BS EN 60079-7:2015+A11:2024
Incorporating corrigendum July 2019

BSI Standards Publication

Explosive atmospheres

Part 7: Equipment protection by increased safety "e"

bsi.

National foreword

This British Standard is the UK implementation of EN 60079-7:2015+A11:2024. It is identical to IEC 60079-7:2015, incorporating amendment 1:2017. It supersedes BS EN IEC 60079-7:2015+A1:2018, which is withdrawn. It partially supersedes BS EN 60079-15:2010, specifically the requirements for Type of Protection "nA".

The significance of the changes between this standard and BS EN 60079-7:2007 (for "ec"), and between this standard and BS EN 60079-15:2010 (for "nA") are listed in a table in the IEC foreword.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment A1 is indicated by ⟦A1⟩ ⟨A1⟧.

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 committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication has been prepared under a mandate given to the European Standards Organizations by the European Commission and the European Free Trade Association. It is intended to support requirements of the EU legislation detailed in the European Foreword. A European Annex, usually Annex ZA or ZZ, describes how this publication relates to that EU legislation.

For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at www.bsigroup.com/standardsandregulation.

For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

Published by BSI Standards Limited 2024

ISBN 978 0 539 28729 5

ICS 29.260.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2015.

Amendments/corrigenda issued since publication

Date	Text affected
31 January 2017	Implementation of IEC Interpretation sheet Sep-tember 2016 in National Annex NA
30 June 2018	Implementation of IEC amendment 1:2017 with CENELEC endorsement A1:2018
31 July 2019	Table 5 corrected
31 January 2024	Implementation of CENELEC amendment A11:2024

National Annex NA
(Informative)

IEC 60079-7
Edition 5.0 2015-06

EXPLOSIVE ATMOSPHERES –

Part 7: Equipment protection by increased safety 'e'

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
31/1258/ISH	31/1272/RVD

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

IEC 60079-7:2015 Edition 5.0, *Explosive atmospheres – Part 7: Equipment protection by increased safety "e"*

Question:

Do the requirements given in 5.2.3 prohibit the use of a terminal box opened to the interior of a motor rated 1 kV or greater, provided the interior of the machine has an ingress protection of IP54 or greater?

IEC 60079-7:2015 Edition 5.0

5.2.3 Degrees of protection provided by electrical machines, Level of Protection "ec"

The requirements of 4.10 apply, except that terminal boxes attached to electrical machines operating at voltages up to 1 kV, may be opened to the interior of the machine, only when the degree of protection of the electrical machine is at least IP44. Covers and entries of the terminal box shall provide at least degree of protection IP54.

Answer:

No. As long as the interior of the machine has an ingress protection of IP54 or greater, determined in accordance with IEC 60079-0, there is no limitation to less than 1 kV. If the interior of the machine has an ingress rating of IP44 or lower, the use of a terminal box open to the interior of a motor rated 1 kV or greater is not permitted.

NOTE Many manufacturers opt to declare IP44 for the machine for certification purposes, whilst claiming a rating of IP54 or higher, by assessment, for contractual purposes in order to avoid the difficult testing required for certification of the IP of larger machines. As such, this additional IP rating need only comply with IEC 60529 or IEC 60034-5 as applicable, and not with any of the testing detailed in IEC 60079-0.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60079-7:2015+A11

January 2024

ICS 29.260.20

English Version

Explosive atmospheres — Part 7: Equipment protection by increased safety "e" (IEC 60079-7:2015)

Atmosphères explosives — Partie 7: Protection de l'équipement par sécurité augmentée "e" (IEC 60079-7:2015)

Explosionsfähige Atmosphäre — Teil 7: Geräteschutz durch erhöhte Sicherheit "e" (IEC 60079-7:2015)

This European Standard was approved by CENELEC on 2015-07-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN IEC 60079-7:2015+A1:2018: E

European foreword

The text of document 31/1182/FDIS, future edition 5 of IEC 60079-7, prepared by IEC/TC 31 "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-7:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-06-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-07-31

This document supersedes EN 60079-7:2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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(s).

