SVENSK STANDARD SS-EN 60079-0

Fastställd	Utgåva	Sida	Ingår i
2006-09-25	2	1 (1+79)	SEK Område 31

Svenska Elektriska Kommissionen, SEK

Elektrisk utrustning för områden med explosiv gasatmosfär – Del 0: Allmänna fordringar

Electrical apparatus for explosive gas atmospheres – Part 0: General requirements

Som svensk standard gäller europastandarden EN 60079-0:2006. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60079-0:2006.

Nationellt förord

Europastandarden EN 60079-0:2006

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60079-0, Fourth edition, 2004 - Electrical apparatus for explosive gas atmospheres - Part 0: General requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60079-0, utgåva 1, 2004, gäller ej fr o m 2008-10-01.

ICS 29.260.20

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60079-0

July 2006

ICS 29.260.20

Supersedes EN 60079-0:2004

English version

Electrical apparatus for explosive gas atmospheres
Part 0: General requirements
(IEC 60079-0:2004, modified)

Matériel électrique pour atmosphères explosives gazeuses
Partie 0: Règles générales
(CEI 60079-0:2004, modifiée)

Elektrische Betriebsmittel für gasexplosionsgefährdete Bereiche
Teil 0: Allgemeine Anforderungen
(IEC 60079-0:2004, modifiziert)

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60079-0:2006 E

Foreword

The text of document 31/474A/FDIS, future edition 4 of IEC 60079-0, prepared by IEC TC 31, Electrical apparatus for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-0 on 2004-03-01.

A draft amendment to the European Standard EN 60079-0:2004, prepared by the Technical Committee CENELEC TC 31, Electrical apparatus for explosive atmospheres - General requirements, was submitted to the formal vote and was approved by CENELEC on 2005-09-13 to be combined with the published standard and published as new edition of EN 60079-0.

This European Standard supersedes EN 60079-0:2004.

The following dates were fixed:

– latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-02-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2008-10-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 94/9/EC. See Annex ZZ.

Clauses, subclauses, notes, tables and figures which are additional to those in IEC 60079-0 are prefixed “Z”.

Annexes ZA, ZB and ZZ have been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60079-0:2004 was approved by CENELEC as a European Standard with agreed common modifications as given below.

Annex ZB
(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 60034-5	–[1)]	Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	EN 60034-5	2001[2)]
IEC 60079-1	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosures 'd'	EN 60079-1 + corr. April	2004[2)] 2006
IEC 60079-2	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 2: Pressurized enclosures "p"	EN 60079-2 + corr. April	2004[2)] 2006
IEC 60079-4	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 4: Method of test for ignition temperature	-	-
IEC 60079-5	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 5: Powder filling 'q'	-	-
IEC 60079-6	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 6: Oil-immersion "o"	-	-
IEC 60079-7	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 7: Increased safety "e"	EN 60079-7	2003[2)]
IEC 60079-10	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 10: Classification of hazardous areas	EN 60079-10	2003[2)]
IEC 60079-11	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety "i"	-	-
IEC 60079-15	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 15: Type of protection "n"	EN 60079-15	2005[2)]
IEC 60079-18	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus	EN 60079-18 + corr. April	2004[2)] 2006

[1)] Undated reference.

[2)] Valid edition at date of issue.

Publication	Year	Title	EN/HD	Year
IEC 60079-25	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 25: Intrinsically safe systems	EN 60079-25 + corr. April	2004[2)] 2006
IEC 60079-26 (mod)	–[1)]	Electrical apparatus for explosive gas atmospheres - Part 26: Construction, test and marking of Group II Category 1 G electrical apparatus	EN 60079-26	2004[2)]
IEC 60086-1	–[1)]	Primary batteries - Part 1: General	EN 60086-1	2001[2)]
IEC 60095-1	–[1)]	Lead-acid starter batteries - Part 1: General requirements and methods of test	–[3)]	–
IEC 60192	–[1)]	Low pressure sodium vapour lamps - Performance specifications	EN 60192	2001[2)]
IEC 60216-1	–[1)]	Electrical insulating materials - Properties of thermal endurance - Part 1: Ageing procedures and evaluation of test results	EN 60216-1	2001[2)]
IEC 60216-2	–[1)]	Electrical insulating materials - Thermal endurance properties - Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria	EN 60216-2	2005[2)]
IEC 60423 (mod)	–[1)]	Conduits for electrical purposes - Outside diameters of conduits for electrical installations and threads for conduits and fittings	EN 60423	1994[2)]
IEC 60529	–[1)]	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991[2)] 1993
IEC 60622	–[1)]	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel-cadmium prismatic rechargeable single cells	EN 60622	2003[2)]
IEC 60623	–[1)]	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells	EN 60623	2001[2)]
IEC 60662 (mod)	–[1)]	High pressure sodium vapour lamps	EN 60662	1993[2)]
IEC 60947-1	–[1)]	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1 + corr. November	2004[2)] 2004
IEC 61056-1	–[1)]	General purpose lead-acid batteries (valve regulated types) - Part 1: General requirements, functional characteristics - Methods of test	EN 61056-1	2003[2)]
IEC 61150	–[1) 4)]	Alkaline secondary cells and batteries - Sealed nickel-cadmium rechargeable monobloc batteries in button cell design	EN 61150	1993[2)4)]

[3)] See EN 50342-1:2006, Lead-acid starter batteries -- Part 1: General requirements and methods of test.

