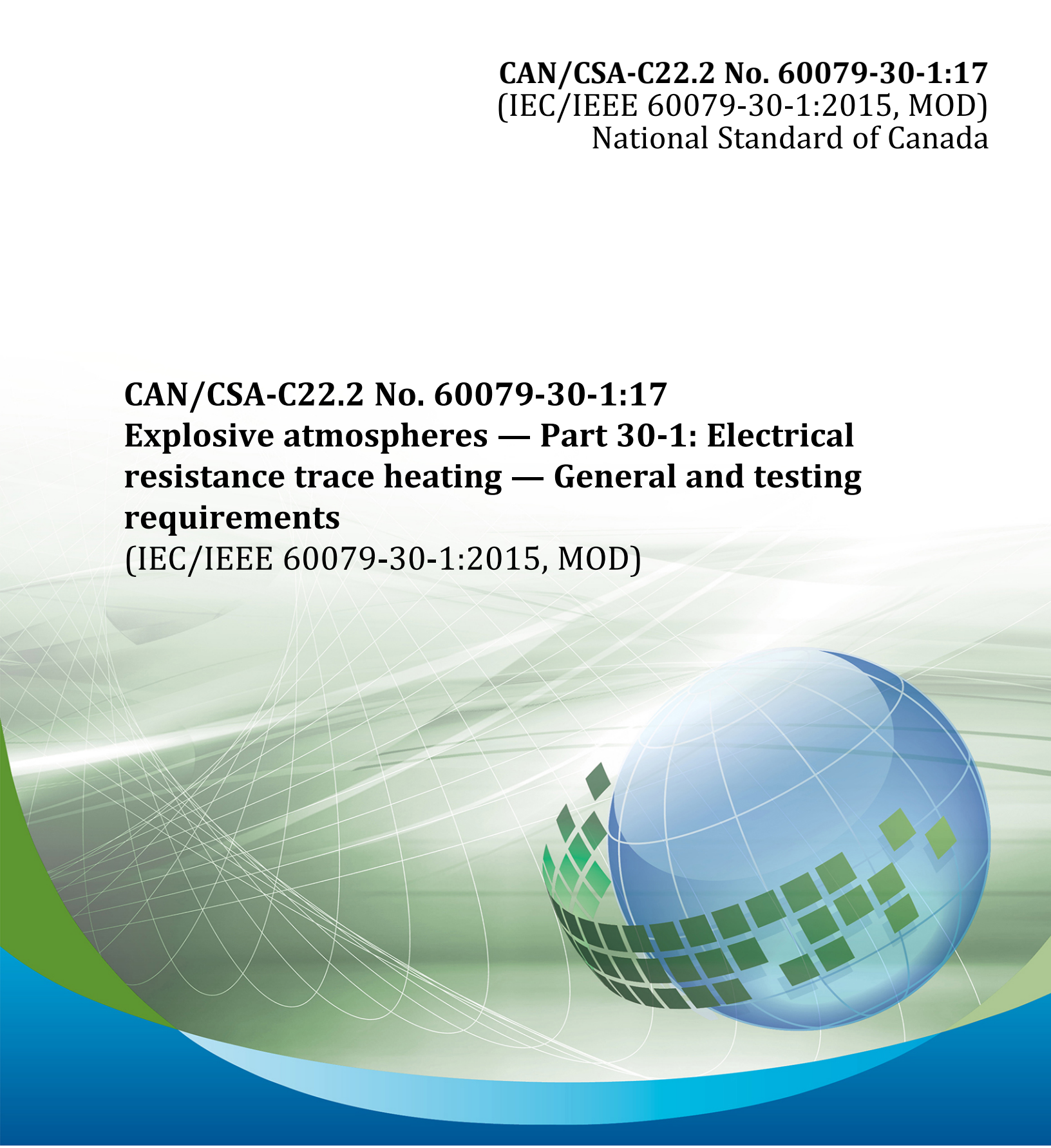
**CAN/CSA-C22.2 No. 60079-30-1:17**
(IEC/IEEE 60079-30-1:2015, MOD)
National Standard of Canada

