

Article Overview

Fiber optic cables with metallic components must be properly bonded and grounded to prevent electrical hazards, while fully dielectric cables require no grounding.

Key Principles

Fiber optic cables transmit data as light, so the fiber core itself does not carry electrical current and does not require grounding. However, many cables include metallic elements such as steel armor, aluminum moisture barriers, copper strength members, or metallic messenger wires, which must be grounded to prevent electric shock, equipment damage, and fire hazards . Fully dielectric cables without metal content do not require grounding .

Grounding Procedure

- o Identify Metallic Components: Check the cable datasheet or jacket markings to determine if metallic armor, shielding, or strength members are present .
- o Prepare the Cable: Carefully remove the outer jacket to expose the metallic components without damaging the optical fibers .
- o Attach Grounding Clamp: Use a metal clamp (e.g., gator clip or bonding clamp) sized for the cable diameter. Position it securely around the exposed metallic armor and tighten to ensure a reliable electrical connection .
- o Connect to Grounding System: Attach a grounding conductor from the clamp to the building's grounding network or approved grounding bus, following NEC Articles 250, 770, 800, and 830 .
- o Ground Conduits and Trays: Any metallic conduit or tray carrying fiber optic cables must also be grounded, independent of the cable's metal content .

Types of Armored Cables

- o Interlocking Armor: Aluminum helically wrapped, used in indoor or indoor/outdoor cables, provides crush resistance .
- o Corrugated Armor: Coated steel tape folded longitudinally, used in outdoor cables, offers mechanical and rodent protection . Armored cables require bonding and grounding, whereas dielectric-armored cables provide protection without the need for grounding, simplifying installation .

Standards and Compliance

Grounding practices should comply with:

- o NEC (National Electrical Code) Articles 250, 770, 800, 830
- o NFPA 70



Fiber optic cable re-grounding

o TIA and IEEE guidelines for telecommunications systems Local authorities having jurisdiction (AHJ) may impose additional requirements, so always verify compliance before installation.

Summary

- o Metallic fiber optic cables: Must be bonded and grounded.
- o Dielectric fiber optic cables: No grounding required.
- o Armored cables: Provide protection but require grounding unless dielectric.
- o Follow NEC and industry standards to ensure safety and prevent equipment damage. Proper grounding ensures voltage buildup prevention, equipment protection, and personnel safety in fiber optic installations.

Local cable company is installing fiber optic cable to residences. They are asking for a grounding conductor to be

The current language regarding optical fiber cabling grounding found in the NFPA 70 NEC 2014 is as follows: " 770.93

While nonarmored fiber optic cables don't need grounding due to their dielectric properties, armored fiber optic cables feature

Bonding and grounding of armored fiber-optic cable are simple steps in the installation process that are often

The following items are key considerations in preparation for installing the fiber optic cable when the

Optical ground wire An optical ground wire (also known as an OPGW or, in the IEEE standard, an optical fiber composite overhead

The type of fiber optic cable and the fibers in the cable should be chosen appropriate for the type of communications system(s) being

The grounding and bonding of the metallic components in an optical fiber cable and the supporting metallic messenger

From the September 2016 OSP Expert Column Our September 2016 OSP Expert column on fiber optic cable bonding and

Understanding how to bond and ground a fiber-optic system with armored cable can be confusing. First, it is important

Fiber optic cable re-grounding

Optical Ground Wire (OPGW) is a dual functioning cable, meaning it serves two purposes. It is designed to replace traditional static /

NEC 770.114 - "Non-current-carrying conductive members of optical fiber cables shall be bonded to a grounded

The term "cable" means stranded conductor or a combination of conductors that includes Fiber Optic Supply Cable, Fiber Optic

After pulling several runs of SM fiber optic, I began terminating today. I began stripping the outer sheath and it has a

AEN 140, Revision: 1 This Applications Engineering Note (AE Note) discusses conventional bonding and grounding practices for

All fiber optic applications are not the same. At the FOA, we're mainly concerned with communications fiber optics - telco, CATV,

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