

Article Overview

High-voltage metal cable trays are typically made from galvanized steel to provide corrosion resistance and durability.

Material and Galvanization

Metal cable trays, including those used for high-voltage installations, are commonly fabricated from steel and coated with zinc through galvanization to protect against corrosion . Galvanization can be applied in two main ways:

- o Pre-galvanized (mill-galvanized) steel: Steel coils are coated with zinc in a rolling mill before fabrication. This provides sacrificial protection, where zinc corrodes preferentially to protect the steel, and small exposed areas from cuts or welds are still protected by neighboring zinc .
- o Hot-dip galvanized steel: Fabricated trays are dipped in molten zinc, forming a thicker, more durable coating that is highly resistant to harsh environments and outdoor exposure .

Corrosion Protection Mechanism

The zinc coating forms a protective layer that reacts with oxygen to create zinc oxide, which further converts to zinc carbonate in wet environments. This layer is adherent, insoluble, and self-healing, meaning minor scratches or exposed areas continue to be protected . The corrosion resistance is directly related to the thickness of the zinc coating, which varies depending on the galvanization process.

Suitability for High-Voltage Applications

Galvanized steel cable trays are widely used in industrial, commercial, and high-voltage electrical systems because they combine mechanical strength with corrosion resistance. They meet standards such as NEMA, UL, and CSA, ensuring safety and reliability in electrical installations . Stainless steel and aluminum trays are alternatives in highly corrosive or specialized environments, but galvanized steel remains the most cost-effective and common choice for high-voltage metal cable trays .

Summary

In conclusion, high-voltage metal cable trays are generally galvanized to protect the steel from corrosion, extend service life, and maintain structural integrity. The choice between pre-galvanized and hot-dip galvanized depends on environmental conditions, exposure, and cost considerations, with both methods providing effective sacrificial protection and self-healing properties .



High-voltage metal cable trays are galvanized

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