

What types of cables are used in vertical cable trays



Overview

Table 392.10 (see Table 1) lists the type of cable that is allowed to be installed in tray and the types of raceway that can be used.

Key Takeaways

Select cables rated for open-air environments, ensure proper support and spacing, and consider environmental and regulatory requirements for vertical cable tray installations. Cable Type Selection

For vertical cable trays, only use conductors rated for open-air environments, such as Tray Rated (Type TC) or Metal-Clad (Type MC) cables. These cables are designed to withstand exposure in trays without additional conduit protection and maintain safety under vertical installation conditions (NEC Article 392) . For sensitive control or instrumentation circuits, consider low-voltage or fiber optic cables that are compatible with ventilated or wire mesh trays .

Environmental Considerations

- **Material compatibility:** Choose cables that match the tray material and environmental conditions. Aluminum trays are lightweight and corrosion-resistant, steel trays provide durability, and FRP trays are ideal for corrosive or high-moisture environments .



- Temperature and moisture: Ensure cables are rated for the expected temperature range and humidity levels. For outdoor or high-UV exposure, use UV-resistant cable jackets and ties .

- Chemical exposure: In industrial environments with chemicals, select cables with chemical-resistant insulation.

Support and Spacing

- Fastening: In vertical runs, cables should be secured to the tray's transverse members to prevent sagging and maintain spacing .

- Spacing: Maintain separation between high-power and low-power cables to prevent electromagnetic interference (EMI). Use isolation plates where trays cross or when multiple layers are installed .

- Cable fill: Do not exceed 40% of tray cross-sectional area for power cables and 50% for control or signal cables to avoid overheating and maintain proper airflow .

Cable Tray Design Considerations

- Ladder trays: Ideal for heavy-duty power cables; provide excellent ventilation and allow heat dissipation .

- Ventilated trough trays: Suitable for smaller control or instrumentation cables; prevent sagging and allow airflow .

- Solid-bottom trays: Offer EMI protection for sensitive circuits but may reduce heat dissipation; use when shielding is a priority .

Regulatory Compliance

- Follow NEC Article 392 for cable type, fill limits, grounding, and installation clearances .

- Ensure fire resistance ratings and anti-corrosion treatments meet local standards (e.g., GB/T 13912 for galvanized steel or aluminum trays) .

- Maintain minimum clearances from other building services (≥ 300 mm from ducts or pipes) and provide firestop space when passing through fire compartments .

Summary

When choosing cables for vertical cable trays, prioritize tray-rated cables, ensure proper support and spacing, consider environmental and chemical exposure, and comply with regulatory standards. Selecting the right combination of cable type, tray design, and installation practices ensures safe, reliable, and maintainable vertical cable systems.

Article Content

Types of Cable Typically Used in Cable Tray

To that end this Bulletin is intended to discuss the types of cables most frequently used in cable trays and the wiring methods

The Ultimate Guide to Tray Cables: Types, Applications and

Tray cables (TC) are multi-conductor cables designed and rated for installation in cable trays and raceways or

Cable Tray Systems: NEC Article 392 Installation Guide

Complete guide to cable tray systems per NEC Article 392. Learn about ladder, solid bottom, ventilated trough, wire mesh, and

Cable Tray Fill Rules (NEC 392)

This guide covers the cable tray types and their appropriate applications, the fill rules for each configuration, ampacity

Cables Allowed in NEC Tray Applications

Table 392.10 (see Table 1) lists the type of cable that is allowed to be installed in tray and the types of raceway that can be used.

Tray Cable Applications & Selection Guide | TC, TC-ER, VNTC, EPR

Complete guide to tray cable types including TC, TC-ER, VNTC, EPR-CPE, and shielded instrumentation cable. Compare

Cable Tray Questions | Cable Tray Institute

The types of cables usually used in cable trays are type TC (article 340), PLTC (article 725), ITC (article 727), MC (article 334) and

What is a Vertical Cable Tray?

A Vertical Cable Tray is a specialized support system designed to carry electrical and data cables securely in a

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Do not use a cable tray as a walkway, ladder, or support for people; a cable tray is a mechanical support system for cables and

NEMA Standards Publication VE 2-2006

—Do not use a cable tray as a walkway, ladder, or support for people; cable tray is a mechanical support system for cables and

Cable Tray Technical Guide A practical guide to product selection

SOLID-BOTTOM CABLE TRAY Providing additional cable protection, solid-bottom cable tray is sometimes preferred to support and

10 Things to Consider when Selecting a Cable Tray | Snake Tray

The type of cable tray (e.g., solid, ventilated), ampacity (current-carrying limit) requirements, and voltage rating of the

B-Line series Cable Tray Design Considerations

The type and size of the cables used will determine the required cable tray width. See the guidelines below, which are based off of

Cables Allowed in NEC Tray Applications

Cables Allowed in NEC Tray Applications Cable tray is one of the most common methods of supporting wire and cable. There are

Cable Tray Institute

Cable tray, introduced in the mid 1940s, is a safe and economical solution for supporting requirements of electric power, signal,

CABLE TRAY SYSTEMS GUIDE

Steel Ladder System Hubbell's NEXTFRAME® Ladder Tray is the effective and widely used cable runway that supports and delivers

Exploring Cable Tray Types and Applications

Often unheralded, cable trays play a vital role in tray cable installations throughout industrial, commercial,

Cable Tray Types and Sizes

What is Cable Tray Systems? An electrical cable tray is a type of containment system used to support insulated electrical cables for

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