

What materials are best for fiber optic patch cords



Overview

Learn about fiber optic patch cables, their types, construction, applications, and how to choose the right one for your network needs.

Key Takeaways

Fiber optic patch cords are primarily made of an optical fiber core, buffer coating, aramid strength members, and an outer protective jacket.

Core and Cladding

The optic fiber core is typically made of high-purity glass or sometimes plastic, which acts as the light-carrying medium. Surrounding the core is the cladding, also glass, with a lower refractive index to reflect light back into the core, minimizing signal loss and ensuring efficient transmission over distances.

Buffer Coating

The buffer coating is a protective layer applied to the fiber to prevent physical damage and enhance durability. It can be made from materials such as acrylate, UV-cured polymers, or other specialized coatings that provide resistance to heat, moisture, or fire depending on the application.



Aramid Strength Members

Aramid yarns (Kevlar®) are used as strength members within the patch cord. These fibers provide tensile strength, protecting the delicate glass fiber from breaking during handling, installation, or connectorization. They also help the cord withstand pulling forces during manufacturing and deployment.

Outer Jacket

The outer jacket protects the internal components from environmental factors and mechanical stress. Common jacket materials include: Polyethylene (PE): Durable and moisture-resistant, ideal for outdoor use. Polyvinyl chloride (PVC): Flexible and cost-effective, commonly used indoors.

Low Smoke Zero Halogen (LSZH): Fire-resistant and safe for enclosed spaces like subways or hospitals. Thermoplastic polyurethane (TPU), Nylon, PTFE: Used for specialized applications requiring chemical resistance, flexibility, or high durability.

Connector Components

Patch cords also include connectors, which consist of ferrules (usually ceramic or metal), housings, and boots. These components are made from materials like ceramic, stainless steel, or plastic to ensure precise alignment and protection of the fiber ends.

Summary

In essence, a fiber optic patch cord combines glass or plastic fiber, protective buffer coatings, aramid strength members, and a durable outer jacket to provide reliable optical transmission while withstanding mechanical and environmental stresses. The choice of jacket and buffer materials depends on whether the cord is intended for indoor, outdoor, or specialized industrial applications.

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