Traditional Armored Cable

/// Background

Traditionally, armored FiberOptic cables were designed to provide enhanced protection to the optical fibers within, especially in terms of compression and rodent resistance, while enabling direct burial. The focus of these cable designs was on mechanical strength rather than ease and speed of installation.

During recent years, as optical networks developed, the importance of installation speed and mid-span access has increased and new cable designs have been introduced to meet this challenge.

Teldor's new line of Easy-Strip Dry Armored cables provides easy and fast installation along with mid-span access, while maintaining cable flexibility and enhanced mechanical performance.

/// Designs

Traditional Armored FiberOptic cable designs combine corrugated steel armor (CSA) and a Polyethylene (PE) outer jacket in order to provide a robust structure and enhanced mechanical characteristics. This material combination provided a strong bond between the CSA and the cable's outer jacket so that long-term resistance to water penetration was achieved. This was achieved by a copolymer layer that coated the corrugated steel tape forming the strong bond with the PE jacket. The adverse effect of the strong bond of the CSA to the PE outer jacket was increased handling and installation time (for jacket stripping and mid-span access). Reducing the degree of adhesion between the corrugated steel tape and the outer jacket is intended to reduce the handling time. However a minimum degree of bonding between the outer jacket and the CSA must be kept in order to avoid the following unwanted phenomena:

a. Water penetration between the cable outer jacket and the CSA

b. Jacket ripping when the cable is repeatedly bent and/or twisted

Note: It is possible to avoid jacket ripping by bonding the CSA overlap but this will make the CSA removal more difficult and simultaneously present a danger of accidentally cutting the fibers in the cable core.

/// TELDOR's solution

In order to enable easy separation of the CSA from the cable's outer jacket, Teldor applies a special composite polymer layer on the CSA. This innovative multi-layer solution is composed of two tough high-modulus plastic outer layers and a soft low-modulus intermediate layer. This design enables the use of reduced stripping force while maintaining excellent water tightness.

Additionally, Teldor makes use of a dedicated narrow water-swallable tape over the CSA overlap. This tape makes the CSA edges blunt while providing water tightness and reducing the degree of adhesion between the copolymer layer of the CSA and the cable's outer jacket.

A comparison between the performance of the new and traditional copolymers:

Tubes/Fibers		4/12+1 filler	8/12	12/12	24/12
Bonding	Bonding of new polymer [N/25mm]	75	82	57	53
	Bonding of old polymer [N/25mm]	116	130	122	173
Repeated bending 20xD radius per IEC 60794-1-21 E6	Bends [new polymer]	20	20	20	20
	Bends [old polymer]	25	25	25	25
Twisting 540° per IEC 60794-1-21 E7	Turns [new polymer]	1000	1000	1000	1000
	Turns [old polymer]	25	25	25	25
Water penetration time in hours for a 3m sample per RUS requirements	Time [new polymer]	2	2	2	2
	Time [old polymer]	24	24	24	24

In summary, Teldor's innovative Easy-Strip Dry Armored FiberOptic Cables provide excellent mechanical characteristics with easy, fast stripping/installation and mid-span access. These cables have an excellent track record and have already been successfully installed in many sites in the U.S.

For further information please contact your Teldor representative or visit our website: www.teldor.com

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