

The Secrets of Choosing Ribbon Fiber

Do you know why it is so expensive to install Fiber To The Home? Why Bell companies are reluctant to deploy fiber optic network directly to consumers in a large scale?

It's not the material cost. It's the labor! The introduction of fiber into the subscriber loop has increased the installation of short cable lengths with large number of splices. The speed at which the cables can be placed, spliced, accessed and reconfigured are becoming extremely important.

So the need for new technologies that promise to reduce the fiber deployment cost are very high. Bell companies are anxious on acquiring these new technologies and products in order to reduce their cost and push the broadband fiber optic network installation.

That is where the high fiber count ribbon cables come to play. These compact, UV epoxy bonded cables are comprised with high precision optical fibers and can be massed fusion spliced with minimum loss. These products have proven to be an excellent platform for FTTH deployment.

Mass fusion splicing machines from Japanese companies are a integrated part of this process. These fusion splicers are used by the fiber installation technicians to splice up to 24 fibers at a time with very low splice loss.

Ribbon Fiber Design

The most basic requirement for any fiber optic cable design is to protect the glass fibers inside from harsh environment. But for ribbon fibers, there is the other vital requirement: organize the fibers for optimum space efficiency and ease of mass fusion splicing and handling. And at the same, they must also be able to maintain the optical performance and mechanical reliability.

This means that ribbon fiber cables must pack high count of glass fibers, organize fibers precisely for mass fusion splicing, provide individual fiber identification, can be divided into single fibers or subunits, mechanically reliable and can be easily accessed from the end or midspan.

These requirements must all be met at the same time which makes the manufacturing of high quality ribbon fibers a tough task.

So fiber cable specialists concluded a excellent design. A color coded array of fibers bonded in a line with fiber coating material. Based on this fundamental structure, two designs emerged: edge bonded or encapsulated.

Edge Bonded Design

The edge bonded design basically bonds the fibers together with only materials in between of each fiber. This design is more popular in the United States. This design is 40% smaller than the encapsulated design.

Encapsulate Design

In encapsulate design, bonding materials extend well beyond the gaps between fibers, it actually encapsulates all fibers inside a rectangular looking tube. This design are more used in Japan.

Ribbon Fiber Mass Fusion Splicing

The time savings for ribbon fiber mass fusion splicing are so big that sometimes in the field individual fibers are ribbonized to make mass fusion splicings.

However, the success of mass ribbon fiber splicing relies critically on the fiber geometry, the ribbon and the mass fusion splicer. High quality and consistent mass fusion splices can only be produced with ribbons that are made from fibers having stringent geometric tolerances.

These high quality fibers and ribbons are already commercially available. And they make the fiber deployment in FTTH projects a joy for the installers.

About the Author

Colin Yao is an expert on fiber optic technologies and products. Learn [fiber furcation](#), [fiber optic furcation](#), [furcation tubing](#) on Fiber Optics For Sale Co. web site.

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