

## Cable tray support load-bearing test standard



### Overview

The document discusses load testing standards for cable trays according to IEC 61537 and NEMA VE 1-2002.

### Key Takeaways

Cable tray load-bearing tests are primarily governed by IEC 61537, which defines Safe Working Load (SWL) testing using uniform load application and strict deflection limits. Overview of Standards

The IEC 61537 standard is the international benchmark for cable tray and ladder systems, focusing on mechanical strength, safety, and performance under load. It does not prescribe exact load values but establishes a methodology for testing the load-bearing capacity of trays.

#### Key Concepts

- Safe Working Load (SWL): The maximum load a tray can safely support under normal operating conditions.
- Uniformly Distributed Load (UDL): Loads must be applied evenly across the tray span during testing.
- Deflection Limits:
- Longitudinal deflection:  $\leq 1/100$  of the span
- Lateral deflection:  $\leq 1/20$  of the tray width

- Temperature Considerations: SWL testing can be conducted at any temperature if the tray material's mechanical properties vary by less than  $\pm 5\%$  within the expected range .

#### Testing Methodology

- Sample Setup:
  - Identify joints, spans, and local weak points.
- Supports must ensure stability; maximum cantilever length is typically 500 mm .
- Preloading:
  - Apply 10% of SWL for 5 minutes, then remove and zero instruments .
- Incremental Loading:
  - Gradually increase load in increments not exceeding 1/4 of SWL until the tray reaches its safe working load .
- Evaluation:
  - Tray must return to its original shape after load removal.
  - No visible damage, cracking, or permanent deformation is allowed .
- Span Configurations:
  - Single-span testing: Load applied between two supports.
  - Multi-span testing: Load applied across multiple supports; principles remain consistent .

#### Additional Considerations

- Support Strength: The weakest point in the system may be a support rather than the tray itself, so support testing is included in IEC 61537 .
- Environmental Testing: High- and low-temperature tests, corrosion resistance (e.g., salt spray), and impact tests may be conducted to ensure reliability .
- Deflection Criteria Variations: Some sources specify relative deflection limits of 1/200 for certain tray sizes under rated loads .

#### Practical Implications

Proper load-bearing testing ensures that cable trays can safely support electrical and data cabling without sagging, breaking, or collapsing, which is critical for safety, compliance, and long-term performance . Following IEC 61537 ensures standardized, repeatable, and internationally recognized testing procedures.

## Article Content

### Understanding IEC 61537: A Comprehensive Guide to Cable Tray

IEC 61537 does not specify exact load-bearing values for cable trays. Instead, it defines a standardized load-testing methodology

### Cable Tray Load-Bearing Test Standards

Overview IEC 61537 is the internationally recognized benchmark for metal cable tray systems. It applies to cable trays made of steel,

### Cable Tray Load Testing Standards

The document discusses load testing standards for cable trays according to IEC 61537 and NEMA VE 1-2002. Key points include: 1)

### NEMA Standards Publication VE 2-2018

Do not use a cable tray as a walkway, ladder, or support for people; a cable tray is a mechanical support system for cables and

### B-Line series Cable Tray Design Considerations

As an industry leader in cable tray, Eaton offers one of the widest ranges of cable management solutions available in the market

### IEC 61537:2023 | IEC

IEC 61537:2023 specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and

### Codes and Standards | Cable Tray Institute

Covers construction and test requirements for continuous, complete nonmetallic systems of ladder, ventilated, solid bottom cable

### LEGRAND CABLE TRAYS TECHNICAL GUIDE

Not all cable trays are equivalent. The mechanical and electrical characteristics, tests, certifications, overall quality management,

### Cable Tray Selection: Strength & Deflection Guide

A guide to cable tray selection, focusing on strength, deflection, load capacity, and beam configurations. Ideal for engineering

### Metal Cable Tray Systems Standard NEMA VE 1-2017

NEMA VE 1-2017 standard for metal cable tray systems. Covers construction, materials, dimensions, load capacity, and testing.

Cable Tray Technical Guide A practical guide to product selection

The Canadian Electrical Code, which publishes standards for electrical applications. Articles 12-2200 to 12-2210 cover various

Instrument Cable Tray Load Calculation: A Detailed Guide

Accurate cable tray load calculation is critical for ensuring the safety and efficiency of the installation. By following the outlined

What Is IS/IEC 61537:2006? Cable Tray & Ladder Guide

IS/IEC 61537:2006 requirements for cable tray and cable ladder systems, testing methods, applications, and compliance explained

Non-Metallic Cable Tray Load Guidelines | PDF | Snow | Cable

This document provides information on selecting cable tray classes and load capacities. It includes tables that define the standard

IEC 61537:2023 | IEC

Where necessary, cable tray systems and cable ladder systems can be used for the arrangement of cables into groups. This

NEMA Standards Publication VE 2-2006

Supports for cable trays should provide strength and working load capabilities sufficient to meet the load requirement of the cable

THOMAS & BETTS CABLE TRAY SYSTEMS

The standard classes of cable trays, as related to their maximum design loads and to the associated design support spacing based

V.C. Summer Nuclear Station, Units 2 and 3, Rev. 3 to Updated

The cable tray test program conducted by ANCO Engineers Inc. included more than 2000 dynamic tests of representative cable tray

Related Video Reference

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