

**Plahvatusohtlikud keskkonnad. Osa 0: Seadmed.
Üldnõuded**

**Explosive atmospheres - Part 0: Equipment -
General requirements (IEC 60079-0:2011,
modified)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

| | |
|---|---|
| <p>See Eesti standard EVS-EN 60079-0:2013+A11:2014 sisaldab Euroopa standardi EN 60079-0:2012+A11:2013 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.08.2012, muudatus A1 8.11.2013.</p> <p>Standard on kättesaadav Eesti Standardikeskusest.</p> | <p>This Estonian standard EVS-EN 60079-0:2013+A11:2014 consists of the English text of the European standard EN 60079-0:2012+A11:2013.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.</p> <p>Date of Availability of the European standard is 24.08.2012, for amendment A1 8.11.2013.</p> <p>The standard is available from the Estonian Centre for Standardisation.</p> |
|---|---|

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ICS 29.260.20

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English version

**Explosive atmospheres -
Part 0: Equipment -
General requirements**
(IEC 60079-0:2011, modified)

Atmosphères explosives -
Partie 0: Matériel -
Exigences générales
(CEI 60079-0:2011, modifiée)

Explosionsgefährdete Bereiche -
Teil 0: Betriebsmittel – Allgemeine
Anforderungen
(IEC 60079-0:2011, modifiziert)

This European Standard was approved by CENELEC on 2012-04-02. 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.

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

This document (EN 60079-0:2012) consists of the text of IEC 60079-0:2011 prepared by IEC/TC 31 "Equipment for explosive atmospheres", 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 (dop) 2013-04-02
at national level by publication of an identical
national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2015-04-02
with this document have to be withdrawn

This document supersedes EN 60079-0:2009.

The State of the Art is included in Annex ZY "Significant changes between this European Standard and EN 60079-0:2009".

For the significant changes with respect to EN 60079-0:2009, see Annex ZY.

Annexes which are additional to those in IEC 60079-0:2011 are prefixed "Z".

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 94/9/EC.

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

Endorsement notice

The text of the International Standard IEC 60079-0:2011 was approved by CENELEC as a European Standard with agreed common modifications.

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/TS 60034-25 | NOTE Harmonized as CLC/TS 60034-25. |
| IEC 60034-29 | NOTE Harmonized as EN 60034-29. |
| IEC 60079-10-1 | NOTE Harmonized as EN 60079-10-1. |
| IEC 60079-10-2 | NOTE Harmonized as EN 60079-10-2. |
| IEC 60079-14 | NOTE Harmonized as EN 60079-14. |
| IEC 60079-17 | NOTE Harmonized as EN 60079-17. |
| IEC 60079-19 | NOTE Harmonized as EN 60079-19. |
| IEC 60079-27 | NOTE Harmonized as EN 60079-27. |
| ISO/IEC 17000 | NOTE Harmonized as EN ISO/IEC 17000. |

COMMON MODIFICATIONS

2 Normative references

Add the following reference:

EN 1710, *Equipment and components intended for use in potentially explosive atmospheres in underground mines*

EN 14986, *Design of fans working in potentially explosive atmospheres*

17.1.5 Ventilating fans

Delete the existing 17.1.5.1 to 17.1.5.5 and **replace** by:

“For Group I equipment, the applicable requirements of EN 1710 shall be applied.

For Group II and Group III equipment, all requirements except marking of EN 14986 shall be applied.”

26.15 Verification of ratings of ventilating fans

Replace text by:

“For Group I equipment, the applicable requirements of EN 1710 shall be applied.

For Group II and Group III equipment, all requirements of EN 14986 shall be applied.”

29.3 General

Add the following after Note 4:

"Additionally, the nameplate shall include the following fan details:

- za) rating information (casing pressure and temperature), where applicable;
- zb) where appropriate, maximum inlet temperature;
- zc) for variable speed fans, the speed range."

30.4 Ventilating fans

Replace text by:

“For Group I equipment, the applicable requirements of EN 1710 shall be applied.

For Group II and Group III equipment, all requirements of EN 14986 shall be applied.”

