

Article Overview

Splicing aluminum-clad steel optical cables requires careful preparation of both the metallic armor and the optical fiber, typically using fusion splicing for the fiber and mechanical or heat-shrink techniques for the armored layer.

Fiber Optic Splicing

The core optical fiber inside aluminum-clad steel cables is spliced using standard fusion or mechanical splicing techniques:

- o **Fusion Splicing:** The fiber ends are stripped of their protective coating, cleaned with alcohol, and precisely aligned in a fusion splicer. An electric arc melts and fuses the fibers into a continuous strand, resulting in minimal signal loss (typically ~0.02 dB) and high reliability. The splice is then protected with a heat-shrink sleeve to restore mechanical strength ().
- o **Mechanical Splicing:** This method aligns the fiber ends inside a sleeve with an adhesive gel. It is faster and requires less expensive equipment but generally has slightly higher insertion loss and lower long-term durability ().

Handling the Aluminum-Clad Steel Layer

Aluminum-clad steel provides mechanical strength and protection but requires careful handling during splicing:

- o **Stripping the Armor:** Use precision tools such as abrasive cutoff wheels or specialized cable strippers to remove the aluminum and steel layers without damaging the fiber inside. Kevlar or strength members should be cut close to the jacket ().
- o **Protective Sleeving:** After splicing the fiber, slide a stainless steel tube or heat-shrink sleeve over the splice to restore mechanical integrity and protect against environmental factors like moisture and vibration ().
- o **Clamping and Alignment:** Clamp the cable core in a vise during preparation to ensure precise cuts and alignment of the armored layers ().

Best Practices

- o **Cleanliness:** Ensure all fiber surfaces are free of dust and debris using lint-free wipes and isopropyl alcohol ().
- o **Testing:** Verify optical continuity and signal loss before finalizing the splice.
- o **Tools:** Essential tools include a fusion splicer, fiber cleaver, strippers, heat-shrink sleeves, and a visual fault

locator ().

o Safety: Wear protective gloves and eye protection when cutting metallic armor to prevent injury from sharp edges.

Summary

Splicing aluminum-clad steel optical cables involves a two-step process: first, carefully splicing the optical fiber using fusion or mechanical methods, and second, restoring the mechanical and environmental protection of the aluminum-clad steel using heat-shrink sleeves or stainless steel tubes. Following proper preparation, alignment, and protective measures ensures minimal optical loss and long-term durability of the cable ().

AFL's aluminum coated products are made with a special, malleable steel core in its formed wire solution.

Aluminum clad steel wire is a kind of bimetallic wire that aluminum covers on the steel core continuously and evenly. Compared with

ACS Aluminium Clad Steel Wire Standards Wires ACS manufactured by Uni fulfills the requirements of the main relative international

GL Technology Co., Ltd. is a manufacturer of power fiber optic cable, aluminum clad steel for electric power

AFL's advanced Stripping, Cleaning, and Fiber Prep Automation solutions for fusion splicing. Our products ensure efficient, precise

All cables utilizing the coated aluminum/coated steel sheath (CACSP) design manufactured in accordance with the requirements of

Fusion splicing is used for joining cables during network installation projects, repairing cables, mounting pre-polished

Fiber Optic Connectivity Test and Inspection Fusion Splicing Specialty Optical Fiber Aluminum Clad Steel Fiber Optic Cleaning New

Introducing fibre optic systems for OHTL Overhead optical fibre cable systems have become a key factor in telecommunications

OPGW (optical ground cable) is preferred for its central aluminum tube and color-coded fiber optic tubes that simplify the splicing

Discover the key differences between core alignment and cladding alignment in fiber optic splicing. Learn

STAINLESS STEEL BOX The XOK universal joint closures are designed to provide water and pressure-tight environmental

Looking to understand fiber splicing? It's the process of joining two fiber optic cables using techniques such as fusion

The OPGW design of dissimilar materials such as stainless steel tube with aluminium or aluminium -clad-steel wire strands are not

Splicing in optical fiber is the joining two fiber optic cables together. There are 2 methods of cable splicing, mechanical

Fiber optic splicing joins two fiber optic cables end to end seamlessly to create a continuous path for light signal,

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