# CAN/CSA-C22.2 No. 60079-30-1:17
# Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements
(IEC/IEEE 60079-30-1:2015, MOD)



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# *National Standard of Canada*

## *CAN/CSA-C22.2 No. 60079-30-1:17*

# ***Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements***

## *(IEC/IEEE 60079-30-1:2015, MOD)*

*Prepared by*
*International Electrotechnical Commission*

*Reviewed by*

CSA Group



*Approved by*

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# ***Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements***
# *(IEC/IEEE 60079-30-1:2015, MOD)*

# *CSA Preface*

This is the second edition of CAN/CSA-C22.2 No. 60079-30-1, *Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements*, which is an adoption, with Canadian deviations, of the identically titled IEC/IEEE (International Electrotechnical Commission/ Institute of Electrical and Electronics Engineers) Standard 60079-30-1 (first edition, 2015-09). It supersedes the previous edition published in 2014 as CAN/CSA-C22.2 No. 60079-30-1 (adopted IEC 60079-30-1:2007). It is one in a series of Standards issued by CSA Group under Part II of the *Canadian Electrical Code*. At the time of publication, IEC/IEEE 60079-30-1:2015 is available from IEC and IEEE in English only. CSA Group will publish the French version when it becomes available from IEC and IEEE.

For brevity, this Standard will be referred to as "CAN/CSA-C22.2 No. 60079-30-1" throughout.

This Standard is intended to be used in conjunction with CAN/CSA-C22.2 No. 60079-0, *Explosive atmospheres — Part 0: Equipment — General requirements*.

In addition to the changes made in the IEC/IEEE Standard, this edition includes
a) the addition of Canadian bonding requirements; and
b) the removal of the requirement to comply with CSA C22.2 No. 130 but adding specific requirements from CSA C22.2 No. 130 to ensure correlation with the *Canadian Electrical Code, Part I*.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was reviewed for Canadian adoption by the CSA Integrated Committee on Trace Heating, under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the Technical Committee. This Standard has been approved as a National Standard of Canada by the Standards Council of Canada.

Interpretations: The Strategic Steering Committee on Requirements for Electrical Safety has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant

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a) *Standard designation (number);*
b) *relevant clause, table, and/or figure number;*
c) *wording of the proposed change; and*
d) *rationale for the change.*

# *Canadian deviations*

The following deviations are intended to meet Canadian product requirements and to align with the *Canadian Electrical Code, Part I*.

International Standard IEC/IEEE 60079-30-1:2015 (first edition) forms the basis for CAN/CSA-C22.2 No. 60079-30-1, which contains the following deviations in addition to those shown in CAN/CSA-C22.2 No. 60079-0.

*[Replace all references to "IEC 60079-0" with "CAN/CSA-C22.2 No. 60079-0"]*

## 1 Scope

*[Add the following paragraph]*

The requirements of the IEC 60079 series of Standards cover protection with respect to explosion hazard only. The CAN/CSA-C22.2 No. 60079 series of Standards (based on the adoption of the corresponding IEC Standards) is to be used in conjunction with other applicable Standards containing the appropriate electrical safety requirements for general use equipment.

## 2 Normative references

*[Add the following]*

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

**CSA Group**

CAN/CSA-C22.2 No. 0.4-04 (R2013)
*Bonding of electrical equipment*

C22.2 No. 130-16
*Requirements for electrical resistance trace heating and heating device sets*

C22.2 No. 2556-15
*Wire and cable test methods*

The following National Standards of Canada, published by CSA Group, are adoptions of IEC Standards. The requirements of these CSA Group Standards shall take precedence over the International Standards on which they are based. Any reference within CAN/CSA-C22.2 No. 60079-30-1 to the International Standard shall be replaced by a reference to the equivalent Canadian Standard.

Any reference to International Standards that are adopted as National Standards of Canada subsequent to the publication of CAN/CSA-C22.2 No. 60079-30-1 shall be replaced by the relevant National Standard of Canada.

