. They are available in two options:

SMF-28® Contour Pro, an ITU-T G.657.A2 compliant low-loss fiber that delivers superior bend performance for high density cables and connectivity and compatibility for installation efficiency.

SMF-28® Contour Fit, an ITU-T G.657.A1 compliant fiber that is compatible with existing legacy fiber for efficient installation and has bend resilience suitable for high density cable applications.

Fiber requirements for efficient operation

Bend in the network will often occur during installation creating expensive remedial work in repair. Signal loss will occur when a fiber is bent to less than a specified minimum bend diameter. In standard ITU-T G.652.D fiber, this occurs for bends less than 30 mm in radius. The loss is higher at longer wavelengths of transmission. Many of the advanced network technologies being installed in networks today, and under consideration for the future, use these longer wavelengths. Furthermore, automatic network monitoring systems used to support operations use the longest wave-lengths of transmission between 1625 and 1650 nm. A bend resilient fiber can increase network efficiency by accommodating varying levels of field craft in installations and tolerance of human error.

Corning's SMF-28® Contour fiber portfolio complies with the ITU-T G.657 standard and offers bend resiliency for installation efficiency.

Low-loss fibers will support extended reach and capture more of the potential customer base. This low loss must be across a wide spectrum of transmission to support high bandwidth systems with many wavelengths at high bit rates in the communication channel. A bend resilient fiber will protect this optical performance and avoid link failures resulting from increased loss in the presence of bend within the network.

Corning's SMF-28® Contour Pro fiber has an industry leading low loss across all the wavelengths of interest in communication systems, delivering 10% longer reach and 20% greater coverage for customer capture. Transmission within the fiber is bend protected by an ITU-T G.657.A2 bend resilience, low loss, and wide spectrum of transmission, making it ideal for networks of today and tomorrow.

Fiber Requirements for Installation

Most of the legacy fiber installed in networks today has a 9.2 µm nominal mode field diameter. The mode field diameter is the region in which the light is contained within the fiber. Significant splice and measurement error can occur if mode field diameters are mismatched. This issue becomes worse in the case where mass fusion splicing is used, where a fiber misalignment in conjunction with a mode field diameter mismatch will result in elevated splice losses and a wider distribution of splice loss results. Time and money are spent in remedial work to investigate ambiguous test results and high splice loss. This is avoided if the mode field diameters of fibers at either side of the splice are matched. The fiber must be compatible with existing fibers within the network for efficiencies in splice, connection, and test in upgrades.

Corning's SMF-28® Contour fibers have a 9.2 µm mode field diameter, matched to most legacy fibers installed in networks. Consequently they deliver up to 75% increase in splice yield on test and up to 50% of time saved in installation by the avoidance of remedial work.

Many ITU-T G.657 fibers provide bend protection with a compromised, lower mode field diameter that is mismatched to legacy fibers already installed in the network. SMF-28® Contour fibers do not compromise on a compatible mode field diameter in conjunction with bend resilience.

Fiber requirements for efficient use of infrastructure

As connections increase within networks, the space available for installation remains the same. Consequently, the ability to increase the fiber density in a cable has value by allowing greater duct space utilization.

Low outer diameter fiber options must be available to provide even greater density of fiber in cable which allows more connections in a constrained space and the ability to use low-cost deployment techniques for even greater installation efficiency. Smaller cables are often lighter and can take advantage of high-speed installation techniques, easier handling, and lower freight costs.

Corning's SMF-28® Contour fibers have a 190 µm outer diameter that provides a 40% cross sectional area reduction when compared to a 242 µm fiber. This provides opportunities for cable designs that deliver an increased fiber count for a given duct size or a smaller cable for the same fiber count, allowing the use of smaller ducts.

Corning's SMF-28® Contour Pro fiber has greater bend resilience conforming to the ITU-T G.657.A2 specification. SMF-28® Contour Pro fiber has been shown to deliver up to a 75% reduction in attenuation at low temperatures in dense cable designs compared to our SMF-28® Ultra 200 fiber. The increase in bend resilience and 190 micron fiber outer diameter make SMF-28® Contour Pro fiber an ideal candidate fiber for the highest density cable applications.