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

Endorsement notice

The text of the International Standard IEC 60079-7:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC/TS 60034-17	NOTE	Harmonized as CLC/TS 60034-17.
IEC 60034-18-41	NOTE	Harmonized as EN 60034-18-41.
IEC/TS 60034-25	NOTE	Harmonized as CLC/TS 60034-25.
IEC 60079-14	NOTE	Harmonized as EN 60079-14.
IEC 60079-17	NOTE	Harmonized as EN 60079-17.
IEC 60079-18	NOTE	Harmonized as EN 60079-18.
IEC 60079-20-1	NOTE	Harmonized as EN 60079-20-1.
IEC 60079-28	NOTE	Harmonized as EN 60079-28.
IEC 60079-29-2	NOTE	Harmonized as EN 60079-29-2.
IEC 60079-30-2	NOTE	Harmonized as EN 60079-30-2.
IEC 60079-35-1	NOTE	Harmonized as EN 60079-35-1.
IEC 60086-1	NOTE	Harmonized as EN 60086-1.
IEC 60095-1	NOTE	Harmonized as EN 60095-1.

IEC 60364-5-55	NOTE	Harmonized in EN 60364-5-55 series.
IEC 60622	NOTE	Harmonized as EN 60622.
IEC 60623	NOTE	Harmonized as EN 60623.
IEC 60664-3	NOTE	Harmonized as EN 60664-3.
IEC 60927	NOTE	Harmonized as EN 60927.
IEC 61008-1	NOTE	Harmonized as EN 61008-1.
IEC 61056-1	NOTE	Harmonized as EN 61056-1.
IEC 61347-2-1	NOTE	Harmonized as EN 61347-2-1.
IEC 61347-2-4	NOTE	Harmonized as EN 61347-2-4.
IEC 61347-2-7	NOTE	Harmonized as EN 61347-2-7.
IEC 61347-2-8	NOTE	Harmonized as EN 61347-2-8.
IEC 61347-2-9	NOTE	Harmonized as EN 61347-2-9.
IEC 61347-2-13	NOTE	Harmonized as EN 61347-2-13.
IEC 61951-1	NOTE	Harmonized as EN 61951-1.
IEC 62013-1	NOTE	Harmonized as EN 62013-1.
ISO 13849-1	NOTE	Harmonized as EN ISO 13849-1.

Foreword to amendment A1

The text of document 31/1301/CDV, future IEC 60079-7:2015/A1, prepared by IEC/TC 31 "Explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60079-7:2015/A1:2018.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-07-19
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-01-19

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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(s).

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

Endorsement notice

The text of the International Standard IEC 60079-7:2015/A1:2017 was approved by CENELEC as a European Standard without any modification.

European foreword to Amendment A11

This document (EN 60079-7:2015/A11:2024) consists of the text of IEC 60079-7:2015/ISH1:2016, prepared by IEC/TC 31 "Equipment for 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)	2025-01-16
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2027-01-16

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60079-7:2015/ISH1:2016 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60034-1	—	Rotating electrical machines — Part 1: Rating and performance	EN 60034-1	—
IEC 60044-6	—	Instrument transformers — Part 6: Requirements for protective current transformers for transient performance	EN 60044-6	—
IEC 60061-1	—	Lamp caps and holders together with gauges for the control of interchangeability and safety — Part 1: Lamp caps	EN 60061-1	—
IEC 60061-2	—	Lamp caps and holders together with gauges for the control of interchangeability and safety — Part 2: Lampholders	EN 60061-2	—
IEC 60064	—	Tungsten filament lamps for domestic and similar general lighting purposes - Performance requirements	EN 60064	—
IEC 60068-2-6	—	Environmental testing — Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	—
IEC 60068-2-27	2008	Environmental testing — Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	2009
IEC 60068-2-42	—	Environmental testing — Part 2-42: Tests - Test Kc: Sulphur dioxide test for contacts and connections	EN 60068-2-42	—
IEC 60079-0	—	Explosive atmospheres — Part 0: Equipment - General requirements	EN 60079-0	—
IEC 60079-1	—	Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"	EN 60079-1	—
IEC 60079-11	—	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	—
IEC 60079-30-1	—	Explosive atmospheres — Part 30-1: Electrical resistance trace heating - General and testing requirements	EN 60079-30-1	—