[4)] Withdrawn.

Publication	Year	Title	EN/HD	Year
IEC 61436	–[1)]	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel-metal hydride rechargeable single cells	EN 61436[5)]	1998[2)]
IEC 61951-1	–[1)]	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 1: Nickel-cadmium	EN 61951-1	2003[2)]
IEC 62013-1	–[1)]	Caplights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion	EN 62013-1	2006[2)]
IEC 62086-1	–[1)]	Electrical apparatus for explosive gas atmospheres - Electrical resistance trace heating - Part 1: General and testing requirements	EN 62086-1	2005[2)]
ISO 48	–[1)]	Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)	-	-
ISO 178	–[1)]	Plastics - Determination of flexural properties	EN ISO 178	2003[2)]
ISO 179	Series	Plastics - Determination of Charpy impact strength	EN ISO 179	Series
ISO 262	–[1)]	ISO general-purpose metric screw threads - Selected sizes for screws, bolts and nuts	-	-
ISO 273	–[1)]	Fasteners - Clearance holes for bolts and screws	EN 20273	1991[2)]
ISO 286-2	–[1)]	ISO system of limits and fits - Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts	EN 20286-2	1993[2)]
ISO 527-2	–[1)]	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics	EN ISO 527-2	1996[2)]
ISO 965-1	–[1)]	ISO general-purpose metric screw threads - Tolerances - Part 1: Principles and basic data	-	-
ISO 965-3	–[1)]	ISO general purpose metric screw threads - Tolerances - Part 3: Deviations for constructional threads	-	-
ISO 1817	–[1)]	Rubber, vulcanized - Determination of the effect of liquids	-	-
ISO 4014	–[1)]	Hexagon head bolts - Product grades A and B	EN ISO 4014	2000[2)]
ISO 4017	–[1)]	Hexagon head screws - Product grades A and B	EN ISO 4017	2000[2)]
ISO 4026	–[1)]	Hexagon socket set screws with flat point	EN ISO 4026	2003[2)]

[5)] EN 61436 is superseded by EN 61951-2:2003.

Publication	Year	Title	EN/HD	Year
ISO 4027	–[1)]	Hexagon socket set screws with cone point	EN ISO 4027	2003[2)]
ISO 4028	–[1)]	Hexagon socket set screws with dog point	EN ISO 4028	2003[2)]
ISO 4029	–[1)]	Hexagon socket set screws with cup point	EN ISO 4029	2003[2)]
ISO 4032	–[1)]	Hexagon nuts, style 1 - Product grades A and B	EN ISO 4032	2000[2)]
ISO 4762	–[1)]	Hexagon socket head cap screws - Product grade A	EN ISO 4762	2004[2)]
ISO 4892-1	–[1)]	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance	EN ISO 4892-1	2000[2)]
ANSI/UL 746B	–[1)]	Polymeric Materials - Long-Term Property Evaluations	-	-

CONTENTS

ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES –

Part 0: General requirements

1 Scope

This part of IEC 60079 specifies the general requirements for construction, testing and marking of electrical apparatus and Ex components intended for use in explosive gas atmospheres.

Unless modified by one of the parts in the IEC 60079 series, electrical apparatus complying with this standard is intended for use in hazardous areas in which explosive gas atmospheres, caused by mixtures of air and gases, vapours or mists, exist under normal atmospheric conditions of

- temperature –20 °C to +60 °C;
- pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar); and
- air with normal oxygen content, typically 21 % v/v.

The application of electrical apparatus in atmospheric conditions outside this range may need special consideration.

NOTE 1 The determination of the maximum surface temperature is based on an operational ambient temperature of –20 °C to +40 °C, if not otherwise specified by the manufacturer. See also 5.1.1.

NOTE 2 In designing apparatus for operation in explosive gas atmospheres under conditions other than the atmospheric conditions given above, this standard may be used as a guide. However, additional testing related specifically to the intended conditions of use is recommended. This is particularly important when the types of protection 'flameproof enclosures "d"' (IEC 60079-1) and 'intrinsic safety "i"' (IEC 60079-11) are applied.

NOTE 3 Requirements given in this standard result from an ignition hazard assessment made on electrical equipment. The ignition sources taken into account are those found associated with this type of equipment, such as hot surfaces, mechanically generated sparks, thermite reactions, electrical arcing and static electric discharge in normal industrial environments. For other ignition sources like adiabatic compression, shock waves, exothermic chemical reaction, self ignition of dust, naked flames, hot gases/liquids the apparatus are subjected to a hazard analysis that identifies and lists all of the potential sources of ignition by the electrical apparatus and the measures to be applied to prevent them becoming effective.

This standard does not specify requirements for safety, other than those directly related to the explosion risk.