CAN/CSA-C22.2 No. 60079-0
*Explosive atmospheres — Part 0: Equipment — General requirements*

CAN/CSA-C22.2 No. 60079-7
*Explosive atmospheres — Part 7: Equipment protection by increased safety "e"*

*[Add the following]*

At the time of publication of this Standard, IEC 60079-14 has not been adopted in Canada. Any reference within CAN/CSA-C22.2 No. 60079-30-1 to IEC 60079-14 shall be replaced by CSA C22.1, *Canadian Electrical Code, Part I*.

# 3 Terms and definitions

## 3.7 electrically conductive covering

*[Replace this definition with the following]*

a metallic braid, metallic sheath, or alternative covering with sufficient conductivity so that, when bonded to ground, it will allow a ground fault protective device to operate under a fault condition

# 4 General requirements

## 4.2 Mechanical strength

*[Replace the third paragraph with the following]*

Trace heaters may be supplied with additional mechanical protection to meet the requirements of this Standard if they are supplied as an integral assembly (prefabricated), and contain the following statement in the instructions: "This mechanical covering shall not be removed and the trace heaters shall not be operated without the mechanical covering being in place". In this case, the instructions shall be in both English and French. In this case the tests in 5.1.5 and 5.1.6 shall be performed with the additional mechanical protection installed on the trace heater.

## 4.4 Circuit protection requirements for branch circuits

*[Add the following paragraph]*

Where the circuit protection requirements in this Standard exceed the general requirements in the *Canadian Electrical Code, Part I*, the requirements in this Standard shall take precedence. Non-heating leads that operate at a temperature above 60 °C shall be marked in accordance with CSA C22.2 No. 130, Clause 5.3.2 i).

*[Add the following clauses]*

### 4.5A Components

Fittings designed to terminate exposed heating devices direct to an exposed enclosure shall meet the requirements of CSA C22.2 No. 130, Clause 6.3.1.

Integral components shall meet the requirements of CSA C22.2 No. 130, Clause 6.3.2.2.

### 4.5B Bonding

The manufacturer shall provide instructions on the methods to connect the electrically conductive covering to the bonding conductor of the power supply, through a lug, terminal block, or other suitable wiring connector.

### 4.5C Non-heating leads

Non-heating leads that operate at a temperature above 60 °C shall be marked in accordance with CSA C22.2 No. 130, Clause 5.3.2 i).

## 5 Testing

### 5.1 Type tests

*[Add the following clauses]*

### 5.1.16A Physical properties of flexible polymeric electrical insulation after thermal aging

Flexible polymeric electrical insulation shall have a minimum 75% retention of tensile strength and a minimum 65% retention of elongation after being subjected to the applicable accelerated aging conditions of Table 1A. The tensile strength and elongation, before and after aging, shall be based on five production specimens of the insulation in its finished form. Compliance shall be determined with the apparatus and method described in Clause 4.2 of CSA C22.2 No. 2556.

If a heating device has a maximum declared continuous exposure temperature different from one of the rated temperatures of insulation listed in Table 1A, the electrical insulation shall be tested for the next higher rated temperature listed in Table 1A.

### 5.1.16B Bonding

The bonding of the electrically conductive covering shall meet the requirements of Clause 4.1 in CAN/CSA-C22.2 No. 0.4.

## 6 Marking

*[Add the following clause]*

### 6.2A Additional markings for Canada

Additional markings are required as applicable in CSA C22.2 No. 130, Clause 5.

**Note:** *Optional wet, sunlight resistance, and pressurized rating markings are available; see CSA C22.2 No. 130, Table 1, Clauses 6.2.6.4.6 and 6.2.6.4.9.*

It is a requirement in Canada that any warnings and cautionary statements relating to the safe installation, operation, and maintenance of the equipment shall be in both English and French.