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

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|---|---------------|-------------|
| - | - | Equipment and components intended for use in EN 1710 potentially explosive atmospheres in underground mines | | - |
| - | - | Design of fans working in potentially explosive atmospheres | EN 14986 | - |
| IEC 60034-1 | - | Rotating electrical machines - Part 1: Rating and performance | EN 60034-1 | - |
| IEC 60034-5 | - | Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification | EN 60034-5 | - |
| IEC 60050-426 | - | International Electrotechnical Vocabulary - Part 426: Equipment for explosive atmospheres | - | - |
| IEC 60079-1 | - | Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d" | EN 60079-1 | - |
| IEC 60079-2 | - | Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p" | EN 60079-2 | - |
| IEC 60079-5 | - | Explosive atmospheres - Part 5: Equipment protection by powder filling "q" | EN 60079-5 | - |
| IEC 60079-6 | - | Explosive atmospheres - Part 6: Equipment protection by oil immersion "o" | EN 60079-6 | - |
| IEC 60079-7 | - | Explosive atmospheres - Part 7: Equipment protection by increased safety "e" | EN 60079-7 | - |
| IEC 60079-11 | - | Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" | EN 60079-11 | - |
| IEC 60079-15 | - | Explosive atmospheres - Part 15: Equipment protection by type of protection "n" | EN 60079-15 | - |
| IEC 60079-18 | - | Explosive atmospheres - Part 18: Equipment protection by encapsulation "m" | EN 60079-18 | - |
| IEC 60079-20-1 | - | Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data | EN 60079-20-1 | - |
| IEC 60079-25 | - | Explosive atmospheres - Part 25: Intrinsically safe electrical systems | EN 60079-25 | - |

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|---------------|-------------|
| IEC 60079-26 | - | Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga | EN 60079-26 | - |
| IEC 60079-28 | - | Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation | EN 60079-28 | - |
| IEC 60079-30-1 | - | Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements | EN 60079-30-1 | - |
| IEC 60079-31 | - | Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t" | EN 60079-31 | - |
| IEC 60086-1 | - | Primary batteries - Part 1: General | EN 60086-1 | - |
| IEC 60095-1 | - | Lead-acid starter batteries - Part 1: General requirements and methods of test | - | - |
| IEC 60192 | - | Low pressure sodium vapour lamps - Performance specifications | EN 60192 | - |
| IEC 60216-1 | - | Electrical insulating materials - Properties of thermal endurance - 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 60243-1 | - | Electrical strength of insulating materials - Test methods - Part 1: Tests at power frequencies | EN 60243-1 | - |
| IEC 60254 | Series | Lead-acid traction batteries | EN 60254 | Series |
| IEC 60423 | - | Conduit systems for cable management - Outside diameters of conduits for electrical installations and threads for conduits and fittings | EN 60423 | - |
| IEC 60529 | - | Degrees of protection provided by enclosures (IP Code) | EN 60529 | - |
| IEC 60622 | - | Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel-cadmium prismatic rechargeable single cells | EN 60622 | - |
| IEC 60623 | - | Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells | EN 60623 | - |
| IEC 60662 | - | High pressure sodium vapour lamps - Performance specifications | EN 60662 | - |
| IEC 60664-1 | - | Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests | EN 60664-1 | - |
| IEC 60947-1 | - | Low-voltage switchgear and controlgear - Part 1: General rules | EN 60947-1 | - |

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|--------------|-------------|
| IEC 60896-11 | - | Stationary lead-acid batteries - Part 11: Vented types - General requirements and methods of tests | EN 60896-11 | - |
| IEC 60896-21 | - | Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test | EN 60896-21 | - |
| IEC 60952 | Series | Aircraft batteries | EN 60952 | Series |
| IEC 61056-1 | - | General purpose lead-acid batteries (valve- regulated types) - Part 1: General requirements, functional characteristics - Methods of test | EN 61056-1 | - |
| IEC 61241-4 | - | Electrical apparatus for use in the presence of combustible dust - Part 4: Type of protection 'pD' | EN 61241-4 | - |
| IEC 61427 | - | Secondary cells and batteries for photovoltaic energy systems (PVES) - General requirements and methods of test | EN 61427 | - |
| IEC 61951-1 | - | Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 1: Nickel-cadmium | EN 61951-1 | - |
| IEC 61951-2 | - | Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 2: Nickel-metal hydride | EN 61951-2 | - |
| IEC 61960 | - | Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications | EN 61960 | - |
| 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 | EN 62013-1 | - |
| ISO 178 | - | Plastics - Determination of flexural properties | EN ISO 178 | - |
| ISO 179 | Series | Plastics - Determination of Charpy impact properties | EN ISO 179 | Series |
| ISO 262 | - | ISO general-purpose metric screw threads - Selected sizes for screws, bolts and nuts | - | - |
| ISO 273 | - | Fasteners - Clearance holes for bolts and screws | EN 20273 | - |
| ISO 286-2 | - | ISO system of limits and fits - Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts | EN ISO 286-2 | - |
| ISO 527-2 | - | Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics | EN ISO 527-2 | - |
| 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 threads | - | - |
| ISO 1817 | - | Rubber, vulcanized - Determination of the effect- of liquids | - | - |

