

National Standard for Aluminum Cable Trays

Article Overview

The primary national standard for aluminum cable trays in the U.S. is NEMA VE 1-2017, harmonized with CSA C22.2 No. 126.1-17, and installations must comply with NEC Article 392.

Overview of Standards

NEMA VE 1-2017 specifies the manufacturing, design, and installation requirements for metal cable tray systems, including aluminum trays. It covers various types such as ladder, ventilated trough, solid bottom, channel, and wire mesh trays, along with associated fittings. The standard provides load/span class designations, material specifications, and guidance for shipping, handling, storage, and maintenance of cable tray systems (NEMA VE 1-2017). CSA C22.2 No. 126.1-17 is the Canadian counterpart, harmonized with NEMA VE 1, ensuring that aluminum cable trays meet safety and performance requirements under the Canadian Electrical Code (CEC) Part 1. NEC Article 392 governs the installation of cable trays in the United States. It specifies requirements for approved tray-rated cables, grounding and bonding of metallic trays, tray fill limits, separation of power and data cables, support spacing, and firestop systems at penetrations. Compliance with NEC ensures safety, reliability, and inspection readiness.

Material and Performance Considerations

Aluminum is widely used for cable trays due to its lightweight, corrosion resistance, and high strength-to-weight ratio. The natural oxide layer (alumina) protects aluminum from atmospheric corrosion, making it suitable for indoor and outdoor installations. Aluminum alloys are selected based on mechanical properties such as strength, hardness, and resistance to stress corrosion, cracking, and pitting.

Installation and Safety Guidelines

- o Grounding and bonding: Mandatory for all metallic trays to ensure electrical safety.
- o Tray fill and separation: Proper calculation of tray fill and separation of power and data cables prevents overheating and interference.
- o Support spacing: Aluminum trays must be supported according to load/span ratings specified in NEMA VE 1.
- o Firestop compliance: Required at penetrations to maintain building fire safety.
- o Maintenance and modifications: Guidelines for safe handling, storage, and system modifications are provided in NEMA VE 1.

International Reference



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While NEMA VE 1 uses an IEC-style format, it is not equivalent to IEC-61537, which is the international standard for cable tray systems. Aluminum cable trays manufactured according to NEMA VE 1 meet U.S. and Canadian national standards but may require additional certification for international compliance .

Key Takeaway

For aluminum cable trays, NEMA VE 1-2017 and CSA C22.2 No. 126.1-17 define the national standards for design, material, and installation, while NEC Article 392 governs safe installation practices. Adhering to these standards ensures structural integrity, electrical safety, and regulatory compliance in commercial, industrial, and data center environments .

Tray components must be accurately formed to tolerances with rounded edges. Cable trays installed in hazardous environments

NEMA VE 2 addresses shipping, handling, storing, and installing cable tray systems and provides information on maintenance and

INTRODUCTION The B-Line series Cable Tray Manual was produced by our technical staff. We recognize the need for a complete

The Cable Tray Institute (CTI) was founded in 1991 to support the cable tray industry by engaging in research, development,

NEC Article 392 explains cable trays, their components, appropriate wiring methods for

Cable tray installation must comply with specific technical standards to ensure electrical safety, system

Understand Cable Tray Regulations worldwide. Learn key standards like NEC (US), BS

As an industry leader in cable tray, Eaton offers one of the widest ranges of cable management solutions available in the market

Cable Tray Systems Guide HUBBELL Hubbell Wiring Device-Kellems and Hubbell Premise Wiring are divisions of Hubbell

Cable tray Electrical installations Wiring practice by region or country North American practice United Kingdom practice Regulation of



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The National Electrical Manufacturers Association (NEMA) Standards and guideline publications, of which the document herein is

Core rules for selecting, installing, grounding, and filling cable trays--clearances, materials, separation, and bonding

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Cable Tray Hold Downs - Cable tray supported on standard 1-5/8 inch strut shall be held down with Cope style hold-down brackets.

For approximate solid cable tray weights multiply above steel and aluminum weights by 1.064 NA = Not Available

The Cable Tray Institute is making available the current edition of this practical guide for the proper installation of aluminum or steel

Web: <https://bssoda.pl>