*[Add the following table]*

**Table 1A**
**Aging temperature**
(See Clause 5.1.16A.)

| Rated temperature of insulation, °C | 90 | 105 | 125 | 150 | 180 | 200 | 250 |
|---|---|---|---|---|---|---|---|
| Aging temperature, ± 2 K | 121 | 136 | 158 | 180 | 220 | 210* | 260† |
| Aging time, days | 7 | 7 | 7 | 7 | 7 | 60* | 60† |

* *The alternative test is 250 °C ± 2 K for 7 days at the manufacturer's discretion.*
† *The alternative test is 320 °C ± 2 K for 7 days at the manufacturer's discretion.*

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# IEC/IEEE 60079-30-1

Edition 1.0 2015-09

# INTERNATIONAL STANDARD

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## Explosive atmospheres –
## Part 30-1: Electrical resistance trace heating – General and testing requirements

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Edition 1.0 2015-09

# INTERNATIONAL STANDARD

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## Explosive atmospheres –
## Part 30-1: Electrical resistance trace heating – General and testing requirements

INTERNATIONAL
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# Part 30-1: Electrical resistance trace heating – General and testing requirements

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International Standard IEC/IEEE 60079-30-1 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres, in cooperation with the Petroleum & Chemical Industry Committee of the IEEE Industrial Applications Society under the IEC/IEEE Dual Logo Agreement.

This publication is published as an IEC/IEEE Dual Logo standard.

NOTE A list of IEEE participants can be found at the following URL:
http://standards.ieee.org/downloads/60079/60079-30-1-2015/60079-30-1-2015_wg-participants.pdf .

This first edition of IEC/IEEE 60079-30-1 cancels and replaces the first edition of IEC 60079-30-1 published in 2007 and constitutes a technical revision.

This edition includes the following significant changes, apart from the general revision and updating of the first edition of IEC 60079-30-1 and harmonization with IEEE Std 515, with respect to the previous edition:

- the inclusion of a minimum temperature impact test;
- the addition of a mechanical procedure in the thermal stability test;
- the inclusion of a thermal performance test to replace the thermal safety requirements;
- the inclusion of a second procedure utilizing a plate fixture for sheath temperature determination;
- the inclusion of an ultraviolet and condensation test;
- the revision and significant expansion of documentation requirements;
- the addition of Annexes covering requirements for Divisions 1 and 2;
- the addition of a table covering the applicability of requirements from IEC 60079-0;
- the addition of an Annex covering trace heater product design verification methodology (formerly located in IEC 60079-30-2);
- the further harmonization of this edition with several national standards.

The significance of changes between IEC 60079-30-1, Edition 1.0 (2007) and IEC/IEEE 60079-30-1, Edition 1.0 (2015) is as listed below:

| | | Type | | |
|---|---|---|---|---|
| **Changes** | **Clause** | **Minor and editorial changes** | **Extension** | **Major technical changes** |
| Addition of clarification for the exclusion of EPLs Ga and Da | 1 | X | | |
| Addition of requirements for the Division method of area classification that may be applied by some users | 1 | | X | |
| Addition of table specifying the application or exclusion of specific clauses of IEC 60079-0 Edition 6 | 1 | X | | |
| For stabilized designs, a clarification for the need for verification by testing and the addition of a table for the specific requirements | 4.5.2 | X | | |
| For controlled designs, a clarification for the need for verification by testing and the addition of a table for the specific requirements | 4.5.3 | X | | |
| For controlled designs, clarifications and additions on the separate requirements for Gb/Db and Gc/Dc | 4.5.3 | | X | |
| The requirements for calibration of the flammability test fixture are replaced with equivalent requirements for the energy levels of the test gases | 5.1.4 | X | | |
| Addition of a minimum temperature impact test | 5.1.5 | | | C1 |

| | | Type | | |
|---|---|---|---|---|
| **Changes** | **Clause** | **Minor and editorial changes** | **Extension** | **Major technical changes** |
| For thermal stability, the addition of a bending requirement on a mandrel | 5.1.11 | | | C1 |
| The replacement of the thermal safety procedure with a thermal performance procedure | 5.1.12 | | | C2 |
| The addition of a second procedure utilizing a plate fixture for the systems method for maximum sheath temperature determination | 5.1.13.2 | | | C3 |
| Addition of outdoor exposure test | 5.1.16 | | | C4 |
| Requirement changed for the marking of the minimum installation temperature | 6.1 | | | C5 |
| Addition of new markings requirements for field assembled components | 6.2 | | | C5 |
| Additions and changes to the documentation requirements | 7 | | | C5 |
| Addition of Annex | Annex A | X | | |
| Addition of Annex | Annex B | X | | |
| Addition of Annex specifying trace heating design verification methodology, moved from IEC 60079-30-2 | Annex C | | | C6 |
| Addition of Annex for the Division method of area classification that may be applied by some users | Annex D | | X | |
| Addition of Annex for the Division method of area classification that may be applied by some users | Annex E | | X | |

