Lose the Gel with New Totally Dry ADSS Cable

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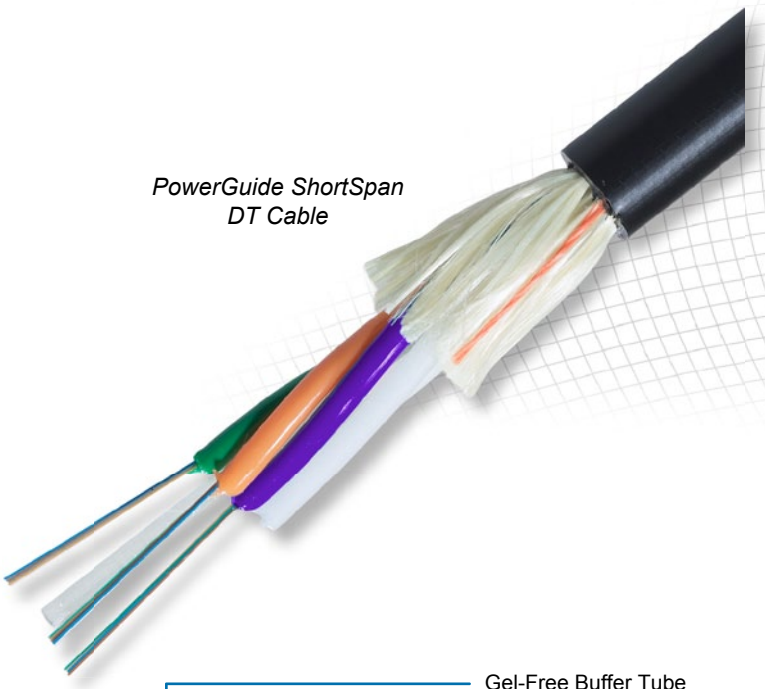
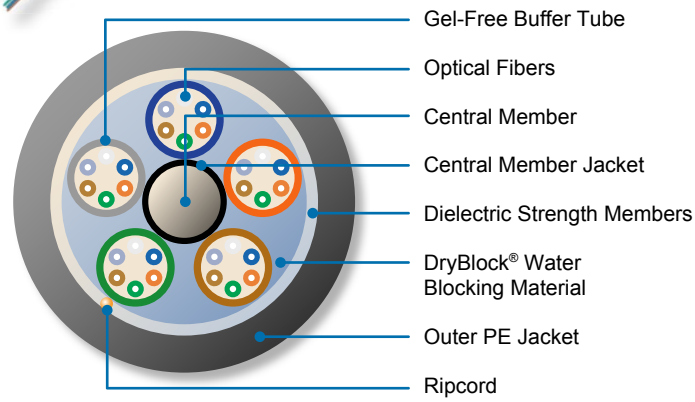
Gels are great in hair and shoes, and maybe even in deodorants. However, anyone who has worked with fiber optic cable knows that gels, like a bad cold, are messy and tend to follow you wherever you go.

As part of our rich corporate heritage extending back to Alexander Graham Bell, AT&T, and Bell Labs, OFS has manufactured high-performance fiber optic cables for many years, and much has changed during that time. For example, optical fibers and cables have become less expensive even as they've become more reliable. As OFS continues to research and develop cable applications, we have worked to keep pace with our customers' demand for innovative, cost-effective solutions to everyday network challenges.

From industry inception up until the past five to ten years, buffer tube gels provided a critical water-blocking function for the majority of fiber optic cables deployed in the field. Old timers may recall that cable cores were once water-blocked with gels, in addition to gels placed in cable buffer tubes. In an effort to help reduce overall deployment costs and improve our customers' installation efficiency, OFS developed gel-free cables, and the industry followed suit by introducing super-absorbent polymers (SAP) into fiber optic cable designs. Customers have wholeheartedly endorsed gel-free cables, and have deployed these products both aerially and underground over the past decade with resounding success. In fact, gel-free cables are used more often today than gel-filled cables.



