

Materials of cable trays and partitions



Overview

Ultimate Guide to Cable Tray Selection – Types, Learn how to choose the best cable tray system for your needs. Explore types, materials, The Ultimate Guide.

Key Takeaways

Cable trays and partitions are commonly made from steel, aluminum, fiberglass, and plastic, each selected based on strength, corrosion resistance, weight, and environmental conditions. Steel

Steel is the most widely used material for cable trays due to its strength, durability, and load-bearing capacity. Variants include:

- Galvanized Steel: Coated with zinc to resist corrosion, suitable for indoor and outdoor applications. The zinc layer provides sacrificial protection, forming a protective patina over time .
- Stainless Steel (AISI 316L): Highly resistant to corrosion, especially in humid, coastal, or chemically aggressive environments. Often used in industrial or marine settings .
- Q235B Steel: Common in heavy-duty applications, with a minimum thickness of 1.5mm and yield strength ≥ 235 MPa, ensuring structural integrity under high loads . Steel trays can be fabricated as ladder, perforated, solid, or channel types, depending on ventilation and cable protection requirements .

Aluminum

Aluminum trays are lightweight, corrosion-resistant, and easy to install, making them ideal for indoor use or where weight reduction is important. Common alloys include 6063-T5, which offers good conductivity and mechanical strength . Aluminum is less strong than steel, so it is better suited for moderate loads. Its natural oxide layer provides excellent resistance to atmospheric corrosion .

Fiberglass and Composite Materials

Fiberglass-reinforced plastic (FRP) or vinyl resin trays are used in highly corrosive or high-temperature environments, such as chemical plants or acidic conditions. They are lightweight, non-conductive, and resistant to chemical attack, making them suitable for specialized industrial applications . Pultrusion processes are often used to manufacture these trays, providing a high strength-to-weight ratio.

Plastic (PVC)

Plastic cable trays are cost-effective, lightweight, and resistant to chemical exposure, but they have limited mechanical strength and are suitable only for light-duty applications or low-voltage cables . They are often used in residential or low-load commercial installations.

Partitions

Partitions within cable trays, used to separate different types of cables (e.g., power vs. data), are typically made from the same material as the tray or from insulating plastics to prevent interference and maintain safety. Materials are chosen based on electrical insulation, fire resistance, and mechanical stability.

Material Selection Considerations

When selecting materials for cable trays and partitions, consider:

- Environmental conditions: Corrosive, humid, or outdoor environments favor stainless steel, aluminum, or FRP.
- Load requirements: Heavy-duty applications require steel; lighter loads can use aluminum or plastic.
- Cost and maintenance: Steel is cost-effective and durable; aluminum and FRP reduce maintenance in corrosive environments.
- Standards compliance: Ensure materials meet IEC 61537, NEC, NEMA, or local standards for safety and performance . By carefully choosing the material, cable trays and partitions can provide long-lasting, safe, and efficient cable management tailored to specific industrial, commercial, or residential needs.

Article Content

Ultimate Guide to Cable Tray Selection – Types,

Learn how to choose the best cable tray system for your needs. Explore types, materials,

The Ultimate Guide to Selecting the Right Cable Tray for Your Project

Cable trays come in various shapes and materials, including ladder trays, channel trays, wire mesh trays, and more.

Cable Tray Installation Rules (NEC 392) – Electrical Trader

Core rules for selecting, installing, grounding, and filling cable trays—clearances, materials,

Comparing Electrical Cable Tray Materials-Aluminium,

Aluminium, steel, or plastic? Compare key features of electrical cable tray materials to find

Cable Tray Technical Guide A practical guide to product selection

In designing supports for a cable tray system, consideration should be given to the loads associated with future cable additions and

The Ultimate Guide to Selecting the Right Cable Tray for Your Project

By understanding the types of cable trays available, assessing your project's specific needs, and considering factors like

Types of Cable Trays: Ladder, Perforated, Basket, Solid & Channel

Explore all types of cable trays—ladder, perforated, basket, solid, and channel. Learn their uses, materials, pros,

Electrical Cable Tray Systems: Types, Installation, Fill Calculations ...

Discover electrical cable tray systems, including types, installation, fill calculations, and best practices for commercial

Cable tray

These trays may be made of wire mesh, called "cable basket", or be designed in the form of a single central spine (rail) with ribs

Cable Trays & Accessories | Cable Management Systems | MEP

SFSP manufactures a wide range of products capable of providing the characteristics which respond to the proposed application,

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A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a

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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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The Ladder Tray features light, rugged, tubular steel construction. It is designed for mechanical support and strain relief in long runs

Comparing Electrical Cable Tray Materials-Aluminium, Steel, Plastic

Aluminium, steel, or plastic? Compare key features of electrical cable tray materials to find perfect match for your

Complete cable tray manual for electrical engineers and designers

The final drawings for a cable tray wiring system may be completed and sent out for bid or construction more quickly

Cable Tray and Raceway Installation Specification

This document serves as a comprehensive technical specification for the engineering, installation, and

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Core rules for selecting, installing, grounding, and filling cable trays—clearances, materials,

What are the main components of a cable tray?

Discover the main components of a cable tray system. Learn about tray types, fittings,

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GUIDE CABLE TRAYS TECHNICAL

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Selecting Cable Trays: A Complete Guide for Cable

Final Thoughts on Selecting Cable Trays Choosing the right cable tray doesn't have to be

Cable Tray Design and Standards Guide

1. The document outlines codes and standards that must be followed for design and construction of cable trays and their

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A Guide to Installing and Supporting Electrical Cable Trays

A professional guide to installing electrical cable tray systems per NEC Article 392. Covers support,

Type of Cable Tray Introduction Cable Tray Materials Electrical

Cable trays have become a necessary part of industrial and commercial construction. Cable trays are capable of supporting all types

Cable Tray: Material Properties

The material properties of an alloy depend on the distribution of each type of element present, giving each alloy specific weight,

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Cable trays and/or cable penetrations through partitions, walls, floors, and ceilings often require special fire rating or environmental

Cable Tray Installation | UpCodes

Cable tray systems must be installed as a complete unit, ensuring electrical continuity and support for cables. Each tray run should

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Types Overview and Components SFSP cable trays and accessories from SFSP are manufactured from steel sheets in accordance

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What Is A Cable Tray? 5 Types Of Cable Trays

A cable tray is a structural system used to support and manage electrical cables in various settings, such as industrial, commercial,

Cable Tray and its types & Sizes

A cable tray is a type of a containment used to support insulated electrical cables used for power distribution, control, and

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

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Cable Tray Installation Rules (NEC 392) – Electrical Trader

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

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