How to seal up cables in vertical shaft cable trays

Article Overview

Cables in vertical shaft trays should be sealed using firestop packs, intumescent caulks, or watertight seals to ensure fire protection, water resistance, and mechanical stability.

Firestopping in Vertical Shafts

When cables pass through vertical shafts, walls, or slabs, all openings must be tightly sealed with firestopping materials to prevent fire and smoke spread. Common materials include fire-rated boards, firestop packs, firestop mastic, and fire-resistant mineral wool. For large openings, a fire-resistant backing plate should be installed before sealing. Firestop packs should be placed in an orderly sequence, ensuring that gaps between packs and cables do not exceed 1 cm2 and packing thickness is sufficient, typically not less than 24 cm. All gaps inside and around metal trunking must be sealed both internally and externally, and cover plates should be square, evenly painted, and properly fitted .

Watertight Sealing

For vertical cable tray runs, especially in concrete pull boxes or outdoor/wet environments, watertight penetration is critical. Individual cable seals using pressure-fit seals are recommended for a truly watertight solution. Specialist products like Roxtec or Hawke transit systems can be used if installed correctly. Alternatively, a dam can be built around the cable penetrations and filled with flowable silicone, such as Dow Corning 734, which fills all crevices and cures to form a watertight barrier .

Mechanical Fixation and Cable Management

Vertical cable installations must account for cable weight and tension. Use high-tensile steel wire armor, pulling grips, or socks to prevent cable rupture during installation. Fail-safe mechanisms should be in place to prevent free fall in case of a pulling wire failure. Once installed, cables should be properly fixed with mounting brackets, clamps, or cleats that maintain constant lateral clamping force, avoiding slippage or mechanical deformation due to thermal expansion or load cycling .

Installation Sequence
o Complete floor and wall finishes in the shaft and install shaft doors.
o Install cable trays and busways, ensuring proper alignment.
o Route cables carefully, considering weight and bend radius.
o Apply grounding and waterproofing measures.
o Seal all penetrations with firestop packs, mastic, or watertight seals.
o Install cover plates or protective barriers to complete the seal .

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Key Considerations

o Ensure no closed loops of ferromagnetic steel in the shaft to avoid interference.
o Maintain minimum bend radius for cables exiting trays.
o Use UL-listed firestop systems and follow manufacturer instructions for compliance.
o Plan installation carefully to allow for maintenance and future cable additions . By combining firestopping, watertight sealing, and mechanical fixation, vertical shaft cable trays can be safely and effectively sealed, ensuring compliance with safety standards and long-term reliability.

FIRSTO firestops are designed to seal multi-cable and cable tray penetrations of fire-rated walls and floors. FIRSTO fire stops are

In practice, cables and pipes are often applied jointly in one penetration - these systems

In vertical wall penetrations, weatherproofing cable trays is often carried out using a weatherstop sealing system.

Learn how to install cable trays correctly. Get the ultimate step-by-step guide on setting up a seamless and reliable

Welcome to our step-by-step guide on installing cable trays! In this video, we"ll explore the

If a wire mesh cable tray is supporting cable with a built-in equipment grounding conductor or control or signal cables, then the tray

This document provides procedures for installing cable trays according to international standards. It describes inspecting and storing

Sealing shall be tight and reliable, without visible cracks or voids. For large openings, install

This technical article discusses twelve different methods for laying high voltage cables. Out of

Once the cable is installed in an open cable tray installation, take care to protect the exposed cables from falling objects or debris

Cables, cable bundles, conduits, bundles of conduits, empty pipes, cable trays and cable ladders may also pass

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Complete vertical cable tray installation guide: materials, grounding, firestop, and GB standards compliance for

Sealing the cables individually with pressure fit seals is the only way you"re likely to get a truly watertight penetration

The frame can be opened and closed repeatedly to allow for cable maintenance and additions. The sponge rubber pads are

This guide covers cable ladder systems, cable tray systems, channel support systems and associated supports intended for the

Core Definition: The Vertical Backbone for Cables A Vertical Cable Tray is a specialized support system designed to

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