

Production of Multimode Outdoor Armored Optical Cables



Overview

The armored fiber optic cables come in single mode and multimode categories like OM1, OM2, OM3 and OM4.

Key Takeaways

Multimode outdoor armored optical cables are engineered with multiple protective layers, water-blocking features, and robust fiber arrangements to ensure high-performance and durability in harsh outdoor environments.

Cable Construction

Multimode outdoor armored cables typically feature a jelly-filled central loose tube that houses multiple optical fibers, providing protection against moisture and mechanical stress. The fibers are often multimode, allowing high-speed data transmission over medium distances, and are encased in water-blocking tape to prevent water ingress during outdoor deployment. The cable core is reinforced with dual steel strength members or a central metallic core to provide tensile strength and resist stretching during installation or environmental stress. The outer protective layers include corrugated steel tape (CST) armor, steel wire armor (SWA), or aluminum armor, depending on the required mechanical protection and environmental conditions. Non-metallic composite armors, such as aramid-reinforced or fiberglass composites, are also used where reduced weight or electromagnetic neutrality is needed.

Sheathing and Environmental Protection



The outer jacket is typically made of HDPE or PE, which is UV-resistant, weatherproof, and capable of withstanding temperature ranges from -40°C to $+70^{\circ}\text{C}$. The combination of armor and outer sheathing ensures rodent protection, crush resistance, and long-term durability, making the cables suitable for direct burial, duct, aerial, or manhole installations. Water-blocking compounds and gel-filled tubes prevent moisture from reaching the fibers, maintaining low signal loss and high optical performance over long distances. Some designs also include FRP (fiber-reinforced plastic) layers for additional tensile strength and stability.

Manufacturing Considerations

The production process involves:

- **Fiber Preparation:** Drawing multimode fibers from silica or plastic, coating them with tight buffers or loose tubes, and filling with water-blocking gel.
- **Core Assembly:** Arranging fibers in loose tubes or ribbon formats, adding fillers, and incorporating central strength members.
- **Armor Application:** Wrapping the core with corrugated steel tape, steel wires, or composite armor for mechanical protection.
- **Sheath Extrusion:** Applying HDPE or PE jackets over the armored core, ensuring uniform thickness and environmental resistance.
- **Quality Control:** Testing for tensile strength, crush resistance, water ingress, and optical performance to meet industry standards.

Applications

These cables are widely used in telecom networks, data centers, campus networks, industrial installations, and long-distance outdoor deployments. They are suitable for duct, conduit, aerial, and direct-burial installations, providing reliable high-speed data transmission even in harsh environmental conditions. By combining mechanical protection, water-blocking, and high-quality multimode fibers, these cables ensure long service life, minimal signal loss, and robust performance in outdoor networks.

Article Content

Multimode Armored Fiber Optic Cable: Structure, Specifications, and ...

Below is a detailed breakdown of the most common types of armored multimode fiber optic cables, including their

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SteelFlex Armored OM4 Multimode Optic Fiber Cables

SteelFlex Armored Fiber Cables may be deployed in high stress areas such as naval vessels, aircraft, and the oil, coal or gas

Armored Fiber Optic Cables

The armored fiber optic cables come in single mode and multimode categories like OM1, OM2, OM3 and OM4. This category of fiber

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SteelFlex Armored OM1 Multimode Optic Fiber Cables

SteelFlex Armored OM1 Multimode Fiber Cables feature an OptoSpan exclusive OptoLock, developed to guard against hazardous

Outdoor Fiber Optic Cables | Armoured Cables

Outdoor fiber optic cable, also known as exterior or armoured outdoor cable, is specifically engineered for outdoor environments. Its

Distribution Armored Indoor/Outdoor (I/O) Plenum-Rated Optical

APPLICATION Leviton's armored plenum rated Indoor/Outdoor tight-buffer cables are designed for LAN/WAN campus and building

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Outdoor Armored Fiber Optic Cables

These outdoor armored fiber optic cables are suitable for outdoor applications that require greater than 100 meters of distance. Their

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