NOTE The technical changes referred to include the significance of technical changes in the revised IEC Standard, but they do not form an exhaustive list of all modifications from the previous version.

**Explanations:**

**A) Definitions**

**Minor and editorial changes**

clarification
decrease of technical requirements
minor technical change
editorial corrections

These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change, or a reduction in level of existing requirement.

**Extension** addition of technical options

These are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements for equipment that was fully compliant with the previous standard. Therefore, these will not have to be considered for products in conformity with the preceding edition.

**Major technical changes**

addition of technical requirements
increase of technical requirements

These are changes to technical requirements (addition, increase of the level or removal) made in a way that a product in conformity with the preceding edition will not always be able to fulfil the requirements given in the later edition. These changes have to be considered for products in conformity with the preceding edition. For these changes additional information is provided in clause B) below.

NOTE These changes represent current technological knowledge. However, these changes should not normally have an influence on equipment already placed on the market.

**B) Information about the background of 'Major Technical Changes'**

C1 – The requirements for additional mechanical testing have been included for harmonization and for added safety.

C2 – The requirements for thermal performance have been included to recognize the necessity for thermal stability of products in explosive atmospheres.

C3 – A second procedure utilizing a plate fixture has been included for sheath temperature determination, which may be used in lieu of the sheath temperature verification part of 5.1.13.4.2.

C4 – An outdoor exposure test has been added to cover products that may be exposed to sunlight and moisture in the intended application.

C5 – Additional marking and documentation requirements have been added to provide additional information to the end user.

C6 – The trace heating design verification methodology has been added to align with the evaluation requirements for the stabilized design and the controlled design methods of maximum sheath temperature determination.

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

| FDIS | Report on voting |
|---|---|
| 31/1191/FDIS | 31/1201/RVD |

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

International standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

This standard is intended to be used in conjunction with IEC/IEEE 60079-30-2:2015, *Explosive atmospheres – Part 30-2: Electrical resistance trace heating – Application guide for design, installation and maintenance.*

A list of all parts of IEC 60079 series, under the general title *Explosive atmospheres,* can be found on the IEC website.

The IEC Technical Committee and IEEE Technical Committee have decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# INTRODUCTION

IEC/IEEE 60079-30-1 is intended to provide a comprehensive overview of the essential requirements and testing appropriate to electric surface heating equipment used in explosive atmospheres. The requirements of this part of IEC 60079 are considered to be the minimum requirements for equipment protection levels Gb, Gc, Db, and Dc in explosive atmospheres for gases, dusts, and fibres/flyings. While some of this work already exists in national standards or international standards, this standard has collated much of this existing work and considerably added to it. This standard also contains the minimum requirements for users applying the Division method of area classification.

# EXPLOSIVE ATMOSPHERES –

# Part 30-1: Electrical resistance trace heating – General and testing requirements

## 1 Scope

This part of IEC 60079 specifies general and testing requirements for electrical resistance trace heaters for application in explosive atmospheres with the exclusion of those for EPL Ga and Da. This standard covers trace heaters that comprise either factory or field (work-site) assembled units, and which may be series trace heaters, parallel trace heaters, trace heater pads, or trace heater panels that have been assembled and/or terminated in accordance with the manufacturer's instructions.

This standard also includes requirements for termination assemblies and control methods used with trace heating systems. The explosive atmospheres referred to in this standard are those defined in IEC 60079-10-1 and IEC 60079-10-2.

Annexes D and E outline the application of this standard for those users applying the Division method of area classification.

