BS EN 60079-30-1:2017

BSI Standards Publication

Explosive atmospheres

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

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Full document details: BS EN 60079-30-1:2017

National foreword

This British Standard is the UK implementation of EN 60079-30-1:2017. It is derived from IEC/IEEE 60079-30-1:2015. It supersedes BS EN 60079-30-1:2007, which is withdrawn.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by [C〉 〈C].

The UK participation in its preparation was entrusted to Technical Committee EXL/31, Equipment for explosive atmospheres.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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

Atmosphères explosives - Partie 30-1: Traçage par résistance électrique - Exigences générales et d'essai (IEC/IEEE 60079-30-1:2015 , modifiée)

Explosionsgefährdeter Bereiche - Teil 30-1: Elektrische Widerstands-Begleitheizungen - Allgemeine Anforderungen und Prüfanforderungen (IEC/IEEE 60079-30-1:2015 , modifiziert)

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Comité Européen de Normalisation Electrotechnique
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European foreword

This document (EN 60079-30-1:2017) consists of the text of IEC/IEEE 60079-30-1:2015 prepared by IEC/TC 31 "Equipment for explosive atmospheres" in collaboration with IEEE Standards Association (IEEE-SA), together with the common modifications prepared by CLC/TC 31 "Electrical apparatus for potentially explosive atmospheres".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-03-06
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-03-06

This document supersedes EN 60079-30-1:2007.

The State of the Art is included in Annex ZY “Significant changes between this European Standard and EN 60079-30-1:2007”.

For the significant changes with respect to EN 60079-30-1:2007, see Annex ZY.

Annexes which are additional to those in IEC/IEEE 60079-30-1:2015 are prefixed “Z”.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
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	EN 60079-0 + A11	2012 2013
IEC 60695-11-3	-	Fire hazard testing - Part 11-3: Test flames – 500 W flames - Apparatus and confirmational test methods	EN 60695-11-3	-
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	EN 4892-1	-
ISO 4892-2	-	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps	EN 4892-2	-
ASTM D5025	-	Standard specification for laboratory burner used for small-scale burning tests on plastic materials	-	-
ASTM G155	-	Standard practice for operating xenon arc light apparatus for exposure of nonmetallic materials	-	-

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Annex ZY
(informative)

Significant changes between this European Standard and EN 60079-30-1:2007

The significant changes with respect to EN 60079-30-1:2007 are as listed below.

		Type		
Significant 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 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
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

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.

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Explanation of the Types of Significant Changes:

A) Definitions

1. 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.

2. 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.

3. 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 item 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.

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Annex ZZ
(informative)

Relationship between this European standard and the essential requirements of Directive 2014/34/EU aimed to be covered

This European standard has been prepared under a Commission's standardization request to provide one voluntary means of conforming to essential of Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZZ.1 – Correspondence between this European standard and Annex II of Directive 2014/34/EU

Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.0.1.	All	
1.0.2.	4, 5, Annex C	
1.0.3.	4, 7.5, 7.6	
1.0.4.	4, 5, Annex C	
1.0.5.	6	In conjunction with EN 60079-0
1.0.6.	7	
1.1.1.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16	
1.1.2.	4.5, 5.1.10, 5.1.12, 5.1.13, 5.1.14, 5.1.15	
1.1.3.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16	
1.2.1.	4, 5, Annex C	
1.2.2.	4.3, 5.1.9, 7	
1.2.3.	Not covered	Not applicable
1.2.4.	4.5, 5.1.8, 5.1.9, 5.1.13, 7	
1.2.5.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16, 7	
1.2.6.	Not covered	Not applicable
1.2.7.	4, 5, 7, Annex C	Covered except of avoidance of injury by touching hot surfaces of the trace heaters or work piece for this, refer to EN 60079-30-2.
1.2.8.	4.4	

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Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.2.9.	Not covered	
1.3.1.	All	Covered by the principle of the type of protection "60079-30-1": Non-arcing, non-sparking, temperature limited.
1.3.2.	Not covered	
1.3.3.	4.1, 5.1.15, 7	
1.3.4.	Not covered	Electric trace heating is not moving, it is intended to be firmly installed on a workpiece, for which friction does not apply.
1.3.5.	Not covered	
1.4.1.	4, 5, 7, Annex C	Covered except of vibration.
1.4.2.	4, 5	
1.5.1	4.5.3.2	
1.5.2.	4.5.3.2	
1.5.3.	4.5.3.2	
1.5.4.	4.5.3.2, 4.5.3.3	
1.5.5.	Not covered	
1.5.6.	5.1.13.4.2, 5.1.13.4.3, 5.1.13.4.4	
1.5.7.	5.1.13.4.2, 5.1.13.4.3, 5.1.13.4.4, 7.3.4	
1.5.8.	Not covered	
1.6.1.	4.4 a)	
1.6.2.	Not covered	Not applicable, electric trace heating is generally ohmic and cools down when de-energized.
1.6.3.	Not covered	
1.6.4.	4.3, 5.1.9, 7	
1.6.5.	Not covered	
2.0.1.1.	Not covered	
2.0.1.2.	Not covered	
2.0.1.3.	Not covered	
2.0.1.4.	Not covered	
2.0.2.1.	Not covered	
2.0.2.2.	Not covered	
2.0.2.3	Not covered	
2.1.1.1.	Not covered	
2.1.1.2.	Not covered	
2.1.1.3.	Not covered	
2.1.2.1.	Not covered	
2.1.2.2.	Not covered	
2.1.2.3.	Not covered	
2.2.1.1.	4, 5	
2.2.1.2.	4, 5, Annex C	
2.2.1.3.	4.4, 7.4 c)	
2.2.2.1	4, 5	

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Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
2.2.2.2.	4, 5, Annex C	
2.2.2.3.	4.3, 5.1.9	
2.2.2.4.	4.4, 7.4 c)	
2.3.1.1.	4, 5	Covered
2.3.1.2.	4, 5, Annex C	Covered
2.3.2.1.	4, 5	Covered
2.3.2.2.	4, 5, Annex C	
2.3.2.3.	4.3, 5.1.9	
3.0.1.	Not covered	
3.0.2.	Not covered	
3.0.3.	Not covered	
3.0.4.	Not covered	
3.1.1.	Not covered	
3.1.2.	Not covered	
3.1.3.	Not covered	
3.1.4.	Not covered	
3.1.5.	Not covered	
3.1.6.	Not covered	
3.1.7.	Not covered	
3.1.8.	Not covered	

WARNING 1: Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2: Other Union legislation may be applicable to the product falling within the scope of this standard.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation.

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8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

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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;
- 〖C〗 Text deleted 〈C〗
- 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		
〖C〗 Text deleted 〈C〗				
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			X

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		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
〈C〉 Text deleted 〈C〉				
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.

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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.

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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.

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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.

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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.

〖C〗 Text deleted 〈C〗

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

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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. 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 tests	Applies

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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

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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

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