

# Do all electrical wires and cables need to be run in cable trays

## Article Overview

Yes, electrical wires can be run through cable trays, provided they are properly rated, installed according to NEC Article 392, and separated as required for safety and performance.

## Cable Tray Overview

Cable trays are open support systems made of metal or plastic, designed to organize and support electrical conductors in commercial, industrial, and large residential installations . Unlike conduits, cable trays are not fully enclosed, so the wires inside must be rated for open-air exposure.

## Approved Cable Types

Only certain types of cables are suitable for cable trays:

- o Tray-rated cables (Type TC) or metal-clad cables (Type MC) are required for open-air installations .
- o THHN/THWN wires can be used if installed according to their temperature and location ratings, with THWN suitable for wet areas .
- o Cables must be durable, heat-resistant, and protected against abrasion, especially in high-traffic or outdoor areas .

## Installation Guidelines

- o Clearances: Maintain at least 12 inches of vertical clearance above trays for installation and maintenance .
- o Fill Limits: Power cables should not exceed 40% of the tray's cross-sectional area; control cables can fill up to 50% .
- o Separation: High-power and low-power cables must be separated to prevent electromagnetic interference (EMI), .
- o Grounding: Metallic trays can serve as equipment grounding conductors if properly bonded .
- o Covers: Optional but recommended in high-traffic areas or outdoor installations to protect cables from physical damage and sunlight .

## Restrictions

- o Cable trays cannot be used in hoistways or enclosed spaces and must remain accessible for maintenance .
- o Mechanical piping, water, or air tubing cannot share the tray with electrical cables .
- o Nonmetallic trays are limited to corrosive environments or where voltage isolation is required .

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## Practical Considerations

- o Cable trays can be installed horizontally or vertically without affecting fill limits .
- o Outdoor trays require sunlight-resistant cables and expansion splice plates to accommodate thermal expansion .
- o Proper installation ensures long-term reliability, reduces fire risk, and facilitates future maintenance . In summary, running electrical wires through cable trays is a standard and safe practice when using approved cables, following NEC Article 392, and adhering to spacing, grounding, and separation requirements. This approach provides organized, accessible, and code-compliant wiring infrastructure.

The short answer is no. Due to their exposure to the open air because of the cable trays,

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

**Why It Matters:** High-voltage and limited energy circuits routed too closely can cause cross-talk, distortion, or packet

Here's what you need to know: **Cable Types:** Only use conductors rated for open-air

**Answer:** No. Cable trays are a support system for electrical cables, power, signal, and communication and optical fiber cables. NEC

If not designed and installed properly, wiring inside cable trays may pose hazards such as

Learn the basics of electrical wiring for the home, including wire and cable types, wire color

Solid bottom cable trays are exactly what they sound like, offering continuous support for the cables they contain.

Cables and conductors must be secured to the cable tray at intervals according to installation instructions. For non

Since cable trays do not fully enclose cables, which would be the case with cable raceway or ducts, tray cable must

Cable tray is considered to be a system. It must provide continuous support for cables, and the electrical continuity of the cable tray

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Is your cable tray system optimized for safety, dependability, space and cost savings? Cable tray (or cable ladder) systems are a

All conductors of a circuit, including the neutral and equipment grounding conductors, must be run in the same raceway, cable,

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

Learn everything about cable tray installation with our complete guide. Discover types, steps, and safety tips for

Discover cable tray systems, including tray types, sizes, duty ratings and materials, and learn how to choose the right solution for

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