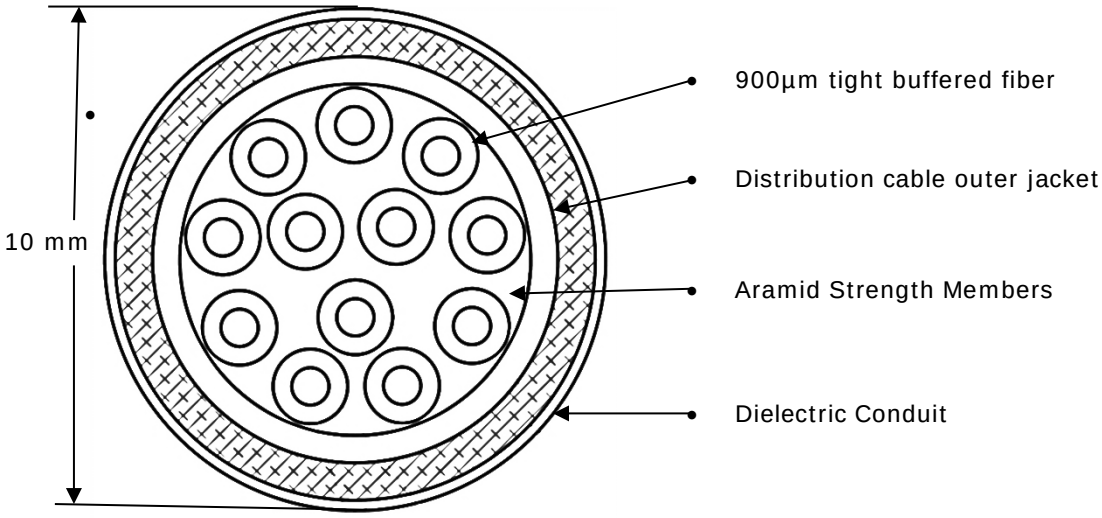
Opticore™ DCF (Dielectric Conduited Fiber) Optic Cable

Panduit has introduced a Dielectric Conduited Fiber (DCF) Optic Cable into their fiber cable offering available in 9µm (OS1/OS2), 50µm (OM2 and OM3) and 62.5µm (OM1) core diameters. This cable is constructed of a rugged conduit that is extruded over a standard tight buffered fiber distribution cable. DCF cable has a crush resistance six times (6x) greater than that of an unarmored cable and with all dielectric properties removes the grounding and bonding requirements that pertain to the standard armored type cable.

What types of DCF is offered?

Panduit offers the DCF cable in two fibers (2F), four fibers (4F), eight fibers (8F) and twelve fiber (12F) count cables with cable jacket ratings of either Low Smoke Zero Halogen (LSZH) or Riser with the conduit being UL and ROHS compliant. The diameter, 10mm for all fiber counts offered, is smaller than that of the standard armored cabling solution (between 13.10mm to 15.6mm), so a higher density of cables can be deployed into a similar area. Shown below is a profile drawing of the twelve fiber (12F) cable.



12F Dielectric Conduited Fiber (DCF)

What are the specifications of DCF?

The fiber specifications of the DCF are the same as standardized OM2, OM3, and OS1/OS2 fiber cabling. The differentiator is the all dielectric conduit that houses the fiber cable. The conduit is UL listed riser (UL 2024) with a 10mm diameter and a crush resistance of 5.88 N-m (52.4 in-lbs). The tensile strength during installation is 1320N (298lbf) and it can operate in temperatures ranging from -20˚C to +70˚C.

Where can I use DCF?

DCF can be used in applications that normally would require armored cable or where a conduit or inner duct would be needed to be placed to protect the fiber cable. DCF will cover these installation scenarios by providing a tight buffered fiber cable within an all-dielectric conduit housing with a crush rating of 5.88 N-m (52.4 in-lbs.).

Some of the pathways where DCF will supply benefits are J-Hooks and Ladder rack.

J-Hook

Under normal load conditions, standard non-armored low count distribution cables (shown below in orange) have a tendency to sag between the j-hooks due to the normal weight of the cabling solution; maximum spacing for J-hook installation per TIA-569 standard is between four feet (4') and five feet (5'). Due to this condition, it is possible to introduce additional fiber attenuation loss into the system. If the cable is heavy enough, it is possible to pinch the fibers located at the bottom of the cable and cause a total loss of signal resulting in possible down time. The DCF is more rugged and will not sag as much and all of the weight is place upon the conduit and not the fiber.

Ladder Rack

Ladder rack is an easy cost effective way to provide cable pathways for large amounts of different types of cabling solutions. When a low count fiber cabling solution is placed on the ladder rack with large amounts of other cable, it should be placed on top of the cable bundles to prevent crushing or large downward pressure causing high attenuation in the cable. Unfortunately, sometimes keeping the smaller diameter cable is not possible for other cables are installed after this solution is installed. Shown below is an example of how the smaller count fiber cable solution may oscillate in between the 9" cable ladder rung spacing. The DCF will keep it shape and prevent this type of oscillating from occurring to the small count fiber cable internal to the conduit.

Some installation areas where the DCF can be cost effective and beneficial are:

- Tight areas where both data and power cabling would need to co-exist
- Riser cabling areas between floors
- Between buildings in a campus environment
- Industrial space between the mini-datacenter and control panels
- Connectivity to remote cameras or security points

How do I test DCF?

Testing the DCF link is performed utilizing the standard testing procedures outlined in TIA-568-C (TIA-526-14A and TIA-526-7). These procedures and best practices are explained and demonstrated in Panduit Best Practice PN445-Permanent Link Testing of Multimode and Singlemode Fiber Optic Cabling Systems.