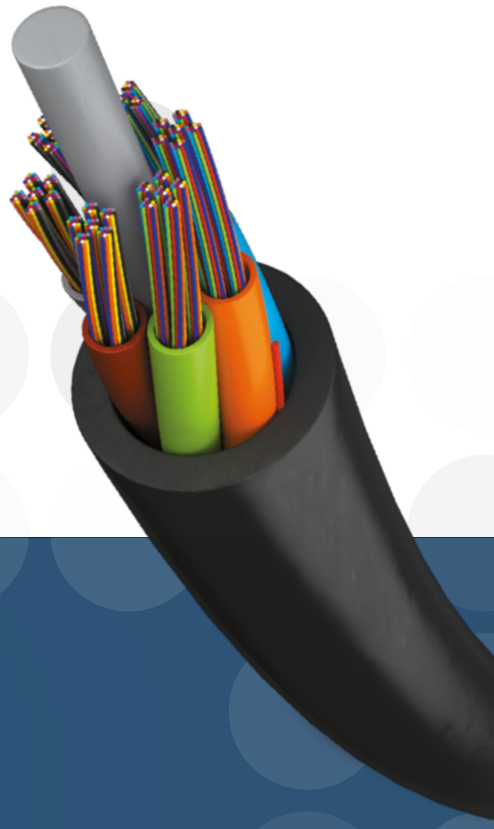

Prysmian
Group
Prysmian Group
The only manufacturer to produce colour coded 180µm fiber optic
Prysmian
General Cable
Draka

# Prysmian Group – the only manufacturer to produce colour coded 180µm fiber optic

Fiber optic cannot be used without being part of an optical cable. An optical cable contains 1 to 6,912 fiber optic, and is designed to appropriately protect the fibers, depending on where and how the cable is installed.

Primarily, each fiber is required to be colour coded accordingly, otherwise it cannot be used in an optical cable. This is simply because, unless the cable contains only one fiber, it would be impossible to indicate the use of each individual fiber at both cable ends without a colour code.

This is similar to how we identify different electrical wires.



The international practice for colouring fiber optic is to use a set of 12 colours (or more in some cases using additional ring marks with each colour) and to design the cable is such a way that sets of 12 fibers are grouped together in sub-units (like plastic tubes or ribbons) that are also colour coded as depicted below.