This standard supplements and modifies the general requirements of IEC 60079-0, except as indicated in Table 1. Where a requirement of this standard conflicts with a requirement of IEC 60079-0, the requirement of this standard takes precedence.

**Table 1 – Application or exclusion of specific clauses of IEC 60079-0**

| IEC 60079-0 | | Electrical resistance trace heaters and integral components | | Terminations as separate components |
|---|---|---|---|---|
| Ed. 6.0 (2011) (informative) | Clause / Subclause title (normative) | Group I and Group II | Group III | |
| 1 | Scope | Applies | Applies | Applies |
| 2 | Normative references | Applies | Applies | Applies |
| 3 | Terms and definitions | Applies, except ambient temperature, see 3.1 | Applies, except ambient temperature, see 3.1 | Applies, except ambient temperature, see 3.1 |
| 4 | Equipment grouping | Applies | Applies | Applies |
| 4.1 | Group I | Applies | Excluded | Applies |
| 4.2 | Group II | Applies, always IIC | Excluded | Applies |
| 4.3 | Group III | Excluded | Applies, outside of thermal insulation only, always IIIC | Applies, outside of thermal insulation only |
| 4.4 | Equipment for a particular explosive atmosphere | Excluded | Excluded | Applies |
| 5.1 | Environmental influences | Applies | Applies | Applies |
| 5.1.1 | Ambient temperature | Replaced by 6.1e) | Replaced by 6.1e) | Applies, see 3.1 |
| 5.1.2 | External source of heating or cooling | Applies | Applies | Applies |
| 5.2 | Service temperature | Modified | Modified | Applies |

| IEC 60079-0 | | Electrical resistance trace heaters and integral components | | Terminations as separate components |
|---|---|---|---|---|
| **Ed. 6.0 (2011) (informative)** | **Clause / Subclause title (normative)** | **Group I and Group II** | **Group III** | |
| 5.3.1 | Determination of maximum surface temperature | Replaced by 4.5 in conjunction with 5.1.13 | Replaced by 4.5 in conjunction with 5.1.13 only when tested in accordance with 5.1.13.3. | Applies |
| 5.3.2.1 | Group I electrical equipment | Applies | Excluded | Applies |
| 5.3.2.2 | Group II electrical equipment | Applies | Excluded | Applies |
| 5.3.2.3.1 | Group III electrical equipment, Maximum surface temperature determined without a dust layer | Excluded | Applies, where the maximum sheath temperatures determined by IEC/IEEE 60079-30-1 are used in place of the method for temperature determination from IEC 60079-0. | Applies |
| 5.3.2.3.2 | Group III electrical equipment Maximum surface temperature with respect to dust layers | Excluded | Applies, where the maximum sheath temperature is determined only for those surfaces that are specified to be exposed to layers of combustible dust.<br>Does not apply for trace heaters specified to be covered by thermal insulation. | Applies |
| 5.3.3 | Small component temperature for Group I and Group II electrical equipment | Excluded | Excluded | Applies |
| 6.1 | Requirements for all electrical equipment – General | Applies | Applies | Applies |
| 6.2 | Mechanical strength | Replaced by 4.2 | Replaced by 4.2 | When in direct contact with the trace heater, may be substituted by 4.2 |
| 6.3 | Opening times | Excluded | Excluded | Applies |
| 6.4 | Circulating currents in enclosures (e.g. of large electrical machines) | Excluded | Excluded | Excluded |
| 6.5 | Gasket retention | Excluded | Excluded | Applies |
| 6.6 | Electromagnetic and ultrasonic radiating equipment | Excluded | Excluded | Applies |
| 7.1.1 | Non-metallic enclosures and non-metallic parts of enclosures – Applicability | Replaced by the last paragraph of 4.1 | Replaced by the last paragraph of 4.1 | Applies |
| 7.1.2.1 | Specification of materials, General | Replaced by the last paragraph of 4.1 | Replaced by the last paragraph of 4.1 | Applies |
| 7.1.2.2 | Specification of materials, plastic materials | Replaced by the last paragraph of 4.1 | Replaced by the last paragraph of 4.1 | Applies |
| 7.1.2.3 | Elastomers | Replaced by the last paragraph of 4.1 | Replaced by the last paragraph of 4.1 | Applies |
| 7.2 | Thermal endurance | Replaced by requirements and tests | Replaced by requirements and | Applies |