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|---|---------------|-------------|
| ISO 3601-1 | - | Fluid systems - Sealing devices - O-rings - Part 1: Inside diameters, cross-sections, tolerances and size identification code | - | - |
| ISO 3601-2 | - | Fluid power systems - O-rings - Part 2: Housing dimensions for general applications | - | - |
| ISO 4014 | - | Hexagon head bolts - Product grades A and B | EN ISO 4014 | - |
| ISO 4017 | - | Hexagon head screws - Product grades A and B | EN ISO 4017 | - |
| ISO 4026 | - | Hexagon socket set screws with flat point | EN ISO 4026 | - |
| ISO 4027 | - | Hexagon socket set screws with cone point | EN ISO 4027 | - |
| ISO 4028 | - | Hexagon socket set screws with dog point | EN ISO 4028 | - |
| ISO 4029 | - | Hexagon socket set screws with cup point | EN ISO 4029 | - |
| ISO 4032 | - | Hexagon nuts, style 1 - Product grades A and B | EN ISO 4032 | - |
| ISO 4762 | - | Hexagon socket head cap screws | EN ISO 4762 | - |
| ISO 4892-2 | - | Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps | EN ISO 4892-2 | - |
| ISO 7380-1 | - | Button head screws - Part 1: Hexagon socket button head screws | EN ISO 7380-1 | - |
| ISO 14583 | - | Hexalobular socket pan head screws | EN ISO 14583 | - |
| ANSI/UL 746B | - | Polymeric Materials - Long-Term Property Evaluations | - | - |
| ANSI/UL 746C | - | Polymeric Materials - Used in Electrical Equipment Evaluations | - | - |

Annex ZZ

(informative)

Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in Annex II of the EU Directive 94/9/EC:

- ER 1.0.1 to ER 1.0.6
- ER 1.1
- ER 1.2.1, ER 1.2.2, ER 1.2.4 to ER 1.2.9
- ER 1.3.1 to ER 1.3.4
- ER 1.4.1, ER 1.4.2
- ER 1.6.2, ER 1.6.4
- ER 2.0 to ER 2.3

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

Annex ZY (informative)

Additional Information relating to the European ATEX Directive 94/9/EC

ZY.1 Equipment Groups

In all cases Equipment Protection Levels (EPL) as defined by EN 60079-0 are related to the corresponding Equipment Groups and Equipment Categories according to the following table. The same applies if a standard makes reference to the intended use of equipment in Zones according to the definitions in EN 60079-10-1 and EN 60079-10-2.

Table ZY.1

| EN 60079-0 | | Directive 94/9/EC | | EN 60079-10-X |
|------------|-------|-------------------|--------------------|---------------|
| EPL | Group | Equipment Group | Equipment Category | Zones |
| Ma | I | I | M1 | NA |
| Mb | | | M2 | |
| Ga | II | II | 1G | 0 |
| Gb | | | 2G | 1 |
| Gc | | | 3G | 2 |
| Da | III | | 1D | 20 |
| Db | | | 2D | 21 |
| Dc | | | 3D | 22 |




ZY.2 Instructions

The manufacturer or his authorized representative in the Community is to draw up the instructions for use in the required Community languages.

ZY.3 Marking

The marking according to this standard is to be supplemented by the marking according to Directive 94/9/EC. Examples are given below.

European marking examples

| Directive part | Standard part | Equipment example |
|---|---------------------|---|
|  I M2 | Ex d I Mb | Mining equipment, type of protection "Flameproof Enclosure" d |
|  II 2G | Ex e IIB T4 Gb | Gas explosion protected equipment type of protection, "Increased Safety" e |
|  II 1D | Ex ma IIIC 120°C Da | Dust explosion protected equipment, type of protection "Encapsulation" ma |

NOTE Attention is drawn to the requirement in 29.8:

The Ex marking for explosive gas atmospheres and explosive dust atmospheres shall be separate and not combined:

 II 1 G - Ex ia IIB T4

 II 1 D - Ex ia IIIC T120°C

ZY.4 Significant changes between this European Standard and EN 60079-0:2009

This European Standard supersedes EN 60079-0:2009.

