PLAHVATUSOHTLIKUD KESKKONNAD. OSA 26: ERALDUSELEMENTIDEGA VÕI KOMBINEERITUD KAITSETASEMEGA SEADMED

Explosive atmospheres - Part 26: Equipment with separation elements or combined Levels of Protection

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60079-26:2024 sisaldab Euroopa standardi EN IEC 60079-26:2024 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60079-26:2024 consists of the English text of the European standard EN IEC 60079-26:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 26.04.2024.	Date of Availability of the European standard is 26.04.2024.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.260.20

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60079-26

April 2024

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English Version

Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection (IEC 60079-26:2021)

Atmosphères explosives - Partie 26: Appareil avec éléments de séparation ou niveaux de protection combinés (IEC 60079-26:2021)

Explosionsgefährdete Bereiche - Teil 26: Betriebsmittel mit Trennelementen oder kombinierten Zündschutzarten (IEC 60079-26:2021)

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European foreword

The text of document 31/1562/FDIS, future edition 4 of IEC 60079-26, prepared by IEC/TC 31 "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60079-26:2024.

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) 2024-10-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-04-26

This document supersedes EN 60079-26:2015 and all of its amendments and corrigenda (if any).

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This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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 60079-26:2021 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 standard indicated:

IEC 60079-14 NOTE Approved as EN 60079-14

ISO 80079-37 NOTE Approved as EN ISO 80079-37

IEC 60079-26

Edition 4.0 2021-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Explosive atmospheres –
Part 26: Equipment with Separation Elements or combined Levels of Protection

Atmosphères explosives –
Partie 26: Appareil avec éléments de séparation ou niveaux de protection combinés

IEC 60079-26:2021-02(en-fr)

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Part 26: Equipment with Separation Elements or combined Levels of Protection

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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.
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International Standard IEC 60079-26 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This fourth edition cancels and replaces the third edition published in 2014 and constitutes a technical revision.

This edition includes the following significant changes with respect to the previous edition:

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
The scope of the standard was extended for separation elements between all EPLs for gas and dust hazardous areas as well as for non-electrical equipment. The title and the structure of the standard was modified accordingly.	5		x	
The requirements for combined Types of Protection 4.1.2 were restructured and included in Clause 4	4	x		
The requirements for equipment with moving parts was removed and transferred to IEC 60079-0	4.2 (ed. 3)	x		
For equipment with partition walls other than corrosion resistant metals, glass or ceramic the type tests were detailed and the cycling test acc. to IEC TS 60079-40 specified, if they were exposed to constant vibrational stress	7.2			C1
The marking is extended for equipment to be mounted between different Zones	8		x	
The thickness of the partition wall must be specified in the instructions	9	x		
Additional warnings are included in the instructions for equipment with separation elements exposed to abrasive dust flow	9		x	
Table 1 "Separation elements" was moved to Annex A as Table A.1 and modified for clarification	Table A.1	x		
Table A.2 to table A.8 added for the extended separation elements			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.

Explanation of the types of 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 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 to ensure that partition walls consisting of materials other than stainless steel, ceramics or glass, which are exposed to pressure or vibrational stress, provide a comparable level of safety, additional endurance tests were included. Reference to tests in IEC TS 60079-40 were considered appropriate.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
31/1562/FDIS	31/1564/RVD

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

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

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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EXPLOSIVE ATMOSPHERES –

Part 26: Equipment with Separation Elements or combined Levels of Protection

1 Scope

This part of IEC 60079 specifies requirements for construction, testing and marking for Ex Equipment that contains parts of the equipment with different Equipment Protection Levels (EPLs) and a separation element. This equipment is mounted across a boundary where different EPLs are required, for example between different gas hazardous areas, dust hazardous areas or gas hazardous areas adjacent to dust hazardous areas.

EXAMPLE: Equipment installed in the wall of storage tanks located in Zone 1 and containing Zone 0 inside.

Separation elements are considered for both electrical and non-electrical equipment. If mechanical energy can be transformed into a potential ignition source, additionally an ignition hazard assessment in accordance with ISO 80079-36 is performed and appropriate measures are undertaken. Suitable measures can be selected from ISO 80079-37 or IEC TS 60079-42.

This document also specifies requirements for the combination of two Types of Protection, each with EPL Gb, to achieve EPL Ga. Examples are included in 4.2.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-1, *Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"*

IEC 60079-11, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

IEC 60079-31, *Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"*

IEC TS 60079-40, *Explosive atmospheres – Part 40: Requirements for process sealing between flammable process fluids and electrical systems*

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

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

ISO 80079-36, *Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60079-0 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Ex Equipment with two combined Types of Protection

4.1 General

To achieve EPL Ga, electrical equipment may comply with the requirements of two independent Types of Protection each of EPL Gb. If one Type of Protection fails, the other Type of Protection shall continue to function. Then even during rare malfunctions, for example two independent faults, no ignition source can occur.

4.2 Basic requirements

The independent Types of Protection shall not have a common mode of failure, except as specified below (see a) and b)). Combined Types of Protection of EPL Gb shall depend on different physical protection principles.

NOTE 1 An example for an unacceptable common mode of failure is an Ex "db" enclosure containing arcing components installed inside an Ex "eb" enclosure. Should the Ex "db" enclosure be compromised, it would also compromise the Ex "eb" enclosure.

NOTE 2 The combination of Ex "db" and Ex "q" both depend on the avoidance of flame propagation (same physical protection principle) and are not suitable in combination. In practice, some combinations are not suitable, for example the combination of liquid immersion "ob" and powder filling "q".

Both Types of Protection shall be assessed using the most onerous malfunction condition of the other Type of Protection. When combining intrinsic safety, i.e. Level of Protection "ib", with another Type of Protection, the second Type of Protection shall be assessed after the application of faults to the intrinsically safe apparatus which result in the most onerous condition as specified in IEC 60079-11. Thermal dissipation shall be considered in case of a fault of one Type of Protection.

When using two Types of Protection, which both rely on the same parameter (for example, the creepage distance when combining Ex "ib" with Ex "eb"), the most stringent requirement of both Types of Protection shall be applied.

If two Types of Protection are combined which both rely on the enclosure, one of the following shall be met:

a) if two enclosures are used (one totally enclosed within the other), each enclosure shall comply with the requirements of the respective Type of Protection; or
b) if only one enclosure is used, the enclosure and the Cable Glands shall meet the impact test requirements of IEC 60079-0, using the Group I values.

Examples of relevant combinations of two independent Types of Protection are as follows:

– inductive transmitters (for example proximity switches, electrical position sensors) with intrinsic safety "ib" enclosed by encapsulation "mb";