Specifications of steel wire for mesh cable trays



Overview

Wire mesh trays are made from a series of perpendicular wires that are welded at each crossing point.

Key Takeaways

Steel wire mesh cable trays must meet mechanical strength, corrosion resistance, coating adhesion, deflection limits, and electrical continuity standards as specified in IEC 61537 and related national standards.

Material and Mechanical Requirements

Steel wire mesh cable trays are typically manufactured from high-strength steel wire, often pre-galvanized or hot-dip galvanized for corrosion protection, or stainless steel (AISI 316L) for highly corrosive environments. The steel must provide sufficient load-bearing capacity to support cables without excessive sagging. The deflection limit under full load is generally specified as $d \leq P/200$, where P is the span in millimeters; for example, a 2-meter span should not deflect more than 10 mm.

Wire diameter, mesh size, and cross-sectional dimensions are critical factors in determining the tray's strength and stability.

Coating and Corrosion Resistance

The steel surface must be smooth, uniform, and dense, free from peeling, bubbles, or exposed base material. Coatings should pass the 48-hour neutral salt spray test (GB/T 2423. 17-2008) to ensure corrosion resistance.

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For painted or varnished trays, adhesion must meet GB/T 9286-1998 cross-cut test, ensuring 100% coating adherence. Stainless steel trays may include chromium and molybdenum to enhance corrosion resistance, particularly in marine or chemical environments.

Electrical and Safety Requirements

Steel wire mesh trays often serve as part of the grounding or bonding system.

IE

C 61537 specifies that trays used for electrical continuity must have a resistance of less than 0. 1 ohms across joints to safely carry fault currents without overheating. Accessories such as earthing clamps and bonding plates must meet the same electrical standards.

Standards and Compliance

Key standards governing steel wire mesh cable trays include: IEC 61537: International standard for metal cable tray systems, covering mechanical strength, corrosion resistance, electrical continuity, fire resistance, and installation compatibility.

NEMA V

E 1: Specifies manufacturing requirements for metal cable trays, including wire mesh types, load/span designations, and compliance with the National Electrical Code (NEC),. GB/T 9286-1998 and GB/T 2423. 17-2008: Chinese standards for coating adhesion and corrosion testing.

Installation and Performance Considerations

Proper installation ensures that trays maintain structural integrity and cable support. Tray spans, bends, and risers must comply with manufacturer specifications and standard load ratings. Ventilation and fill ratios should be observed to prevent overheating and overloading of cables.

Electrical continuity should be verified post-installation, especially if trays are coated or painted.

Summary

Steel wire mesh cable trays must combine mechanical strength, corrosion resistance, coating integrity, electrical continuity, and compliance with IEC 61537 and national standards. Adhering to these requirements ensures safe, durable, and reliable cable management in industrial, commercial, and data center environments.

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Practices for grounding and bonding of cable trays

It is also recommended that wire mesh cable trays not be used as an equipment grounding conductor. Although permitted by the NEC, it is

Wire Mesh Tray & Basket Cable Tray | EAE Electric

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Cable Trays

These trays, meeting sector-specific needs with a robust structure, feature a covered design, interlocking splicing options, and wire tray structures to facilitate high cable density. In addition to sheet metal

How to Produce Wire Mesh Cable Trays and Complex Connectors

Preparing to Produce Wire Mesh Cable Trays Material Selection Use high-quality steel or stainless steel. Select the material based on environmental conditions, such as indoor or outdoor

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