**FlexTube**
12 individually colored fibers in each module

Colored micromodules for fiber group identification

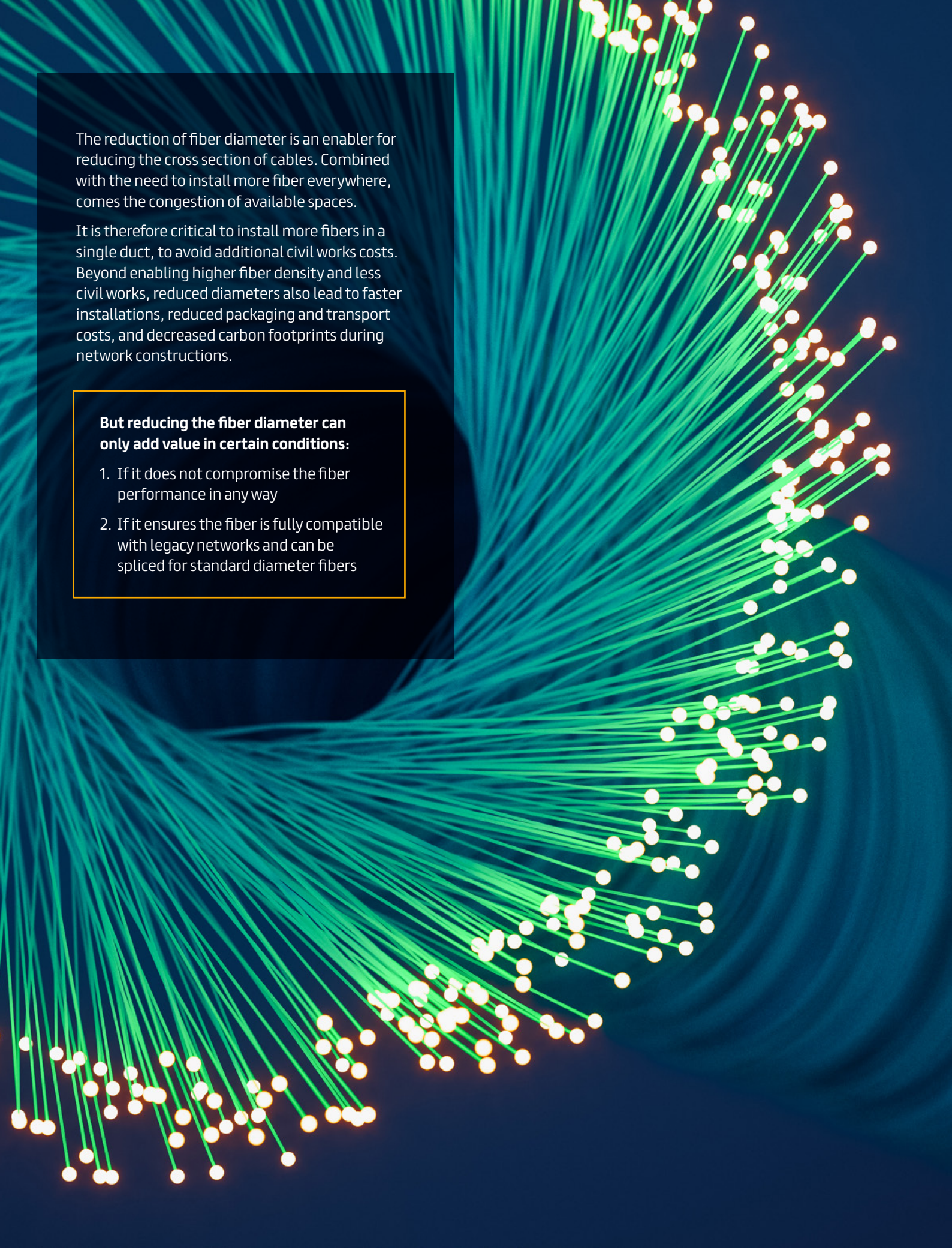
**Ribbon**
12 individually colored ribbon fibers in each group

Colored plastic tubes for fiber group identification

**Loose Tube**
12 individually colored fibers in each group

Colored plastic tubes for fiber group identification

**Diagram 1:** Example of how coloured fibers and tubes are used in cables for fiber identification



The reduction of fiber diameter is an enabler for reducing the cross section of cables. Combined with the need to install more fiber everywhere, comes the congestion of available spaces.

It is therefore critical to install more fibers in a single duct, to avoid additional civil works costs. Beyond enabling higher fiber density and less civil works, reduced diameters also lead to faster installations, reduced packaging and transport costs, and decreased carbon footprints during network constructions.

**But reducing the fiber diameter can only add value in certain conditions:**

1. If it does not compromise the fiber performance in any way
2. If it ensures the fiber is fully compatible with legacy networks and can be spliced for standard diameter fibers

When Prysmian Group (Draka at that time) invented and introduced the first bend-insensitive fiber in 2006, it was meant to enable the FTTH last mile, where cables are often installed in spaces with more severe bending.

Later, when cables were needed to be installed in zones combining not only severe bending but also reduced space, Prysmian Group invented and introduced the first class of fibers combining bend-insensitive properties and reduced outer coating diameter.

A standard fiber is made up of a glass core of a diameter of 125µm surrounded by protective plastic primary coating and secondary clear coating. Finally, a layer of UV cured coloured ink is applied to reach the final - coloured - fiber diameter.


