

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Safety in electroheating installations –
Part 10: Particular requirements for electrical resistance trace heating systems
for industrial and commercial applications**

**Sécurité dans les installations électrothermiques –
Partie 10: Exigences particulières pour les systèmes de chauffage par traçage à
résistance électrique pour applications industrielles et commerciales**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY IN ELECTROHEATING INSTALLATIONS –

Part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications

FOREWORD

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International Standard IEC 60519-10 has been prepared by IEC technical committee 27: Industrial electroheating and electromagnetic processing.

This second edition cancels and replaces the first edition published in 2005. This edition constitutes a technical revision.

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

- The structure has been amended and adjusted to IEC 60519-1:2010;
- References to IEC 62395-1¹ and IEC 62395-2² have been completed.

1 Second edition to be published.

2 First edition (replacing IEC/TS 62395-2:2008) to be published.

The text of this standard is based on the following documents:

CDV	Report on voting
27/853/CDV	27/873/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60519 series, published under the general title *Safety in electroheating installations*, can be found on the IEC website.

The clauses of parts of the IEC 60519 series (hereinafter called Particular requirements) supplement or modify the corresponding clauses of IEC 60519-1:2010 (*General requirements* hereinafter called Part 1).

This part of IEC 60519 is to be read in conjunction with Part 1. It supplements or modifies the corresponding clauses of Part 1. Where the text indicates an "addition" to or a "replacement" of the relevant provision of Part 1, these changes are made to the relevant text of Part 1. Where no change is necessary, the words "This clause of Part 1 is applicable" are used. When a particular subclause of Part 1 is not mentioned in this part, that subclause applies as far as is reasonable.

Additional specific provisions to those in Part 1, given as individual clauses or subclauses, are numbered starting from 101.

NOTE The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

It is the objective of this standard that, when in accordance with the standard, electrical trace heating systems operate safely under their normal defined conditions of use, by

- a) employing heaters of the appropriate construction and meeting the test criteria detailed in IEC 62395-1;
- b) operating at safe temperatures when designed, installed, and maintained in accordance with IEC 62395-2;
- c) having at least the minimum levels of overcurrent and ground-fault protection, and an evenly distributed electrically conductive metallic braid, sheath or other equivalent electrically conductive material, as specified in IEC 62395-1 and IEC 62395-2.

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SAFETY IN ELECTROHEATING INSTALLATIONS –

Part 10: Particular requirements for electrical resistance trace heating systems for industrial and commercial applications

1 Scope and object

This clause of Part 1 is replaced by the following.

Replacement:

This part of IEC 60519 provides safety requirements for electrical resistance trace heating systems used in industrial and commercial applications for piping, vessels, roofs, concrete slab heating and other similar applications.

This standard pertains to trace heating systems that may comprise either factory fabricated or field (work-site) assembled units, and which may be series heater cables, parallel heater cables, heater pads or heater panels that have been assembled and/or terminated in accordance with manufacturer's instructions.

Typical applications include but are not limited to

- the freeze protection of pipes, tanks and vessels, including fire water systems;
- maintaining required temperatures of equipment, including pipes, tanks and vessels;
- earth thermal storage;
- hot water temperature maintenance;
- snow melting of surfaces;
- de-icing of roofs and gutters.

This standard does not include or provide for any requirements in potentially explosive atmospheres.

This part of IEC 60519 does not cover induction, impedance or skin effect heating.

NOTE Specific requirements and test criteria for electrical resistance trace heating systems and design, installation, and maintenance requirements for these systems are detailed in IEC 62395-1 and IEC 62395-2.

This standard provides general safety requirements for the installation, operation, maintenance and repair of systems and individual circuits and for trace heating systems designs. These safety considerations concern the protection of persons and the environment against dangers of electrical origin and also against certain dangers of non-electrical origin, common to all types of equipment and installations.

2 Normative references

This clause of Part 1 is applicable, except as follows.

Additions:

IEC 60519-1:2010, *Safety in electroheating installations – Part 1: General requirements*

IEC 62395-13, *Electrical resistance trace heating systems for industrial and commercial applications – Part 1: General and testing requirements*

IEC 62395-24, *Electrical resistance trace heating systems for industrial and commercial applications – Part 2: Application guide for system design, installation and maintenance*

3 Terms and definitions

This clause of Part 1 is applicable with the following additions.

Additions:

3.101

ambient temperature

average temperature of air or another medium in the vicinity of the equipment

Note 1 to entry: Where electrical trace heaters are enclosed in thermal insulation, the ambient temperature is the temperature exterior to such thermal insulation.

[SOURCE: IEC 60050-826:2004, 826-10-03, modified – The content of the note has been modified]

3.102

branch circuit

portion of the wiring installation between the overcurrent device protecting the circuit and the trace heater(s)

3.103

end termination

termination, which may be heat producing, applied to a trace heater at the end opposite to that where the power is supplied

[SOURCE: IEC 60050-426:2008, 426-20-04]

3.104

factory fabricated unit

trace heater cable, tape or device, including the necessary terminations and connections, assembled by the manufacturer

3.105

field assembled unit

trace heaters supplied in bulk with terminating components to be assembled at the work site

3.106

heat loss

energy flow from a pipe, vessel or equipment to its surroundings

3.107

heater pad

trace heater comprising series or parallel connected elements having sufficient flexibility to conform to the shape of the surface to be heated

³ Second edition to be published.

⁴ First edition (replacing IEC/TS 62395-2:2008) to be published.