This standard is supplemented or modified by the following parts of IEC 60079 concerning specific types of protection:

– IEC 60079-1: Flameproof enclosures "d";
– IEC 60079-2: Pressurized enclosures "p";
– IEC 60079-5: Powder filling "q";
– IEC 60079-6: Oil immersion "o";
– IEC 60079-7: Increased safety "e";
– IEC 60079-11: Intrinsic safety "i";
– IEC 60079-15: Type of protection "n";
– IEC 60079-18: Encapsulation "m".

This standard is supplemented or modified by the following apparatus standards:

– IEC 60079-25
– IEC 60079-26
– IEC 62013-1
– IEC 62086-1.

This part of IEC 60079, along with other parts in the IEC 60079 series and the additional standards mentioned above, is not applicable to the construction of electromedical apparatus, shot-firing exploders, test devices for exploders and for shot-firing circuits.

2 Normative references

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.

IEC 60034-5*, Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) – Classification*

IEC 60079-1*, Electrical apparatus for explosive gas atmospheres – Part 1: Flameproof enclosures "d"*

IEC 60079-2*, Electrical apparatus for explosive gas atmospheres – Part 2: Pressurized enclosures "p"*

IEC 60079-4*, Electrical apparatus for explosive gas atmospheres – Part 4: Method of test for ignition temperature*

IEC 60079-5*, Electrical apparatus for explosive gas atmospheres – Part 5: Powder filling "q"*

IEC 60079-6, *Electrical apparatus for explosive gas atmospheres – Part 6: Oil-immersion "o"*

IEC 60079-7, *Electrical apparatus for explosive gas atmospheres – Part 7: Increased safety "e"*

IEC 60079-10, *Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas*

IEC 60079-11, *Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"*

IEC 60079-15, *Electrical apparatus for explosive gas atmospheres – Part 15: Type of protection "n"*

IEC 60079-18, *Electrical apparatus for explosive gas atmospheres – Part 18: Encapsulation "m"*

IEC 60079-25: *Electrical apparatus for explosive gas atmospheres – Part 25: Intrinsically safe systems* [1]

IEC 60079-26: *Electrical apparatus for explosive gas atmospheres – Part 26: Construction, test and marking of zone 0 electrical apparatus* [2]

IEC 60086-1, *Primary batteries – Part 1: General*

IEC 60095-1, *Lead-acid starter batteries – Part 1: General requirements and methods of test*

IEC 60192, *Low-pressure sodium vapour lamps – Performance specifications*

IEC 60216-1, *Electrical insulating materials – Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results*

IEC 60216-2, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 2: Choice of test criteria*

IEC 60423, *Conduits for electrical purposes – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60622, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Sealed nickel-cadmium prismatic rechargeable single cells*

IEC 60623, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Vented nickel-cadmium prismatic rechargeable single cells*

IEC 60662, *High-pressure sodium vapour lamps*

IEC 60947-1, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 61056-1, *General-purpose lead-acid cells and batteries (valve-regulated types) – Part 1: General requirements, functional characteristics – Methods of test*

IEC 61150, *Alkaline secondary cells and batteries – Sealed nickel-cadmium rechargeable monobloc batteries in button cell design*

IEC 61436, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Sealed nickel-metal hydride rechargeable single cells*

IEC 61951-1, *Secondary cells and batteries containing alkalinei and other non-acid electrolytes – Portable sealed rechargeable single cells – Part 1: Nickel-cadmium*

IEC 62013-1, *Caplights for use in mines susceptible to firedamp – Part 1: General requirements – Construction and testing in relation to the risk of explosion*

IEC 62086-1: *Electrical apparatus for explosive gas atmospheres – Electrical resistance trace heating – Part 1: General and testing requirements*

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[1] To be published.

[2] In preparation.

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 178, *Plastics – Determination of flexural properties*

ISO 179, *Plastics – Determination of Charpy impact properties*

ISO 262, *ISO general-purpose metric screw threads – Selected sizes for screws, bolts and nuts*

ISO 273, *Fasteners – Clearance holes for bolts and screws*

ISO 286-2, *ISO system of limits and fits – Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 527-2, *Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics*

ISO 965-1, *ISO general-purpose metric screw threads – Tolerances – Part 1: Principles and basic data*

ISO 965-3, *ISO general-purpose metric screw threads – Tolerances – Part 3: Deviations for constructional screw threads*

ISO 1817, *Rubber, vulcanized – Determination of the effect of liquids*

ISO 4014, *Hexagon head bolts – Product grades A and B*

ISO 4017, *Hexagon head screws – Product grades A and B*

ISO 4026, *Hexagon socket set screws with flat point*

ISO 4027, *Hexagon socket set screws with cone point*

ISO 4028, *Hexagon socket set screws with dog point*

ISO 4029, *Hexagon socket set screws with cup point*

ISO 4032, *Hexagon nuts, style 1 – Product grades A and B*

ISO 4762, *Hexagon socket head cap screws*

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

ANSI/UL 746B, *Polymeric Materials – Long-Term Property Evaluations*