

What should be used to seal the cable trays in the low-voltage electrical shaft



Overview

Firestopping Requirements for Cable Trays and Wall/Slab Penetrations Where cables pass through shafts, walls, slabs, or enter electrical panels or cabinets.

Key Takeaways

Cable trays in low-voltage electrical shafts must be sealed with fire-resistant materials, ensuring tight, reliable closures without visible gaps, while complying with applicable standards and installation best practices. Firestopping and Sealing Requirements

When low-voltage cable trays pass through electrical shafts, walls, or slabs, all openings must be tightly sealed using firestopping materials to prevent fire and smoke propagation. Acceptable materials include fire-rated boards, firestop packs, firestop mastic, or fire-resistant mineral wool. For large openings, a fire-resistant backing plate should be installed before sealing to provide structural support and ensure complete coverage .

- Gap limitations: The area between firestop packs and cables should not exceed 1 cm², and the packing thickness should be at least 24 cm .
- Metal trunking: All gaps inside and around metal cable trays or trunking must be sealed both internally and externally.



- Cover plates: Use square, consistently sized cover plates, painted evenly, to close openings and maintain aesthetics and safety .

Slab Penetrations

For cable trays passing through slabs in electrical shafts:

- Provide 20–30 mm of firestopping at the penetration.
- Install a fire-support plate at the top of the penetration.
- Ensure a waterstop of at least 50 mm at floor-level penetrations to prevent water ingress .

Technical and Safety Considerations

- Cable types: Low-voltage power cables (50–1000 V AC or 120–1500 V DC) must comply with standards such as AS 1125 for conductor specifications and AS 3008 for current-carrying capacity, voltage drop, and short-circuit ratings .
- Control and signal cables: Must be shielded and installed in metal conduits or ducts, maintaining at least 300 mm separation from power cables to minimize electromagnetic interference .
- Installation sequence: Firestopping should be performed after floor and wall finishes are completed and shaft doors are installed, following a logical sequence: reserved openings → cable tray installation → conduit and cable routing → grounding → waterproofing → firestopping .

Best Practices

- Maintain reasonable layout and positioning to facilitate installation and future maintenance.
- Ensure tight and reliable sealing without visible cracks or voids.
- Use appropriate fire protection materials based on the shaft environment and cable type.
- Verify compliance with local standards and regulations, including Australian Standards, IEC, ISO, or other relevant codes . By following these requirements, low-voltage cable trays in electrical shafts will meet fire safety, electrical safety, and maintainability standards, ensuring both regulatory compliance and operational reliability.

Article Content

Firestopping Requirements for Cable Trays and Wall/Slab Penetrations

Where cables pass through shafts, walls, slabs, or enter electrical panels or cabinets, openings shall be tightly sealed

Cable Tray Installation Rules (NEC 392) – Electrical Trader

It's important to use cable ties that are listed and approved for cable tray applications - standard plastic ties may not

NEC Article 392: Cable Tray Systems | PDF | Electrical Wiring

It provides rules for acceptable wiring methods that can be installed in cable trays, including conditions for use. It

NEC Article 392 Guide: Ensuring Compliance for Cable Tray Systems

Strong hangers or brackets should be used to ensure that cable trays do not fall or hang. According to the regulations

NEC Standards for Cable Trays: Grounding, Fill Capacity

This article provides a comprehensive framework that governs various aspects of cable tray installations, including

Types of Cable Trays – Purpose, Advantages, Disadvantages

Cable tray is alternatives to wire ways and electrical conduits, which completely enclose cables. Study types of cable

Cable Tray Institute

The Cable Tray Institute (CTI) was founded in 1991 to support the cable tray industry by engaging in research, development,

Cable Tray Penetration Seals

SRE Solution: Cable Tray Penetration Seals provide a barrier between rooms protecting equipment from smoke and fire. Materials

The effects of various sealing methods on dielectric strength

Introduction There are various forms of cable accessory sealing methods in the industry today. The main three are heat shrink,

Cable tray manual

Steel or stainless steel cable trays should be used to support Type MI cable being used for critical circuit service. During severe fire

Installation Of Cable In Cable Trays: NEC, Safety

With this growth in the use of tray, it is increasingly important that the tray and cable be installed within industry recognized practices.

How Do You Seal a "Wire Conduit"?

Discover 4 ways to seal a conduit carrying wire or cable from the passage of gases, vapors and liquids. Effectively seal conduits with

Cable Tray Technical Guide A practical guide to product selection

What is a cable tray ? Both the Canadian Electrical Code (CEC) and its American counterpart, the National Electrical Code (NEC),

Cable Tray Fill Rules (NEC 392)

Cable tray types, NEC fill limits, single-conductor vs multiconductor differences, ampacity derating, and when to use

CSD Sealing Systems: Weatherstops

Multi-cable and Cable-tray Weatherstop Penetrations WSP weatherstops are designed to seal penetrations of any type in walls or

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