Publication	Year	Title	EN/HD	Year
IEC 60085	—	Electrical insulation - Thermal evaluation and designation	EN 60085	—
IEC 60112	—	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	—
IEC 60216-1	—	Electrical insulating materials - Thermal endurance properties — Part 1: Ageing procedures and evaluation of test results	EN 60216-1	—
IEC 60216-2	—	Electrical insulating materials - Thermal endurance properties — Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria	EN 60216-2	—
IEC 60228	—	Conductors of insulated cables	EN 60228	—
IEC 60238	—	Edison screw lampholders	EN 60238	—
IEC 60317-3	2004	Specifications for particular types of	—	—
+A1	2010	winding wires — Part 3: Polyester enamelled round copper wire, class 155		
IEC 60317-8	—	Specifications for particular types of winding wires — Part 8: Polyesterimide enamelled round copper wire, class 180	EN 60317-8	—
IEC 60317-13	—	Specifications for particular types of winding wires — Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200	EN 60317-13	—
IEC 60317-46	—	Specifications for particular types of winding wires — Part 46: Aromatic polyimide enamelled round copper wire, class 240	EN 60317-46	—
IEC 60400	—	Lampholders for tubular fluorescent lamps and starterholders	EN 60400	—
IEC 60432-1	—	Incandescent lamps - Safety specifications — Part 1: Tungsten filament lamps for domestic and similar general lighting purposes	EN 60432-1	—
IEC 60432-2	—	Incandescent lamps - Safety specifications — Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes	EN 60432-2	—
IEC 60432-3	—	Incandescent lamps - Safety specifications - Part 3: Tungsten halogen lamps (non-vehicle)	EN 60432-3	—
IEC 60529	—	Degrees of protection provided by enclosures (IP Code)	—	—
IEC 60598-1	—	Luminaires — Part 1: General requirements and tests	EN 60598-1	—
IEC 60664-1	—	Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests	EN 60664-1	—

Publication	Year	Title	EN/HD	Year
IEC 60947-1	—	Low-voltage switchgear and controlgear — Part 1: General rules	EN 60947-1	—
IEC 60947-7-1	—	Low-voltage switchgear and controlgear — Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	—
IEC 60947-7-2	—	Low-voltage switchgear and controlgear — Part 7-2: Ancillary equipment - Protective conductor terminal blocks for copper conductors	EN 60947-7-2	—
IEC 60947-7-4	—	Low-voltage switchgear and controlgear — Part 7-4: Ancillary equipment - PCB terminal blocks for copper conductors	EN 60947-7-4	—
IEC 60998-2-4	—	Connecting devices for low voltage circuits for household and similar purposes — Part 2-4: Particular requirements for twist-on connecting devices	EN 60998-2-4	—
IEC 60999-1	—	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units — Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)	EN 60999-1	—
IEC 60999-2	—	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units — Part 2: Particular requirements for clamping units for conductors above 35 mm^2 up to 300 mm^2 (included)	EN 60999-2	—
IEC 61184	—	Bayonet lampholders	EN 61184	—
IEC 61195	—	Double-capped fluorescent lamps - Safety specifications	EN 61195	—
IEC 61347-1	—	Lamp controlgear - Part 1: General and safety requirement	EN 61347-1	—
IEC 61347-2-3	—	Lamp controlgear — Part 2-3: Particular requirements for a.c. and/or d.c. supplied electronic control gear for fluorescent lamps	EN 61347-2-3	—
IEC 62035	—	Discharge lamps (excluding fluorescent lamps) - Safety specifications	EN 62035	—
ISO 178	—	Plastics - Determination of flexural properties	EN ISO 178	—
ISO 527-2	—	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics	EN ISO 527-2	—
ISO 2859-1	—	Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	—	—

Annex ZZ
(informative)

Relationship between this European standard and the essential requirements of 2014/34/EU [2014 OJ L96] aimed to be covered

This European Standard has been prepared under a Commission's standardisation request M/BC/CEN/92/46 to provide one voluntary means of conforming to essential requirements of 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast).

