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

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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.

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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

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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,

Document DICOS

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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