Table ZY.2 – Significant changes with respect to EN 60079-0:2009

| | | Type | | |
|--|----------------------|-----------------------------|-----------|-------------------------|
| Significant Changes | Clause | Minor and editorial changes | Extension | Major technical changes |
| Expansion of material specification data for plastics and elastomers, including UV resistance | 7.1.2 | | x | |
| Addition of alternative qualification for O-rings | 7.2.3 | | x | |
| Addition of alternative criteria for surface resistance | 7.4.2 a) | | x | |
| Addition of alternative breakdown voltage limit for non-metallic layers applied to metallic enclosures | 7.4.2 c) | | x | |
| Expansion of “X” marking options for non-metallic enclosure materials not meeting basic electrostatic requirements | 7.4.2 d) 7.4.2 e) | | x | |
| Clarification that non-metallic enclosure requirements also apply to painted or coated metal enclosures | 7.4.3 | | x | |
| Clarification of test to determine capacitance of accessible metal parts with reduction in acceptable capacitance | 7.5 Table 9 | | | C1 |
| Addition of limits on zirconium content for Group III and Group II (Gb only) enclosures | 8.3 8.4 | | x | |
| Introduction of “X” marking for Group III enclosures not complying with basic material requirements, similar to that existing for Group II | 8.4 | x | | |
| Addition of button-head cap screws to permitted “Special Fasteners” | 9.2 | | x | |
| Reference for protective earthing (PE) requirements for rotating electrical machines to EN 60034 1 | 15.3 | x | | |
| Addition of requirements for ventilating fans | 17.1.5 | | | C2 |

| | | Type | | |
|--|----------------------|-----------------------------|-----------|-------------------------|
| Significant Changes | Clause | Minor and editorial changes | Extension | Major technical changes |
| Addition of alternative construction for disconnectors | 18.2 | | x | |
| Removal of voltage limits on plugs and sockets | 20.2 | | x | |
| Addition of test requirements for arc-quenching test on plugs and sockets | 20.2 | | | C3 |
| Additional information on cell voltages | 23.3 Table 12 | | | C4 |
| Revision to impact test of glass parts | 26.4.2 | x | | |
| Revision to impact test procedure to address "bounce" of impact head | 26.4.2 | | x | |
| Clarification of the test requirements for "service" and "surface" temperature | 26.5.1.2 26.5.1.3 | x | | |
| Addition of temperature rise tests for converter-fed motors | 26.5.1.3 | | x | |
| Addition of alternative test method for thermal endurance | 26.8 Table 15 | | x | |
| Removal of "charging test" and addition of note providing guidance | Formerly 26.14 | | | C5 |
| Clarification of test for the measurement of capacitance | 26.14 | x | | |
| Addition of a "Schedule of Limitations" to certificates for Ex Components | 28.2 | x | | |
| Clarification of the marking for multiple temperature classes | 29.3 d) | x | | |
| Addition of marking for converter-fed motors | 29.14 | x | | |
| Removal of IP marking for Group III | 29.4 29.15 | x | | |
| Addition of specific instructions for electrical machines and for ventilating fans | 30.3 30.4 | x | | |

NOTE 1 The technical changes referred include the significant technical changes from the EN revised but is not 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

Changes in a standard classified as 'Minor and editorial changes' refer to changes regarding the previous standard, which modify requirements in an editorial or a minor technical way. Also changes of the wording to clarify technical requirements without any technical change are classified as 'Minor and editorial changes'.

A reduction in level of existing requirement is also classified as 'Minor and editorial changes'

Extension addition of technical options

Changes in a standard classified as 'extension' refers to changes regarding the previous standard, 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 'extensions' will not have to be considered for products in conformity with the preceding edition.

Major technical change addition of technical requirements
increase of technical requirements

Changes in a standard classified as 'Major technical change' refer to changes regarding the previous standard, which add new or increase the level of existing technical requirements, in a way that a product in conformity with the preceding standard will not always be able to fulfil the requirements given in the standard. 'Major technical changes' have to be considered for products in conformity with the preceding edition. For every change classified as 'Major Technical Change' additional information is provided in B) of Annex ZY.

NOTE 2 These changes represent current technological knowledge¹. 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 values in the table have been significantly reduced based on information that is intended to be published in IEC 60079-32 (currently in preparation).

C2 – The requirements for fans which are not integral to the cooling system of a rotating electrical machine were added to the IEC version of the standard at the request of the IECEx International Product Certification Scheme as such requirements do not exist elsewhere in international standards. These requirements were removed from the EN version of the standard by common modification and replaced by reference to other European standards harmonised under the ATEX Directive 94/9/EC. If this clause is being used for IECEx purposes, it should be noted that the major new requirement for fans relates to the back pressure considerations which are also specifically addressed in EN 14986:2007.

C3 – The test has been introduced for all disconnectors as an alternative to the voltage and current restrictions in the previous standard which were considered to be arbitrary.

C4 – There has been a slight increase in some cell voltages. This is a minor change for most protection concepts but should be regarded as a major change for equipment having a type of protection relying on energy limitation, e.g. EN 60079-11

C5 – The charging test was removed as it had been found to be not repeatable. Guidance is currently provided in CLC/TR 50404 and will be given in IEC 60079-32 which is in preparation.

¹ see also ATEX Guide 10.3 and Annex ZZ.

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