**Diagram 2:** Example of a UV inked optical fiber.

In the 1990s, Draka introduced the ColorLock™ fiber coating system for the first time, which eliminated the need for this additional layer of UV cured ink by using a secondary plastic coating, already including pigments (mass coloured).

Later, the ColorLock-XS™ fiber coating system was introduced, upgrading to brighter, more intense colours for better differentiation in cables, and improved primary coating.

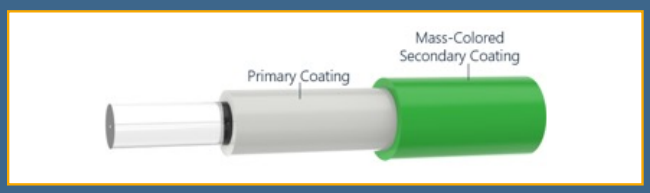


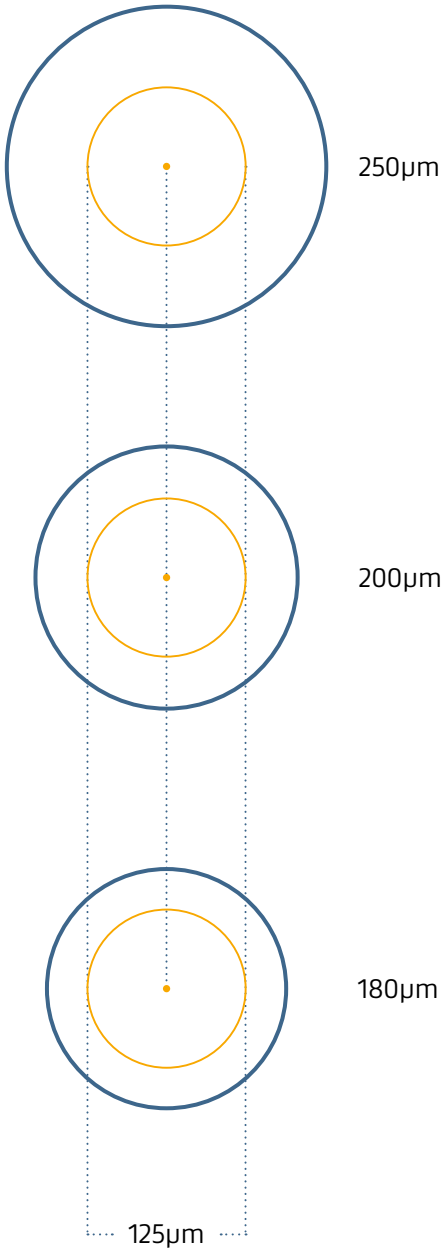

**Diagram 3:** Example of a Prysmian Colorlock-XS optical fiber.

Further to this in 2009, Prysmian Group was the first to introduce a 200µm bend-insensitive reduced diameter fiber, keeping the glass part at 125µm. Reducing the thickness of the primary and secondary coatings has been made possible by combining an improved primary coating and Colorlock-XS technology.

The outer overall diameter was produced at 200µm, saving one third of the standard fiber cross section.

Then, in 2019, Prysmian Group introduced a 180µm bend insensitive fiber, saving half the standard fiber cross section, with a glass that is still a standard dimension of 125µm and subsequently, compatible with legacy products.

The performance of this fiber was maintained thanks to further improved primary coating combined with Colorlock-XS technology.



## Currently the only manufacturer to produce a reduced diameter 180µm optical fiber that is already colour coded.

Prysmian Group ensures a scalable, high density, physically compact, and easily deployable future fit solution.

Colour coding fiber is an essential part of cable management, enabling installers to be able to identify the fibers, which enables installation speed, maintenance, and splicing, as well as experiencing fewer installation errors.

Prysmian Group is unique within the optical cable industry in that its colour coded 180µm fiber already includes colour coating.

While, other manufacturers may state that they have 180µm or 190µm fibers available, the dimensions quoted are for natural fibers. In reality when a UV cured colour ink layer is added, these fibers become 190µm and 200µm respectively.

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