PowerGuide ShortSpan DT Cable



PowerGuide ShortSpan DT Cable Cross-Section

One product type that has not yet benefited from this gel-free modernization is All-Dielectric, Self-Supporting (ADSS) cable. Historically, ADSS cables have been used by power utilities on transmission and distribution lines, and these cables increasingly form both the backbone and distribution networks for Fiber-to-the-Home (FTTH) systems. An early drawback of ADSS cables was that other cables are not typically lashed to them. However, for today's all-fiber networks, the need to overlash is much less frequent, and ADSS cables make a perfect choice for leading-edge FTTH networks, with different cable designs for the trunk, feeder, and drop portions all working together in harmony. The ADSS system can be installed faster and more cost-effectively than a similar lashed cable, helping to enable a faster return on investment.

Once again, OFS saw an opportunity to help reduce overall installation costs and improve our customers' bottom lines, by integrating our gel-free technology into ADSS cables. However, there were several initial concerns about removing the gel from these cables. ADSS cables are unique in that installation

tensions are typically the least stressful cable scenario, since they are designed to withstand wind and ice loads for typical weather extremes in a particular area. One concern was that fibers in the cable would not survive installation if gel was not present to serve as a cushion. Another worry was that fibers would ultimately migrate down the length of the span, placing excess strain on the fibers at the pole attachment points. A third concern was that the superabsorbent polymers simply wouldn't provide the same thorough water-blocking protection as gels.

Without getting into the physics of cable design, OFS has designed and manufactured buffer tubes that are strong enough to support installation tensions when proper deployment techniques and manufacturer guidelines are followed, just as required with gel-filled cables. In addition, the OFS gel-free ADSS cables have passed the stringent "Sheave Test" in IEEE 1222, the widely referenced standard for these cables worldwide. For those not familiar with the sheave test, it's pretty brutal. The cable is pulled up to its maximum stringing tension and then pulled back and forth, over the same section of cable, 60 times in each direction, for a total of 120 pulls. OUCH! All ADSS cables (both gel-filled and gel-free) must pass this test in order to ride on distribution poles, and OFS' gel-free ADSS cables have passed with flying colors. As of today, OFS has installed gel-free ADSS cables in customer field trials across the nation, using the same deployment methods used with gel-filled cables. As you read this sentence, the cables are up and running, carrying photons from Amazon.com to Zappos.com and all places in between.

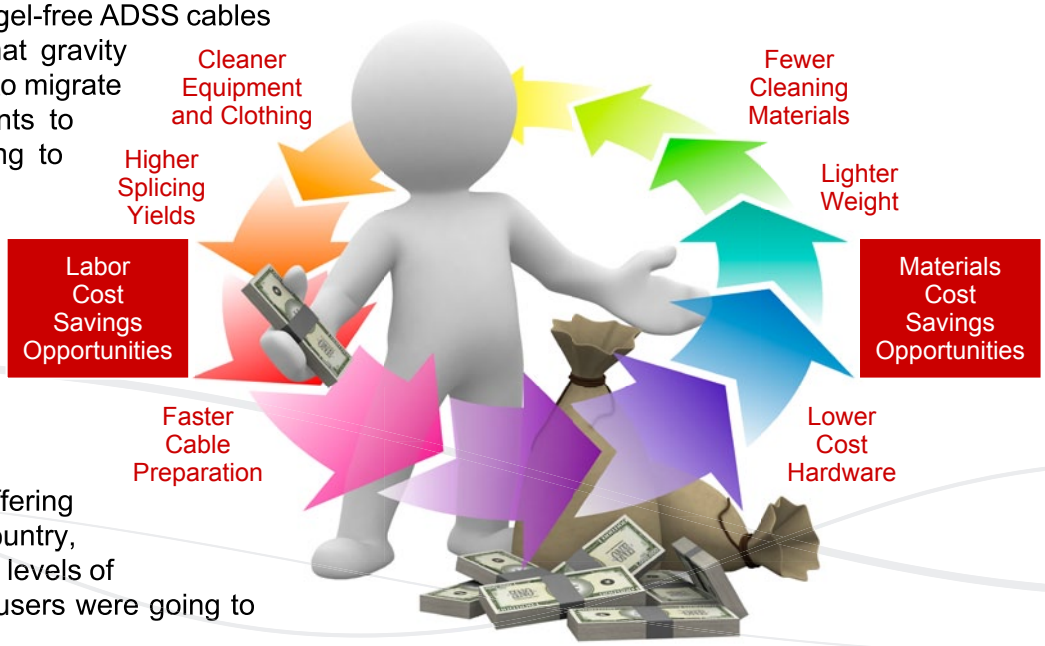
The second big concern about gel-free ADSS cables was that gravity would do what gravity does, namely cause the fibers to migrate from the pole attachment points to the center of the span, leading to fiber breakage. This concern turned out to be unwarranted as well. Multiple years of standard gel-free loose tube and ribbon cable installations operating on metallic strands have proven that gel-free cables are reliable. These cables have been installed with differing amounts of sag, all over the country, and by contractors with varying levels of capabilities. In other words, if users were going to encounter problems with gel-free ADSS cables, the industry would have already detected problems with other gel-free cables installed with greater amounts of sag. In addition, the reverse-oscillating lay stranding technique used in loose tube cable production serves to "lock" in the cable buffer tubes so that they do not move. Finally, OFS uses proprietary techniques that help prevent potential migration from being a concern.