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 [2014 OJ L96]

Essential Requirements of 2014/34/EU	**Clause(s) / sub-clause(s) of this EN**	**Remarks / Notes**
1.0.1.	All clauses	This is the purpose of the Standard.
1.0.2.	4.2 / 4.3 / 4.4 / 4.6 / 5.2 / 5.3 / 5.4 / 5.6 / 5.8 / 5.9 / A.3 / A.5 / B.4.2	
1.0.2.	4/ 5 /A/B//F/G//H	
1.0.3.	5.2 / 5.3 / 5.6	
1.0.3.	5.2 / 5.3 / 5.6	
1.0.4.	4.2 / 4.6 / 4.8	
1.0.4.	4.2 / 4.6 / 4.8	
1.0.5.	5.2 / 5.3 / 5.7 / 5.9 / 8.1 / 8.2 / 9.4	
1.0.5.	9	
1.0.6.	5.7 / 8.2	
1.0.6.	9.3	
1.1.1.	5.6 / 4.2	
1.1.1.	4.2/ 5.6 /	
1.1.2.	4.6 / 4.7 / 5.2 / 5.3 / 5.6 / 6.6	
1.1.2.	4.6 / 4.7 / 5.2 / 5.3 / 5.6:/5.8 / 6.6	
1.1.3.	4.2 / 4.3 / 4.9 / 5.2 / 5.3 / 5.6 / 5.8 / 6.1 / 6.6 / 6.7 / 6.8 / 7	
1.1.3.	4.2 / 4.3 / 4.5 /4.8 /4.9 / 5.2 / 5.3 / 5.6 / 5.8 / 6.1 / 6.3 / 6.6 / 6.7 / 6.8 / 7	
1.2.1.	All clauses of the standard contain up-to-date requirements	
1.2.2.	5.3 / 5.6 / 5.9	
1.2.3.	5.6 / 6.6 / 6.7	
1.2.4.	—	

Essential Requirements of 2014/34/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.2.5.	4.10 / 5.3 / B.1	
1.2.5.	4.10 / 5.3 /5.6/ B.1	
1.2.6.	4.11	Fasteners according to IEC 60079-0
1.2.7.	4.8 / 5.6 / B.4	EN 60079-0 and relevant standards for normal industrial applications.
1.2.8.	5.2 / 5.3 / 5.6 / 5.8 / 5.9	
1.2.8.	5	
1.2.9.	—	
1.3.1.	4.2 / 4.4 / 4.6 / 5.3 / 5.6 / 6.8	
1.3.2.	—	
1.3.3.	4.4 / 5.3 / 5.6	
1.3.4.	5.2	
1.3.4.	4.10/ 5.2	
1.3.5.	—	
1.4.1.	4.2 / 4.11 / 5.3 / 6.2 / 6.3 / 6.4	Fasteners according to IEC 60079-0
1.4.1.	4.2 / 4.10/4.11 / 5.3 / 6.2 / 6.3 / 6.4	Fasteners according to IEC 60079-0
1.4.2.	4.2 / 4.3 / 4.6 / 4.9 / 5.2 / 5.3 / 5.6 / 5.8 / 6.2 / 6.3 / 6.8	
1.4.2.	4.2 / 4.3 / 4.6 / 4.9 /4;10/ 5.2 / 5.3 / 5.6 / 5.8 / 6.2 / 6.3 / 6.8	
1.5.1	5.2 / 5.8 / 6.2	
1.5.2.	5.2 / 5.8 / 6.2	
1.5.3.	5.2 / 5.8 / 6.2	
1.5.4.	5.2 / 5.8 / 6.2	
1.5.5.	5.2 / 5.8 / 6.2	
1.5.6.	5.2 / 5.8 / 6.2	
1.5.7.	5.2 / 5.8 / 6.2	
1.5.8.	5.2 / 5.8 / 6.2	
1.6.1.		
1.6.2.		
1.6.3.		
1.6.4.		
1.6.5.		
1.6.1.	9	
1.6.2.	9	
1.6.3.	9	
1.6.4.	9	
1.6.5.	9	
2.0.1.1.	—	
2.0.1.2.	—	
2.0.1.3.	—	
2.0.1.4.	—	
2.0.2.1.	4.11 / 5.3	

