

Article Overview

Non-metallic optical fiber cables are dielectric, reinforced fiber optic cables designed for high durability, rodent resistance, and safe use in electrically sensitive environments.

Overview

Non-metallic optical fiber cables are fiber optic cables reinforced with non-metallic materials such as aramid yarn, glass yarn, or fiber-reinforced plastics (FRP/GRP) instead of steel or aluminum. This design ensures the cable is fully dielectric, meaning it does not conduct electricity, making it safe for installation near high-voltage lines or in areas where grounding is impractical or prohibited (ETK Kablo) .

Construction

Typical non-metallic fiber optic cables include:

- o Loose tube with optical fibers: Often gel-filled or dry-blocked to prevent moisture ingress and maintain stable transmission (Prysmian Draka) .
- o Central strength member: Made of FRP or GRP to provide tensile strength without metal (ETK Kablo, CRXCONEC) .
- o Reinforcement layers: Aramid or glass yarn layers protect against mechanical stress, crush, and rodent damage (ETK Kablo, GL Fiber) .
- o Water-blocking elements: Fillers or tapes prevent water penetration, ensuring consistent optical performance (GL Fiber, CRXCONEC) .
- o Outer sheath: UV-stabilized polyethylene (PE) or LSZH (Low Smoke Zero Halogen) for flame resistance and outdoor durability (Prysmian Draka, ETK Kablo) .
- o Ripcords and markings: Facilitate installation and identification (Prysmian Draka) .

Advantages

- o Electrical Safety: Fully dielectric design prevents lightning-induced damage and allows installation near energized lines (ETK Kablo) .
- o Mechanical Strength: High tensile strength and crush resistance due to aramid or glass yarn reinforcement (ETK Kablo, GL Fiber) .
- o Rodent and Termite Resistance: Non-metallic armoring protects against biological threats, ideal for underground or harsh environments (AFL Global) .
- o Fire Resistance: Some models, like FireTuf OFC-LT-NM, meet flame retardant and fire-resistant standards for circuit integrity (Prysmian Draka) .
- o Lightweight and Flexible: Easier to handle and install compared to metallic armored cables (ETK Kablo) .

Non-metallic optical fiber cable standard

o Long-Distance Transmission: Supports high-speed data over long distances with low attenuation (Prysmian Draka) .

Applications

Non-metallic optical fiber cables are suitable for:

- o ADSS (All-Dielectric Self-Supporting) aerial installations: Strung between poles without a messenger wire, relying on dielectric strength members for support (ETK Kablo) .
- o Direct burial and duct systems: Resistant to moisture, rodents, and mechanical stress (GL Fiber, AFL Global) .
- o Indoor and outdoor networks: Including FTTH, core networks, and high electromagnetic interference areas (CRXCONEC) .
- o Electrically sensitive environments: Where metallic cables are unsafe or prohibited (ETK Kablo) .

Fiber Counts and Types

Non-metallic cables are available in single-mode (OS2) and multimode (OM1, OM3, OM4) configurations, with fiber counts ranging from 2 to 192 or more, depending on the manufacturer and application (Prysmian Draka, CRXCONEC) .

Summary

Non-metallic optical fiber cables combine dielectric safety, mechanical durability, and environmental resistance, making them ideal for modern telecommunications, power line networks, and outdoor installations where metallic cables are unsuitable. Their design ensures long-term performance, high-speed data transmission, and protection against electrical, mechanical, and biological hazards.

Characteristics of a single-mode optical fibre and cable Summary Recommendation ITU-T G.652 describes the

Underground Non-Metallic Fiber Optic Cables (UGNMFOC) with 96-cores Dispersion Un-shifted Single-Mode (ITU-T- G.652D) A.

Recommended technical requirements are detailed by reference to IEC 60794-3-11 on outdoor optical fibre cables for

This sample specification for indoor fiber-optic cable combines information from published standards and user

Non-metallic optical fiber cable standard

NON-METALLIC ANTI-RODENT OPTICAL CABLE This cable is designed with physical and chemical anti-rodent methods. The

Standards Updates for Optical Fiber: What You Need to Know Industry standards for optical fiber cables, components,

All ETK Kablo non-metallic armored cables are manufactured in accordance with IEC 60794, ITU-T G.652/G.657, and EN 50173

Indoor/Outdoor Non-Metallic Fiber Optic Cable The fiber, either single-mode or multimode type, are positioned in a loose tube made

Compare armored vs non-armored fiber cable: steel armor protection, tensile strength, installation environments, IEC

Non-Metallic Duct Optical Fiber Cable Product Description: The cable is designed for metropolitan

ITU Standards The ITU has defined a series of recommendations that describe the geometrical properties and transmissive

A conductive cable contains non-current-carrying conductive members such as metal strength members and metallic

The cable must be sufficiently rugged to endure the rigors of installation. These cables are designed to comply with

ETK Kablo's non metallic armored fiber optic cables are ideal for ADSS and dielectric network projects requiring high tensile strength,

Non-armored stranded loose tube fiber optic cable features FRP as the central member, ensuring the resistance to electromagnetic

This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero

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