Given the outstanding performance of hundreds of thousands of kilometers of central core and loose tube gel-free cables installed around the world, the third concern that super-absorbent polymers wouldn't provide the same complete water-blocking protection as gels has proven to be irrelevant. And for any remaining skeptics, the gel-free ADSS cables were tested to and have passed the water-blocking standard in IEEE 1222.

All of these issues have been addressed, and OFS has designed, manufactured and installed gel-free ADSS cables that are now living their long lives on distribution poles in customer locations across the country.

From the discussion above, the answer to the question, "Can you deploy a gel-free ADSS cable," is a resounding, "YES!" The next question is, "Should you?" The answer to that question is also, "YES, what's taken so long?"

Gel-Free PowerGuide ShortSpan® DT Cable Cycle of Potential Cost Savings



The most obvious benefit of gel-free cable over gel-filled cable is that preparation time drops by up to 80%, which means that the splicing process is much faster. That can mean money in the bank. In addition, faster splicing means quicker restoration in the event that a pole gets taken out by an errant vehicle. “Losing the Gel” also means that no cleaning materials are needed, which helps reduce cost, potential irritants, and general “ickiness.” This “ick” factor drives people to send their splicers and cleavers for deep cleaning more frequently than they would otherwise; removing this need can also save thousands of dollars over short periods of time.

A cleaner splicing machine also means faster splicing with higher yields due to a more pristine work environment, especially for those who use sensitive fixed V-groove splicers. This can result in even more time saved and money in the bank. Finally, on the obvious side, “no gel” helps reduce the need for cleaning solvents and paper towels, which is more environmentally friendly (not to mention clothes friendly…if you’ve ever gotten gel on your nice pair of pants or shirt).

The perhaps not-so-apparent additional benefits relate to installation and cable operation. Gel-free ADSS cables are up to 20% lighter than comparable gel-filled cables. This reduced weight leads to several good things. First, a lighter cable is easier to handle and install. Secondly, lighter cables can span longer lengths than heavier cables, all else being equal. Finally, these lighter cables result in lower tensions on poles, and can also help enable the use of less expensive deadend hardware in certain circumstances. This lower-cost hardware is also often easier to install, leading to more savings opportunities.

So…keep the gel in your hair (if you like that sort of thing), but take it out of your cable.

“Lose the Gel” with OFS’ totally dry PowerGuide® ShortSpan DT ADSS Cable. The clothes you save may be your own.

For additional information please contact your sales representative. You can also visit our website at www.ofsoptics.com or call 1-888-fiberhelp (1-888-342-3743) from inside the USA or 1-770-798-5555 from outside the USA.

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