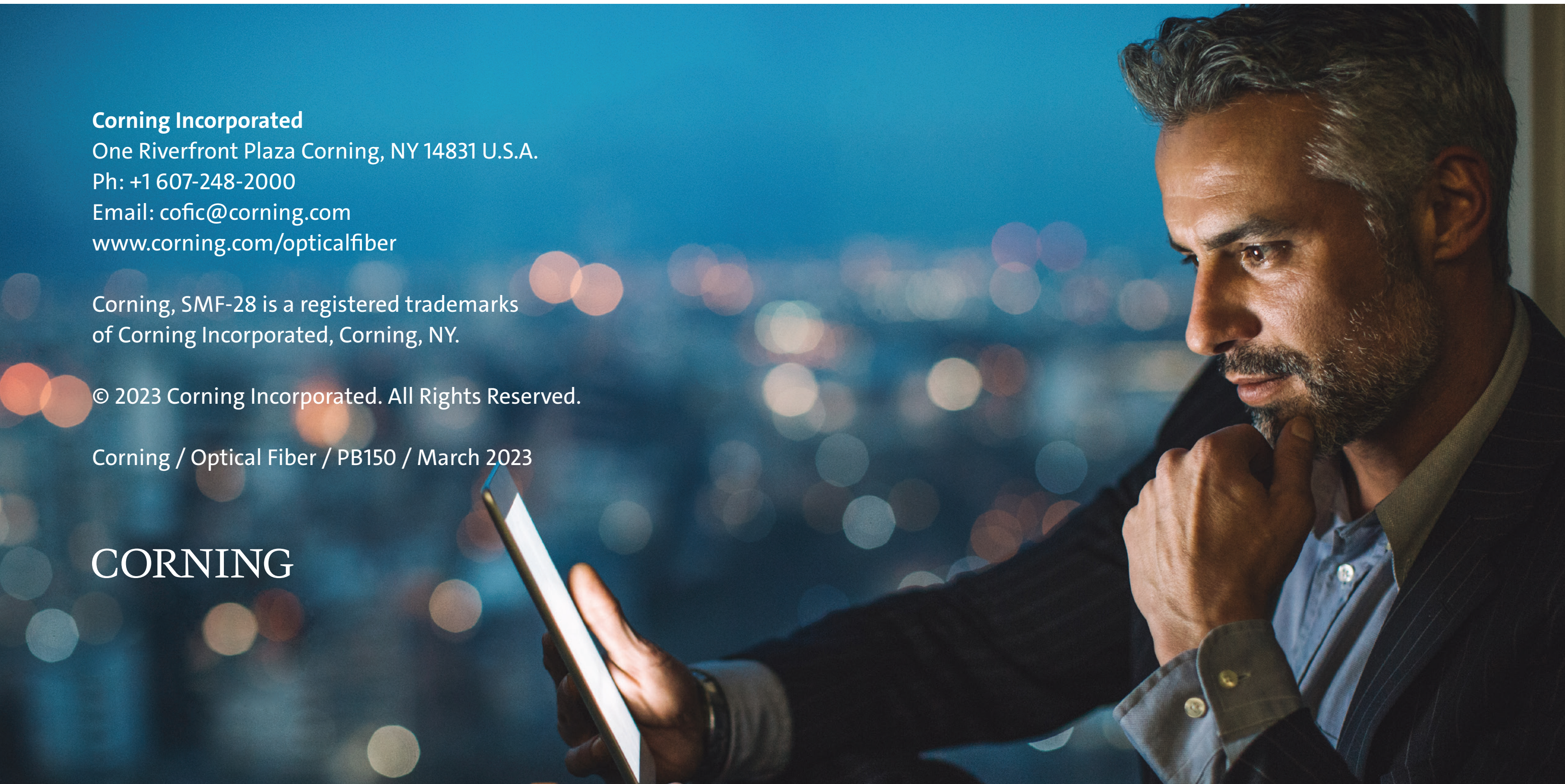
Corning's SMF-28® Contour Fit fiber has bend resilience conforming to the ITU-T G.657.A1 specification, while being aligned to the ITU-T G.657.A2 requirements at 7.5 mm and 10 mm bend radii. The bend resilience and 190 micron fiber outer diameter make SMF-28® Contour Fit fiber an ideal candidate for high-density cable applications.

Conclusion

Networks are quickly evolving to support our rapidly changing world. Corning introduced the first low-loss fiber in 1970. Continuing our history of innovations in optical communications, Corning SMF-28® Contour optical fiber portfolio is a platform for density with improved bend resilience, 9.2 micron mode field diameter, and low loss options. These optical fibers bring more bend and more reach to more places. The future of communication, connection, and progress will be led by Corning, and SMF-28® Contour fibers will shape it.

Key Specifications

Attribute	SMF-28® Contour Pro fiber	SMF-28 Contour Fit fiber
Attenuation @ 1310 nm	≤ 0.32 dB/km	≤ 0.35 dB/km
Attenuation @ 1383 ± 3 nm	≤ 0.32 dB/km	≤ 0.35 dB/km
Attenuation @ 1550 nm	≤ 0.18 dB/km	≤ 0.21 dB/km
Attenuation @ 1625 nm	≤ 0.20 dB/km	≤ 0.23 dB/km
Macrobend Loss, 1 turn x 7.5 mm radius @ 1550 nm	≤ 0.5 dB	≤ 0.5 dB
Macrobend Loss, 1 turn x 7.5 mm radius @ 1625 nm	≤ 1.0 dB	≤ 1.0 dB
Macrobend Loss, 1 turn x 10 mm radius @ 1550 nm	≤ 0.1 dB	≤ 0.1 dB
Macrobend Loss, 1 turn x 10 mm radius @ 1625 nm	≤ 0.2 dB	≤ 0.2 dB
Macrobend Loss, 10 turns x 15 mm radius @ 1550 nm	≤ 0.03 dB	≤ 0.25 dB
Macrobend Loss, 10 turns x 15 mm radius @ 1625 nm	≤ 0.1 dB	≤ 1.0 dB
Mode Field Diameter @ 1310 nm	9.2 ± 0.4 µm	9.2 ± 0.4 µm



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