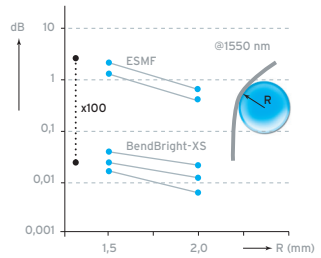
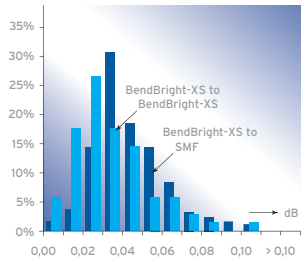
Kink loss of BendBright-XS when bent 45º around a very small radius pin



Splice Loss Distribution of BendBright-XS to SMF and to itself at 1550 nm



Kink losses

Apart from the macrobending loss, very low loss at short radii in the millimeter range, referred to as "kink loss", is a remarable feature of BendBright-XS. Because of the industry leading coating technology utilized by Draka, BendBright-XS also gives a 100x improvement in microbending over standard ESMF. The combination of the 100x improvement in microbending and 100x improvement in macrobending results in a fiber with the performance shown in the plot below. "Kink loss" deformations induce an added loss that is similar to the loss of an average splice, as opposed to much higher losses with standard SMF. This makes a BendBright-XS network very friendly to fiber engineering errors like overclamping the fiber, tie wrapping bundles of patchcords etc... It's this very characteristic that makes BendBright-XS fiber handling like working with good old "copper wires".

Other characteristics

Backwards compatibility with fibers used in existing networks requires parameters such as loss, dispersion, PMD and cut-off wavelength to be in the same range. As compared to legacy SMF, the mode field diameter of BendBright-XS shows a small average reduction of about 0.2µm, much different than other bend-insensitive fiber that have very small mode field diameters, and thus are not compatible with existing SMF fibers. Fusion splicing is an important consideration for new fiber types. As the plot shows, BendBright-XS has excellent splice performance, achieved with standard splicing equipment. Likewise, cleaving or polishing of the end faces is unchanged compared with standard SMF.

Lifetime

When compared to the years old and widely accepted minimum storage radius of 30 mm, a reduction to 7.5 or 15 mm might raise concern about lifetime issues. However, this topic has been studied thoroughly by Draka and others in the industry, and the conclusion is that high quality fibers, such as BendBright-XS, can fully cope with these circumstances. Because fiber quality has increased dramatically over the past decade, the assumptions that led to the 30 mm minimum storage radius are out-dated. Just like standard SMF, the choice of pure materials and clean processing conditions result in fiber quality that meet all conditions with respect to lifetime. For modern cables this involves that a low level continuous strain of 1/3 of the proof-test level for 20 years is allowed over its full length. In storage cassettes, a much higher strain applied over a much shorter length leads to the same low probability of breakage.

Why BendBright-XS ?

- 100x bending improvement over SMF
- Exceeds toughest bending standards; ITU-T G.657.B
- Fully backwards compatible with SMF; G.652.D compliant
- Close to 1 billion meters sold since 2006
- Deployed in over 30 countries worldwide
- Tens of million splices and connectors
- Used everywhere in the network!

Further information

Interested by these new exciting possibilities?
Contact Draka and ask for the full datasheet and extended Application Note with more details on various aspects of applying this industry leading bend-insensitive fiber.
Demand the Best... Demand BendBright-XS!

VALUE INNOVATION

BendBright-XS

Glass that handles like "copper wire"

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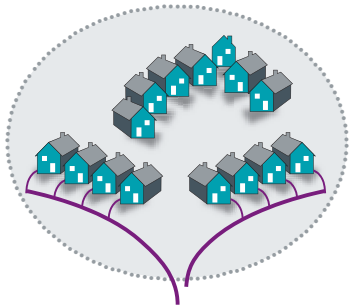
Draka

Draka Communications – a member of Draka Holding N.V. located in Amsterdam – offers a versatile and reliable range of copper and optical fiber cables for the transmission in the data and telecommunication industry. Our long-lasting expertise in cable and fiber business has been the basis for us holding a major market position today. Draka Communications is located in more than 30 countries in Europe, Asia, North America and South America.

Value Innovation is a way of looking at the world. What we can do to help our customers do more, make more, save more and achieve more? A lot. We help our customers to stay ahead. By combining market insight with technological know-how and building strong, long-lasting relationships, we add value to their business with advanced communication solutions and services that are designed to last. No matter how complex your challenge, we have a product or solution that will do more than meet your needs. And if for some reason we don't, we'll make it for you. New applications, breakthrough cables, custom connectors or complete network designs - it's all part of what we call Value Innovation, and it's what drives us.