Essential Requirements of 2014/34/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
2.0.2.1.	4.10 /4.11 / 5.3	
2.0.2.2.	—	
2.0.2.2.	9	
2.0.2.3	4.11 / 6.1 / 7.1	
2.0.2.3	4.10 /4.11 / 6.1 / 7.1	
2.1.1.1.	—	
2.1.1.2.	—	
2.1.1.3.	—	
2.1.2.1.	—	
2.1.2.2.	—	
2.1.2.3.	—	
2.2.1.1.	—	
2.2.1.1.	-5	
2.2.1.2.	—	
2.2.1.2.	4/5	
2.2.1.3.	—	
2.2.1.3.	4.2/5.9/9	
2.2.2.1	—	
2.2.2.2.	—	
2.2.2.3.	—	
2.2.2.4.	—	
2.3.1.1.	—	
2.3.1.1.	4/5	
2.3.1.2.	—	
2.3.1.2.	4/5/9	
2.3.2.1.	—	
2.3.2.2.	—	
2.3.2.3.	—	
3.0.1.	—	
3.0.2.	—	
3.0.3.	—	
3.0.4.	—	
3.1.1.	—	
3.1.2.	—	
3.1.3.	—	
3.1.4.	—	
3.1.5.	—	
3.1.6.	—	
3.1.7.	—	
3.1.8.	—	

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(s) falling within the scope of this standard.

Contents

Page

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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

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.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60079-7 has been prepared by IEC Technical Committee 31: Equipment for explosive atmospheres.

This fifth edition cancels and replaces the fourth edition published in 2006, and constitutes a technical revision.

The requirements for Type of Protection "nA" have been relocated from IEC 60079-15. To assist the user of this document, the significant changes with respect to the previous edition are shown below in two separate tables, one showing the changes from IEC 60079-7, Edition 4 (2006) for "e" to IEC 60079-7, Edition 5 (2014) for "eb"; and the other showing the changes from IEC 60079-15, Edition 4 (2010) for "nA" to IEC 60079-7, Edition 5 (2014) for "ec".

The significance of the changes between IEC Standard, IEC 60079-7, Edition 5 (2014) (for "eb") and IEC 60079-7, Edition 4 (2006) (for "e") are as listed below:

for “e” to “eb”		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Scope Clarification of applicability Notes added to address short circuits and short-term thermal excursions	1	X		
Clarification of resistance heating definitions	3.13	X		
Addition of terminal insulation material tests	4.2.2.4			C1
Soldered Connections	4.2.2.5 4.2.3.3			C2
Silver-Soldered connections	4.2.3.3	X		
Clarification of “duplicated” contacts	4.2.3.4a)	X		
External plug and socket connections for field wiring connection of batteries	4.2.4	X		
Clarification of conditions for the determination of maximum surface temperature	4.8.1 Table 3	X		
Maximum temperatures for insulated windings	Table 4	X		
Degrees of protection provided by enclosures	4.10.1		x	C3
Clarification of applicability	5.2.1	X		
Minimum air gap for motors	5.2.6	X		
Devices for limiting winding temperature protection	5.2.8.2 5.2.8.3		X	
Permanent magnet motors	5.2.9 6.2.4 9.3.4c)		X	
Added Tungsten-Halogen lamp	5.3.2.2 5.3.2.3 5.3.2.4		X	
Added spacings for < 10 W lamps	5.3.3		X	
Permission added for re-lamping outside of hazardous area	5.3.5.2.2		X	
Added bayonet lamps	5.3.5.4.2		X	
Added contact requirements for bayonet lamps	5.3.5.5		X	
Renaming of “Type” of cells and batteries	5.6.2	X		
Clarification of approaches for general purpose junctions boxes	5.7 6.9 Annex E	X		
Clarified temperature monitoring and control	5.8	X		
Clarification of testing of battery powered luminaires	6.3.1	X		
Clarification of impact tests	6.3.2.2	X		
Added abnormal tests for discharge lamps	6.3.4.1			C4
Added T5 8W	6.3.4.3 Table 16		X	

