Waterproof cable tray process requirements



Overview

This guide for engineers and installers has been developed by ABB as a practical reference regarding cable tray characteristics, installation, and requirements.

Key Takeaways

Waterproof cable trays require proper material selection, sealing, corrosion protection, and compliance with IEC 61537 and NEMA VE standards to ensure safe and durable operation in wet environments.

Material Selection and Corrosion Resistance

Waterproof cable trays are typically made from stainless steel, aluminum, or coated steel to resist corrosion in wet or outdoor environments. Aluminum offers excellent corrosion resistance due to its natural oxide layer, while stainless steel provides durability against chemical and atmospheric exposure. Protective coatings such as hot-dip galvanizing or epoxy finishes are often applied to steel trays to enhance waterproof performance and longevity.

Design and Sealing

To achieve waterproofing, cable trays should have a solid bottom and fully enclosed covers. Joints, bends, and fittings must be sealed using gaskets, silicone, or other approved sealing materials to prevent water ingress. Ventilated trays are generally unsuitable for waterproof applications unless additional sealing measures are applied.

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Standards and Compliance

Compliance with IEC 61537 ensures that cable trays meet mechanical strength, corrosion resistance, electrical continuity, and fire resistance requirements. Waterproof trays must also adhere to NEMA VE 1 and VE 2 guidelines for metallic cable tray systems, including load/span ratings, installation practices, and material specifications.

U

L 568 certification may also be required for nonmetallic waterproof trays.

Installation Requirements

Proper slope and drainage: Ensure trays are installed with a slight slope to allow water runoff. Secure supports and hangers: Use corrosion-resistant brackets, rods, and clamps to maintain structural integrity. Field verification: Measure and confirm tray dimensions, routing, and sealing before cable installation.

Expansion joints: Include expansion joints in long runs to accommodate thermal expansion without compromising waterproofing.

Testing and Maintenance

Waterproof cable trays should undergo leak testing after installation to verify sealing effectiveness. Periodic inspections are recommended to check for corrosion, seal degradation, or mechanical damage. Electrical continuity tests ensure grounding paths remain intact, which is critical for safety in wet environments.

Summary

To meet waterproof requirements, cable trays must combine durable materials, sealed designs, proper installation, and compliance with IEC and NEMA standards. Following these process requirements ensures long-term reliability, safety, and protection of electrical cables in wet or outdoor conditions.

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