

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Cable management – Cable tray systems and cable ladder systems

Systèmes de câblage – Systèmes de chemin de câbles et systèmes d'échelle à câbles

IEC 61537:2023

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CABLE MANAGEMENT – CABLE TRAY SYSTEMS AND CABLE LADDER SYSTEMS

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IEC 61537 has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This third edition cancels and replaces the second edition published in 2006. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) new, repositioned and renumbered figures,
- b) revised classification for corrosion,
- c) revised SWL test types and procedures,
- d) new tests for lengths mounted vertical running horizontal and mounted vertical running vertical,
- e) tests for support devices: cantilevers, pendants, C shape ceiling supports and trapeze systems,
- f) new and revised annexes including use of tray as a protective earth conductor.

The text of this International Standard is based on the following documents:

Draft	Report on voting
23A/1032/FDIS	23A/1039/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The following differences exist in some countries:

In the USA it is permitted to use cable tray systems and cable ladder systems as a PE conductor, in which case national wiring regulations have to be adhered to.

In France it is not permitted to use cable tray systems and cable ladder systems as a PE conductor.

In France the use of flame propagating cable tray and cable ladder systems is not permitted.

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- Requirements proper: in roman type.
- *Test specifications: in italic type.*
- Explanatory matter: in smaller roman type.

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- reconfirmed,
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CABLE MANAGEMENT – CABLE TRAY SYSTEMS AND CABLE LADDER SYSTEMS

1 Scope

This document specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and accommodation of cables and possibly other electrical equipment in electrical and/or communication systems installations. Where necessary, cable tray systems and cable ladder systems can be used for the arrangement of cables into groups.

This document does not apply to conduit systems, cable trunking systems and cable ducting systems or to any current-carrying parts.

NOTE Cable tray systems and cable ladder systems are designed for use as supports for cables and not as enclosures.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60287 (all parts), *Electric cables – Calculation of the current rating*

IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-11-2:2017, *Fire hazard testing – Part 11-2: Test flames – 1 kW pre-mixed flame – Apparatus, confirmatory test arrangement and guidance*

ISO 1461:2022, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

ISO 2081:2018, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

ISO 2409:2020, *Paints and varnishes – Cross-cut test*

ISO 3506-1:2020, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs with specified grades and property classes*

ISO 3575:2016, *Continuous hot-dip zinc-coated and zinc-iron alloy-coated carbon steel sheet of commercial and drawing qualities*

ISO 4042:2022, *Fasteners – Electroplated coating systems*

ISO 4046:2016 (all parts), *Paper, board, pulps and related terms – Vocabulary*

ISO 9227:2022, *Corrosion tests in artificial atmospheres – Salt spray tests*

ISO 10289:1999, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates – Rating of test specimens and manufactured articles subjected to corrosion tests*

ISO 4628-8:2012, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect*

ISO 4628-3:2016, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting*

ISO 4998:2014, *Continuous hot-dip zinc-coated and zinc-iron alloy-coated carbon steel sheet of structural quality*

ISO 10684:2004, *Fasteners – Hot dip galvanized coatings*

EN 10346:2015, *Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions*

3 Terms and definitions

For the purpose of this document, the following definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

cable tray system

assembly of cable supports consisting of cable tray lengths and other system components

3.2

cable ladder system

assembly of cable supports consisting of cable ladder lengths and other system components

3.3

system component

part used within the system

EXAMPLE a) cable tray length or cable ladder length, b) cable tray fitting or cable ladder fitting, c) coupler, d) support device, e) mounting device, f) system accessory.

3.4

cable tray length

system component used for cable support consisting of a base with integrated side members or a base connected to side members

Note 1 to entry: A tray made from wires is referred to as mesh cable tray. Typical examples of cable tray types of length are shown in Annex A, Figure A.1 to Figure A.3.

**3.5
cable ladder length**

system component used for cable support consisting of supporting side members, fixed to each other by means of rungs

Note 1 to entry: Typical examples of cable ladder types of length are shown in Annex A Figure A.4.

**3.6
fitting**

system component used to change direction, change dimension or terminate cable tray lengths or cable ladder lengths

Note 1 to entry: Typical examples are bends, tees, crosses.

**3.7
cable runway**

assembly comprising cable tray lengths or cable ladder lengths and fittings only

**3.8
support device**

system component designed to provide mechanical support

Note 1 to entry: Typical examples of support devices are shown in Annex B, Figure B.1, Figure B.2, Figure B.3 and Figure B.4; support devices may provide additional functions such as fixings.

**3.9
mounting device**

system component used to attach or fix other devices to the cable runway

**3.10
apparatus mounting device**

part used to accommodate electrical apparatus, such as switches, socket outlets, circuit-breakers, telephone outlets, etc., which can be an integral part of the electrical apparatus and which is not part of the cable tray system and cable ladder system

**3.11
system accessory**

system component used for a supplementary function such as cable retainers, covers, etc.

**3.12
protective earthing
protective grounding, US
PE**

earthing for purposes of electrical safety

[SOURCE IEC 60050-195:2021, 195-01-11, modified – The abbreviated term PE has been added.]

**3.13
metallic system component**

system component which consists of metal only

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

**3.14
non-metallic system component**

system component which consists of non-metallic material only

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

3.15**composite system component**

system component which consists of both metallic and non-metallic materials

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

3.16**non-flame propagating system component**

system component which can catch fire as a result of an applied flame and the resulting flame does not propagate and extinguishes itself within a limited time after the applied flame is removed

3.17**external influence**

presence of water, oil, building materials, corrosive and polluting substances, external mechanical forces from snow, wind, and other environmental hazards

3.18**safe working load****SWL**

maximum load that can be applied safely in normal use

3.19**uniformly distributed load****UDL**

load applied evenly over a given area

Note 1 to entry: Methods of applying uniformly distributed loads are shown in Annex D and Annex E.

3.20**span**

distance between the centres of two adjacent support devices

3.21**internal fixing device**

device for joining and/or fixing system components to other system components

Note 1 to entry: This device is part of the system but is not a system component.

Note 2 to entry: Typical examples are nuts and bolts.

Note 3 to entry: A device used for fixing support devices to walls, ceilings or other structural parts, is not part of the system.

3.22**base area**

plan area available for cables

3.23**free base area**

part of the base area which is open to the flow of the air

Note 1 to entry: This includes the area between cable ladder rungs and the holes in cable ladder rungs.

3.24**load distribution plate**

means through which a point load is applied to the sample for testing purposes