for “e” to “eb”		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
To maintain T4 temperature class, cathode power or ambient temperature reduced	6.3.4.3 Table 16			C5
Clarification of routine tests for terminal boxes	7.1	X		
Marking of “e” replaced by “eb”	9.1	See “Information about the background of Changes”		
Ex Component enclosures	9.2			C6
Highlight essential documentation for rotating electrical machines	10	X		
Temperature tests	Annex A		X	

The significance of the changes between IEC Standard, IEC 60079-7, Edition 5 (2015) (for “ec”) and IEC 60079-15, Edition 4 (2010) (for “nA”) are as listed below:

for “nA” to “ec”		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Scope Clarification of applicability Notes added to address short circuits and short-term thermal excursions	1	X		
Clarification of resistance heating definitions	3.13	X		
Soldered Connections	4.2.2.5 4.2.3.3			C7
Silver-Soldered connections	4.2.3.3	X		
Evaluation of pluggable connections	4.2.3.5a)	X		
External plug and socket connections for field wiring connection	4.2.4	X		
Minimum separation distances for encapsulated or solid insulation replaced by requirements for solid insulating materials	4.3 4.4 4.5 Table 2	X		
Alternative separation distances for equipment under controlled environments	4.3 4.4 Annex H		X	
Thermal stability of solid insulating materials	4.6			C8
Clarification of conditions for the determination of maximum surface temperature	4.8.1 Table 3	X		
Maximum temperatures for insulated windings	Table 4	X		
Clarification of applicability	5.2.1	X		
Permanent magnet motors	5.2.9 6.2.4 9.3.4c)		X	

for "nA" to "ec"		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Clarified applicability to handlights and caplights	5.3	X		
Addition of permitted light sources	5.3.2 Annex J		X	
Added spacings for < 10 W & 100-200 W lamps	5.3.4		X	
Added LED as a light source	5.3.2.5 0		X	
Clarified internal sapcings for LED packages	0	X		
Added spacings for < 10 V lamps	5.3.5.3.2		X	
Clarification of temperature testing	5.3.7	X		
Renaming of "Type" of cells and batteries	5.6.1	X		
Clarification of approaches for general purpose junctions boxes	5.7 6.8 Annex E	X		
Clarified temperature monitoring and control	5.8	X		
Clarification of permitted fuses	5.9.1	X		
Clarification of testing of battery powered luminaires	6.3.1	X		
Addition of end-of-life tests	6.3.4.3.2 Table 16			C9
Dielectric tests based on industrial standards	7.1		X	
Clarification of routine tests for terminal boxes	7.1	X		
Marking of "nA" is replaced by "ec"	9.1	See "Information about the back-ground of Changes"		
Ex Component enclosures	9.2			C10
Highlight essential documentation for rotating electrical machines	10	X		
Temperature tests	Annex A		X	
Alternative separation distances	Annex H	A1		

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 'Changes

Marking:

Former marking of "nA" has been replaced by marking "ec". Even if the other technical aspects on the product are unchanged and comply with the revised requirements, a change in the marking will be required.

Former marking of "e" has been replaced by marking "eb" . Even if the other technical aspects on the product are unchanged and comply with the revised requirements, a change in the marking will be required.

A1 The text of Annex H for *Alternative separation distances for Level of Protection "ec" equipment under controlled environments* has been reorganized and clarified from Clause 13 of IEC 60079-15, Ed 4; to facilitate consistent application of the requirements. The title has been revised to remove "low power" as power is not relevent for insulation coordination in accordance with IEC 60664-1. Although a clarification, it is recognized that some existing equipment may not meet the clarified requirement.

C1 The terminal insulating materials are now subjected to the same tests as rail-mounted terminals as a failure of the material presents the same hazard.

C2 Although a clarification, it is recognized that some existing equipment will not meet the clarified requirement. The requirements for soldered connections were revised to specify that mechanical support of the connection was required in addition to the solder. It is not a requirement that the connection function electrically in the absence of the solder.