VALUE INNOVATION



With over 20 million subscribers worldwide, Fiber-to-the-Home (FTTH) access networks are re-shaping the way people conduct their lives. Whether it's video chatting, on-line gaming, running peer-to-peer applications, high-definition movies on-demand, or watching videos on YouTube, there has been tremendous growth in user-driven demand for high bandwidth optical access networks. Draka Communications, a leading fiber, cable, and passive network manufacturer, has been a pioneer in this market from the beginning. As the largest fiber optic cable manufacturer in the world, Draka has led the industry in a new direction, with the introduction of bend-insensitive optical fibers for use in optical access networks. Draka's flagship bend-insensitive fiber, BendBright-XS , has helped redefine the way optical access networks are designed and deployed today and in the future.

The industry leader

Since it's introduction in 2006, over close to 1 million km of BendBright-XS, enough to circumnavigate the globe 25 times over, has been deployed in over 30 countries worldwide. People recognize the benefits of a fiber that meets the most stringent bending standards in the industry, yet is fully backwards compatible with traditional SMF. BendBright-XS is fully compliant with ITU-T G.657 A and B, as well as the low water peak single mode standard, ITU-T G.652.D. This results in a fiber that is 100x improved in both macrobending and microbending over traditional low water peak single-mode fiber. The majority of the success of BendBright-XS is driven by the large scale deployment of FTTH access networks by the major telecommunication carriers in both North America and Europe.

While the telecommunications industry is the early adopter of this fiber, a wide array of other applications have emerged taking advantage of the excellent bending properties of the fiber, including the aerospace, marine oil & gas, broadcast, military, home entertainment and trans-portation industries, just to name a few. BendBright-XS is enabling applications in which fiber was previously not an option.

It's benefits

Excellent Macrobend Performance

Considering the harsh environment in local loop network deployment, Draka quickly realized that macrobending loss is a parameter of vital importance. Supporting smaller and denser footprints, fiber management systems can save expensive space in the telecom offices and cabinets. Engineer-friendly fiber performance for accidental low radius kinks and bends can prevent excessive rework and allow for the employment of lower skilled labor forces. The very same cost reducing characteristics will also support further reduction of maintenance cost in case of frequent reconfiguration of the network due to customer churn or further built-out of the access network.

Backwards compatibility

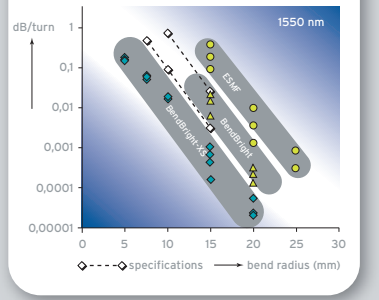
Although the need for low macrobending loss is most relevant in the last mile of access networks, Draka also realizes that the proliferation of fiber types has a negative cost impact for the network operator. Maintaining an up-to-date network administration and stock level of cables with different fiber types is a burden to many operators. Therefore, BendBright-XS has been designed such that it is fully compatible with the existing single-mode fibers (SMF) used in the trunk and metro networks. Because BendBright-XS is fully compliant with the low-waterpeak single mode standard, ITU-T G.652D, some operators have decided not to mix fibers, but rather chosen to deploy BendBright-XS throughout their FTTH network, from Central Office to the customer's home.

It's characteristics

Macrobending loss

The key feature in the fiber design that allows for such significant improvement in macrobending performance is the insertion of a field confining "trench" in the fiber cladding. This trench reduces the optical power in the region just outside the guiding

Macrobend performance of BendBright-XS compared to industry standards and other fibers



core, which is very beneficial in keeping the signal inside the fiber when the fiber is bent. Using a trench to achieve this level of performance is only possible using Draka's versatile Plasma Chemical Vapor Deposition (PCVD) process.

As the figure below depicts, BendBright-XS exceeds the bend loss requirements of ITU-T G.657.B, the most stringent bending standard in the industry. This is an order of magnitude improvement over Draka's 1st generation bend-insensitive fiber, BendBright, and two orders of magnitude over conventional ESMF. BendBright-XS is fully compliant with both the A and B classes of the ITU-T G.657 bend insensitive fiber standard, established in 2006. The fiber is also fully compliant with ITU-T G.652.D low water peak single-mode fiber specification.