| IEC 60079-0 | | Electrical resistance trace heaters and integral components | | Terminations as separate components |
|---|---|---|---|---|
| **Ed. 6.0 (2011) (informative)** | **Clause / Subclause title (normative)** | **Group I and Group II** | **Group III** | |
| | | of this standard | tests of this standard | |
| 7.3 | Resistance to light | Replaced by 5.1.16 for trace heaters and integral components specified for outdoor exposure | Replaced by 5.1.16 for trace heaters and integral components specified for outdoor exposure | Applies |
| 7.4.1 | Electrostatic charges on external non-metallic materials, Applicability | Excluded | Excluded | Applies |
| 7.4.2 | Avoidance of a build-up of electrostatic charge on Group I or Group II electrical equipment | Excluded | Excluded | Applies |
| 7.4.3 | Avoidance of a build-up of electrostatic charge on equipment for Group III | Excluded | Excluded | Applies |
| 7.5 | Accessible metal parts | Excluded | Excluded | Applies |
| 8.1 | Material composition | Excluded | Excluded | Applies |
| 8.2 | Group I | Excluded | Excluded | Applies |
| 8.3 | Group II | Excluded | Excluded | Applies |
| 8.4 | Group III | Excluded | Excluded | Applies |
| 9 | Fasteners | Excluded | Excluded | Applies |
| 10 | Interlocking devices | Excluded | Excluded | Applies |
| 11 | Bushings | Excluded | Excluded | Applies |
| 12 | Materials used for cementing | Replaced by the last paragraph of 4.1 | Replaced by the last paragraph of 4.1 | Applies |
| 13 | Ex Components | Applies | Applies | Applies |
| 14 | Connection facilities and termination compartments | Covered by the requirements of this standard | Covered by the requirements of this standard | Applies |
| 15 | Connection facilities for earthing and bonding conductors | Replaced by 5.1.15 | Replaced by 5.1.15 | Applies |
| 16 | Entries into enclosures | Excluded | Excluded | Applies |
| 17 | Supplementary requirements for rotating electrical machines | Excluded | Excluded | Excluded |
| 18 | Supplementary requirements for switchgear | Excluded | Excluded | Excluded |
| 19 | Supplementary requirements for fuses | Excluded | Excluded | Applies |
| 20 | Supplementary requirements for plugs and sockets | Excluded | Excluded | Applies |
| 21 | Supplementary requirements for luminaires | Excluded | Excluded | Excluded |
| 22 | Supplementary requirements for caplights and handlights | Excluded | Excluded | Excluded |
| 23 | Equipment incorporating cells and batteries | Excluded | Excluded | Applies |
| 24 | Documentation | Applies | Applies | Applies |
| 25 | Compliance of prototype or | Applies | Applies | Applies |