C3 Ingress protection requirements for Group I increased from IP20 to IP23 for consistency with the remainder of the document.

C4 Added abnormal tests for discharge lamps.

C5 Based on further research, maintaining temperature class T4, under conditions of end-of-life, requires either the cathode power or the ambient temperature be reduced.

C6 Requirements for Ex Component "e" enclosures introduced based on those for Ex Component "d" enclosures. Even if the other technical aspects on the product are unchanged and comply with the revised requirements, a change in the marking will be required.

C7 Although a clarification, it is recognized that some existing equipment may not meet the clarified requirement. The requirements for soldered connections were revised to specify that mechanical support of the connection was required in addition to the solder. It is not a requirement that the connection function electrically in the absence of the solder.

C8 Requirements added for the use of solid insulating materials within the limits of their thermal stability.

C9 Based on further research, requirements for T5 lamps added.

C10 Requirements for Ex Component “e” enclosures introduced based on those for Ex Component “d” enclosures. Even if the other technical aspects on the product are unchanged and comply with the revised requirements, a change in the marking will be required.

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

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

The committee has decided that the contents of the base publication and its amendment 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.

Explosive atmospheres —

Part 7:
Equipment protection by increased safety "e"

1 Scope

This part of IEC 60079 specifies the requirements for the design, construction, testing and marking of electrical equipment and Ex Components with type of protection increased safety “e” intended for use in explosive gas atmospheres.

Electrical equipment and Ex Components of type of protection increased safety “e” are either:

a) Level of Protection “eb” (EPL “Mb” or “Gb”); or

b) Level of Protection “ec” (EPL “Gc”)

Level of Protection “eb” applies to equipment or Ex Components, including their connections, conductors, windings, lamps, and batteries; but not including semiconductors or electrolytic capacitors.

NOTE 1 The use of electronic components, such as semiconductors or electrolytic capacitors, is excluded from Level of Protection “eb” as expected malfunctions could result in excessive temperatures or arcs and sparks if the internal separation distances were not applied. It is not generally practical to maintain those separation distances and maintain the function of the electronic component.

Level of Protection “ec” applies to equipment or Ex Components, including their connections, conductors, windings, lamps, and batteries; and also including semiconductors and electrolytic capacitors.

NOTE 2 The use of electronic components, such as semiconductors or electrolytic capacitors, is permitted in Level of Protection “ec” as these are evaluated under both normal conditions and regular expected occurrences, and are not likely to result in excessive temperatures or arcs and sparks. As the requirements for separation distances are not applied to the internal construction, commercially available electronic components are generally suitable if the external separation distances comply.

The requirements of this standard apply to both Levels of Protection unless otherwise stated.

For Level of Protection “eb”, this standard applies to electrical equipment where the rated voltage does not exceed 11 kV r.m.s., a.c. or d.c.

For Level of Protection “ec”, this standard applies to electrical equipment where the rated voltage does not exceed 15 kV r.m.s., a.c. or d.c.

NOTE 3 Short circuit currents flowing through increased safety connections of mains circuits are not considered to create a significant risk of ignition of an explosive gas atmosphere due to movement of connections as a result of mechanical stresses created by the short circuit current. Normal industrial standards require that the effects of short time high currents on the security of connections be considered. The presence of the explosive gas atmosphere does not adversely affect the security of the connection.

NOTE 4 Any short term thermal excursions that occur as a result of electrical current excursions above normal rated currents, such as those that occur during the starting of motors, are not considered to create a significant risk of ignition of an explosive gas atmosphere due to the relatively short duration of the event and the convection that occurs during the event.

NOTE 5 High-voltage connections and associated wiring (above 1 kV) can be susceptible to increased partial discharge activity that could be a source of ignition. Increased spacings to earthed surfaces or other connections and provision of suitable high-voltage stress relief for the terminations are typically provided.

This standard supplements and modifies the general requirements of IEC 60079-0. Where a requirement of this standard conflicts with a requirement of IEC 60079-0, the requirement of this standard takes precedence.