

Types of overhead steel ropes for communication optical cables

Article Overview

Overhead steel ropes for optical cables are primarily classified by construction, core type, strand configuration, and surface treatment, with common types including galvanized steel messenger wires, ADSS support ropes, and steel-reinforced fiber optic cables.

Key Types and Classifications

1. Self-Supporting ADSS Cables (All-Dielectric Self-Supporting) These cables do not require a separate steel messenger wire because they incorporate a high-strength central core, often made of aramid yarn or steel-reinforced elements, to bear the mechanical load. They are ideal for long spans and areas with high wind or ice loads, providing both tensile strength and optical protection . 2. Messenger-Supported Fiber Optic Cables These cables rely on a separate steel messenger wire to support the weight of the optical fibers. The steel rope is typically galvanized or stainless steel to resist corrosion and environmental stress. The optical cable is lashed or clipped to the messenger wire, which carries the mechanical load . 3. Galvanized Steel Wire Ropes Used as messenger or support wires, these ropes are made from high-strength carbon steel wires twisted into strands, which are then helically laid around a core. Common strand configurations include 6x19, 6x37, and 6x61, where the first number indicates strands and the second the number of wires per strand. These ropes can have smooth or galvanized surfaces for corrosion resistance . 4. Core Types in Steel Ropes

- o Metal Core (IWRC - Independent Wire Rope Core): Provides maximum strength and stability, often used in long spans or heavy-duty installations.

- o Fiber Core (Hemp or Synthetic): Offers flexibility and shock absorption, suitable for shorter spans or lighter loads . 5. Strand Lay and Construction Steel ropes are classified by lay direction: right lay, left lay, right alternate lay, and left alternate lay. The choice affects flexibility, fatigue resistance, and suitability for dynamic or static loads . Advanced constructions like Seale, Warrington, or Warrington-Seale optimize load distribution and bending performance .

Selection Considerations

- o Tensile Strength: Must support the cable's weight plus environmental loads (wind, ice). ADSS cables typically require 1,500-12,000 N tensile strength depending on span length .
- o Corrosion Resistance: Galvanized or stainless steel is preferred in outdoor or coastal environments.
- o Flexibility vs. Strength: Fiber cores provide flexibility, while metal cores maximize load-bearing capacity.
- o Environmental Conditions: Extreme temperatures, UV exposure, and ice accumulation influence rope choice and installation spacing .

Summary

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For overhead optical cable installations, steel ropes serve as either the primary load-bearing element (messenger wires) or as reinforcement within self-supporting cables. The main types include galvanized steel ropes with metal or fiber cores, ADSS self-supporting cables, and messenger-supported fiber optic cables, with strand configuration, lay type, and surface treatment tailored to the installation environment and mechanical requirements .

Ropes made of stainless steel are used if a high corrosion resistance is necessary or if a high value is placed on the optics. These

What is Aerial Fiber Optic Cable? Aerial fiber optic cable is a type of optical fiber transmission cable used for aerial

Refer to the cable specification sheet for the specific allowed tension for each cable . Coils are required for all ribbon gel-free and gel

Overhead cables are a critical component of modern power distribution systems, providing

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Overhead fiber optic cable is suitable for long-distance lines and dedicated network optical

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time and installation cost by

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