| IEC 60079-0 | | Electrical resistance trace heaters and integral components | | Terminations as separate components |
|---|---|---|---|---|
| Ed. 6.0 (2011) (informative) | Clause / Subclause title (normative) | Group I and Group II | Group III | |
| | sample with documents | | | |
| 26.1 | General | Applies | Applies | Applies |
| 26.2 | Test configuration | Applies | Applies. | Applies |
| 26.3 | Tests in explosive test mixtures | Excluded | Excluded | Applies |
| 26.4 | Tests of enclosures | Excluded | Excluded | Applies |
| 26.4.1 | Order of tests | Excluded | Excluded | Applies |
| 26.4.1.1 | Metallic enclosures, metallic parts of enclosures and glass parts of enclosures | Excluded | Excluded | Applies |
| 26.4.1.2 | Non-metallic enclosures or non-metallic parts of enclosures | Excluded | Excluded | Applies |
| 26.4.2 | Resistance to impact | Replaced by 5.1.5 | Replaced by 5.1.5 | Applies |
| 26.4.3 | Drop test | Excluded | Excluded | Excluded |
| 26.4.4 | Acceptance criteria | Replaced by 5.1.5 | Replaced by 5.1.5 | Applies |
| 26.4.5 | Degree of protection by enclosure | Replaced by 5.1.8 and/or 5.1.9 | Replaced by 5.1.8 and/or 5.1.9. | Applies |
| 26.5 | Thermal tests | Modified. | Modified | Applies |
| 26.5.1 | Temperature measurement | Replaced by 5.1.13 | Replaced by 5.1.13 | Applies |
| 26.5.2 | Thermal shock test | Excluded | Excluded | Applies |
| 26.5.3 | Small component ignition test | Excluded | Excluded | Applies |
| 26.6 | Torque test for bushings | Excluded | Excluded | Applies |
| 26.7 | Non-metallic enclosures or non-metallic parts of enclosures | Excluded | Excluded | Applies |
| 26.8 | Thermal endurance to heat | Replaced by 5.1.11 | Replaced by 5.1.11 | Applies |
| 26.9 | Thermal endurance to cold | Replaced by 5.1.7 | Replaced by 5.1.7 | Applies |
| 26.10 | Resistance to light | Replaced by 5.1.16for trace heaters and integral components specified for outdoor exposure | Replaced by 5.1.16 for trace heaters and integral components specified for outdoor exposure | Applies |
| 26.11 | Resistance to chemical agents for Group I electrical equipment | Applies for Group I | Excluded | Applies |
| 26.12 | Earth continuity | Excluded | Excluded | Applies |
| 26.13 | Surface resistance test of parts of enclosures of non-metallic materials | Excluded | Excluded | Applies |
| 26.14 | Measurement of capacitance | Excluded | Excluded | Applies |
| 26.15 | Verification of ratings of ventilating fans | Excluded | Excluded | Excluded |
| 26.16 | Alternative qualification of elastomeric sealing O-rings | Excluded | Excluded | Applies |
| 27 | Routine tests | Applies | Applies | Applies |
| 28 | Manufacturers responsibility | Applies | Applies | Applies |
| 29 | Marking | Modified | Modified | Applies |

| IEC 60079-0 | | Electrical resistance trace heaters and integral components | | Terminations as separate components |
|---|---|---|---|---|
| **Ed. 6.0 (2011) (informative)** | **Clause / Subclause title (normative)** | **Group I and Group II** | **Group III** | |
| 30 | Instructions | Modified | Modified | Applies |
| Annex A | Supplementary requirements for Ex cable glands | Excluded | Excluded | Applies |
| Annex B | Requirements for Ex components | Excluded | Excluded | Applies |
| Annex C | Example of rig for resistance to impact test | Replaced by 5.1.5 | Replaced by 5.1.5 | Applies |
| Annex D | Motors supplied by converters | Excluded | Excluded | Excluded |
| Annex E | Temperature rise testing of electric machines | Excluded | Excluded | Excluded |
| Annex F | Guideline flowchart for tests of non-metallic enclosures or non-metallic parts of enclosures (26.4) | Excluded | Excluded | Applies |
| NOTE 1 Clause numbers in the three right-hand columns of this table refer to IEC/IEEE 60079-30-1<br>NOTE 2 The clause number in the above table is shown for information only. The applicable requirements of IEC 60079-0 are identified by the clause title which is normative. | | | | |
| Applies: this requirement of IEC 60079-0 is applied without change.<br>Excluded: this requirement of IEC 60079-0 does not apply.<br>Modified: this requirement of IEC 60079-0 is modified as detailed in this standard. | | | | |

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-151:2001, *International Electrotechnical Vocabulary – Part 151: Electrical and magnetic devices*

IEC 60050-426:2008, *International Electrotechnical Vocabulary – Part 426: Equipment for explosive atmospheres*

IEC 60079-0:2011, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60695-11-3, *Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods*

ISO 4582, *Plastics – Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources*

ISO 4892-1, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*

ISO 4892-2, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*