

Reasons why mineral cables are not allowed in cable trays



Overview

Only cables specifically rated for tray use - such as Type TC (Tray Rated) or Type MC (Metal-Clad) - are allowed.

Key Takeaways

Mineral-insulated (MI) cables are generally not recommended for installation in cable trays due to heat dissipation, mechanical stress, and NEC compliance concerns. Reasons MI Cables Should Not Be Run in Cable Trays



1. **Heat Dissipation Limitations** MI cables have a high thermal mass and rely on surrounding materials for heat dissipation. Cable trays, especially enclosed or densely packed trays, restrict airflow and can cause localized heating, reducing the cable's ampacity and potentially damaging the insulation or conductor over time. Unlike tray-rated cables, MI cables are not designed for the thermal conditions typically encountered in cable trays.

2. **Mechanical Stress and Flexibility** MI cables are rigid and brittle compared to conventional tray-rated cables. Running them in trays, which often require bending, pulling, or securing, can lead to mechanical damage, cracks in the mineral insulation, or conductor breakage. Cable trays are designed for flexible or semi-flexible cables that can be tied down or spaced according to NEC requirements.

3. **NEC and Tray-Rated Cable Requirements** The National Electrical Code (NEC) Article 392 specifies that only approved tray-rated cables should be installed in cable trays. MI cables are typically not listed as tray-rated because they are intended for fixed, protected installations such as conduits or direct burial. Installing non-tray-rated cables in trays may violate code compliance and could fail inspection.

4. **Grounding and Bonding Considerations** Metallic cable trays often serve as an equipment grounding conductor (EGC) or require bonding of tray-mounted cables. MI cables have a metallic sheath, but improper installation in trays can create grounding or bonding issues, especially if the tray is aluminum and the MI cable sheath is copper, leading to potential electrolytic corrosion.

5. **Installation and Maintenance Challenges** MI cables are difficult to install, terminate, or replace once in a tray system. Cable trays are designed for easy access, pulling, and rearrangement of cables, which conflicts with the permanent and rigid nature of MI cables.

Conclusion

While cable trays are ideal for flexible, tray-rated power, control, and communication cables, mineral-insulated cables should not be run in cable trays due to heat dissipation issues, mechanical fragility, NEC compliance, and grounding concerns. MI cables are better suited for conduits, direct burial, or fixed installations where their thermal and mechanical properties can be safely maintained. Proper adherence to NEC Article 392 and manufacturer guidelines ensures both safety and long-term reliability of the electrical system.

Article Content

NEC Article 392: Cable Tray Systems

It defines cable trays and their components. It provides rules for acceptable wiring methods that can be installed in

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Only cables specifically rated for tray use - such as Type TC (Tray Rated) or Type MC (Metal-Clad) - are allowed.

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Two common alternatives to open wiring (types of an enclosed wiring system) are cable conduit and cable tray. Let's

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The primary reason why cable trays are invaluable is that they support and protect power and signal cables. These

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The only reason to select a ventilated trough cable tray over a ladder type cable tray is aesthetics. No drooping of small cables is

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Tray can be manufactured in various types of material including aluminum, steel and fiber and other nonmetallic materials. Cable tray

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A cable tray is a structural system used to organize and protect electrical cables in industrial, commercial, and

Practices for grounding and bonding of cable trays

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

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Equipment Grounding Conductors for Cable Tray Systems Cable tray wiring systems have excellent safety and dependability

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We uncover the mystery of mineral insulated cable, explain why they are ideal for challenging environments and what

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