Can cables overlap in cable trays



Overview

General Practice: Cables within the tray should be laid straight and orderly, avoiding crosses or overlaps, and should not protrude. All bends must be securely fastened.

Key Takeaways

Cables should generally not be overlapped in a cable tray beyond the tray's fill limits, and proper separation between power, signal, and communication cables must be maintained.

Cable Tray Fill and Overlapping

Cable trays are designed to support electrical, communication, and control cables while allowing ventilation and heat dissipation. Overlapping cables can lead to overheating, mechanical stress, and difficulty in maintenance.

NE

C Article 392 specifies that the sum of the cross-sectional areas of all cables must not exceed the maximum fill area for the tray type and width, which varies for ladder, ventilated trough, and solid-bottom trays (NEC 392. 22(A)),. Exceeding these limits by overlapping cables can reduce airflow and ampacity, potentially causing insulation damage or fire hazards.

Separation of Cable Types

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It is also important to separate power cables from communication or signal cables to prevent electromagnetic interference. A minimum separation of about two inches is generally recommended, though the exact distance depends on voltage, cable type, and manufacturer guidelines. Overlapping different types of cables in the same tray is discouraged unless the tray is specifically designed for mixed-use and the fill limits are strictly observed.

Best Practices

Use ladder trays for large power cables to maximize ventilation and reduce heat buildup. For small instrumentation or control cables, ventilated trough or wire mesh trays can be used, but avoid stacking cables on top of each other unnecessarily. Maintain minimum bend radii and secure cables with ties or clamps to prevent sagging or mechanical damage.

If additional cables must be added, consider using a separate tray or tiered tray system rather than overlapping in the same tray.

Conclusion

While minor overlapping may occur in practice, cables should not be overlapped in a way that exceeds the tray's fill capacity or compromises separation requirements. Proper planning, adherence to NEC fill rules, and maintaining separation between cable types ensure safety, reliability, and ease of maintenance.

Article Content

Cable Tray Spacing Standards for Installation and Safety

General Practice: Cables within the tray should be laid straight and orderly, avoiding crosses or overlaps, and should not protrude. All bends must be securely fastened.

Cable Tray Fill Rules (NEC 392)

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