

Product:
Optical Fibre Cable

Family:
Fiber Solutions

Tech
Tip

17

Basic Criteria for Selecting a Fiber Optic Cable

When choosing a cable, all the environmental factors that influence the installation and the life of the cable must be analyzed. Here are the most important factors:

Traction

Some cables are simply located in trays or cable raceways, in which case the tensile strength is not so important. However, in the case of other types of installations such as buildings, it may be necessary to use a pulling force on them along a conduit, distances of a few meters and even kilometers (1-3kms or more). The pulling force can become very high. The use of lubricants improves the scenario, but remains a stressful situation for the cable.

LanPro fiber optic cables subjected to traction come mostly with Aramid® fibers (Kevlar®, trade mark of Dupont), which is a fabric of very strong yarns that does not stretch, so that if a Pulling force on it, the cable will not deform or stress the other cable components. Apart from this, most LanPro fiber optic cables come with central reinforcing elements such as FRP (Fiberglass Reinforced Member), which avoids breaking the fiber in curves or extreme maneuvers,



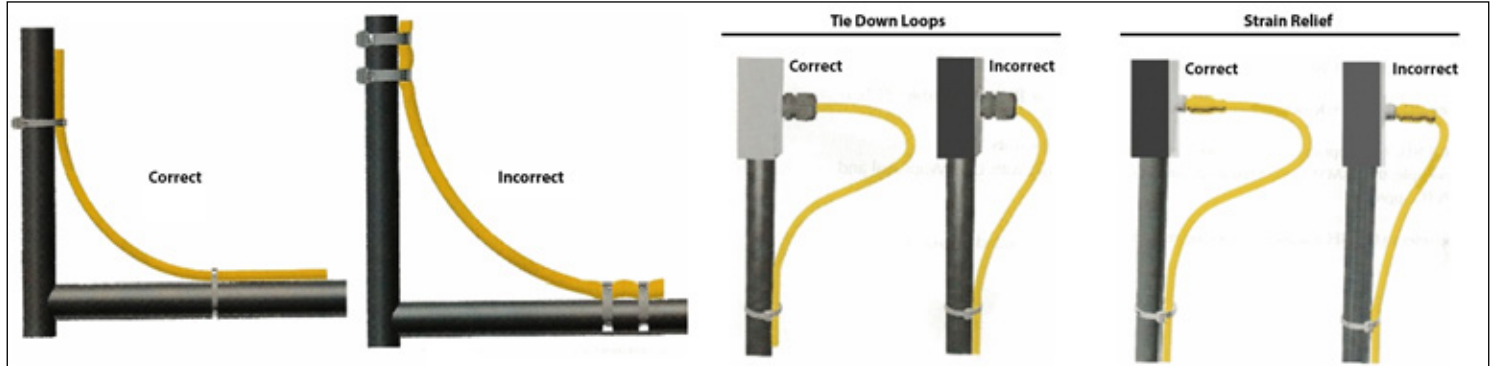
Lubricants for fiber optic cables.

gives it body, in addition gives it Structural strength and allows aerial use over small distances (up to 75 meters). LanPro DOES NOT use central elements of iron or metals like cheap brands, because the metal complicates the situation to be electric conductor, it is very heavy, it can corrode, while the FRP although it is more expensive but lacks those problems.

Bending Radius limits

The turning radius is an element widely neglected by many installers.

Spin graphs in the real world



The traditional recommendation for turning a fiber optic cable is that the minimum bending radius when the cable is subjected to a tensile force is 20 times the diameter of the cable. The LESS is the turning radius MORE is the effort. The bending radius must always be taken into account when mounting a fiber optic.

Fiber cables are not like copper wires. Fibers are delicate in these specifications, and many technicians ignore or belittle it!

When the tensile force is not applied, the recommended minimum bending radius in the long term is 15 times the diameter of the cable.

Example, a cable 1 cm in diameter, when pulled, the turning radius should NOT be less than 20cm, and the rest (Long Term / Low Stress), not less than 15cm.

Did you know that LanPro can offer fiber optic cables with ultra-flexible fibers under request for applications with complex or very high turning radius?

Water Protection

In outdoor installations, all cables must be protected in some way from water or moisture. In cold climates with frost, this is very critical because the accumulated water expands when freezing breaking the covers. To begin with, this protection is provided by means of a jacket resistant to humidity, usually polyethylene (PE); and with the filling of internal tubes with compounds block the water.

The massive infusion or infusion with GEL has been widely used, although it's becoming obsolete today. The gel is dirty, cumbersome, and in vertical tendencies tends to mobilize, leaving the system without effect.

More modern are dry cables (most of ours are like this), using a layer of water-absorbent tape. This tape has a compound similar to the material used in disposable diapers to absorb moisture. There are also some cables that come with a kind of water-absorbing powder. Another much more modern approach to the problem is the use of Aramid® super absorbent moisture, used in our **imb™** Series cables, in which Aramid® fibers not only act to give traction to the cable, but also absorbs many times their weight in water. This fiber replaces the use of water-absorbent tape.

LANPRO
Connect-and-Forget

Designed and Manufactured under LanPro™ standards and specifications. LanPro™ is a member of One Network Alliance Group of Companies. LanPro™, Connect-and-Forget...and LanProfessional are US registered brands.

Plastering or ingress of rodents.

Armored cables are used for their strong jackets, which resist crushing and rodent ingress. We use plastic and corrugated stainless steel. Our simplest and popular armored cable belongs to the **Armadillo™** Series. LanPro also offers heavy-duty direct burial cables with double polyethylene (PE) jacket plus steel corrugated tape. These cables belong to our series called **Rhino™**.

Often the outer plant cables are installed inside ducts that radically improve the performance. Also, there're times they're buried directly without further

consideration. Armored cables for indoor installation must have jackets, as established by the National Electrical Code (NEC), in order to identify among other cables under a false floor, such as in a data center. It should be noted, that LanPro is developing a non-metal anti-rodent cable using a polyethylene jacket (PE) and an intermediate thick layer of fiberglass strands and a FRP reinforcement center (Fiberglass). This cable is very unpleasant for rodents and since it does NOT contain metal, it can be installed in areas or locations where there are high voltage cables in the vicinity with no risk of electric shock.

Wind.

Highly forgotten, wind is a critical factor in selecting aerial cables or ADSS.

Most of our ADSS aerial cables are specified to support Beaufort 11 scale.

This scale indicates that Category 11 is a thunderstorm with winds up to 32m / sec (120kph).

Scale 12 is a hurricane / tornado with winds over 120kph with no upper limit.

Our ADSS fiber optic cables (with the exception of our lightweight Halo™ Series) support 11 scale.

In short aerial cables (up to 120m) this wind factor is NOT critical, but in cables with a span of up to 1000 meters this factor is extremely serious and adds a lot of manufacturing cost to the cable. If your country is subject to intense tropical storms, this factor should be considered and should be added to the LanPro cable manufacturing table.



Designed and Manufactured under LanPro™ standards and specifications. LanPro™ is a member of One Network Alliance Group of Companies. LanPro™, Connect-and-Forget...and LanProfessional are US registered brands.