Armored Optical Cable Selection

Overview

Armored fiber optic cable is a type of fiber cable that has an outer jacket made of metal or plastic armor.

Key Takeaways

Armored optical cables are reinforced fiber optic cables designed to protect against mechanical damage, environmental hazards, and rodent attacks, making them ideal for harsh or high-risk installations.Key Features of Armored Optical Cables

Construction: Armored cables include a protective layer over the fiber core, typically made of corrugated steel tape (STA), steel wires (SWA), or non-metallic synthetic materials. This layer is placed under the outer jacket or between dual jackets for enhanced protection . Strength Members: Materials such as aramid yarns, FRP rods, or metallic wires provide tensile strength, ensuring the cable can withstand pulling and bending during installation . Outer Jacket: Commonly made of PE, PVC, or LSZH, the jacket provides UV resistance, abrasion protection, and fire retardance for indoor/outdoor applications . Mechanical Advantages: Armored cables offer crush resistance, impact protection, rodent deterrence, and water/moisture barriers, extending service life in challenging environments .

Types of Armored Cables
• Steel Tape Armored (STA): Corrugated steel tape wrapped around loose tubes, providing radial compression resistance .

• Steel Wire Armored (SWA): Layers of steel wires offering superior tensile and impact resistance, suitable for direct burial or high-traffic areas .

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• Double Armored: Combines tape and wire for extreme protection, often used in submarine, mining, or high rodent-risk areas .

• Non-Metallic Armored: Synthetic armor for corrosion resistance and EMI-sensitive environments, offering flexibility in tight spaces .
Selection Considerations
• Installation Environment:
• Direct Burial: Requires high crush and rodent resistance; double steel tape or wire armor is recommended .

• Aerial or Conduit: Non-armored or single-armored cables may suffice if mechanical threats are minimal .

• Indoor/Outdoor Penetration: Fire-rated jackets (PVC or LSZH) are necessary for building code compliance .

• Environmental Factors:
• Rodent Activity: Steel or aluminum armor deters chewing .

• Climate: Consider UV resistance, temperature extremes, and moisture ingress .

• Traffic and Construction Risk: Armored cables reduce repair frequency in high-risk areas .

• Mechanical Requirements:
• Tensile Strength: Ensure the cable can withstand pulling during installation.

• Crush and Impact Resistance: Critical for underground or industrial deployments .

• Future Maintenance and Grounding:
• Metallic armored cables require proper grounding according to NEC standards, while all-dielectric cables do not .

Practical Tips
• Match the armor type to the expected mechanical and environmental threats.

• Consider cable flexibility for installations with bends or tight spaces; aluminum or non-metallic armor may be preferable.

• Evaluate long-term durability and service life; armored cables typically last 20–30 years in harsh conditions .

• Ensure compliance with local codes and standards for fire safety, grounding, and installation . By carefully assessing the installation environment, mechanical threats, and regulatory requirements, you can select an armored optical cable that provides reliable performance, protection, and longevity for your network.

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