

**Plahvatusohtlikud keskkonnad. Osa 25:
Sädemeohutud elektrilised süsteemid**

Explosive atmospheres - Part 25: Intrinsically safe
electrical systems

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60079-25:2010 sisaldab Euroopa standardi EN 60079-25:2010 ingliskeelset teksti.

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This Estonian standard EVS-EN 60079-25:2010 consists of the English text of the European standard EN 60079-25:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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English version

**Explosive atmospheres -
Part 25: Intrinsically safe electrical systems
(IEC 60079-25:2010)**

Atmosphères explosives -
Partie 25: Systèmes électriques de
sécurité intrinsèque
(CEI 60079-25:2010)

Explosionsfähige Atmosphäre -
Teil 25: Eigensichere Systeme
(IEC 60079-25:2010)

This European Standard was approved by CENELEC on 2010-10-01. 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 Central Secretariat 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

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Foreword

The text of document 31G/202/FDIS, future edition 2 of IEC 60079-25, prepared by SC 31G, Intrinsically-safe apparatus, of IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-25 on 2010-10-01.

This European Standard supersedes EN 60079-25:2004.

The significant changes with respect to EN 60079-25:2004 are:

- extension of the scope from Group II to Groups I, II and III;
- introduction of level of protection "ic";
- addition of requirements for cables and multi-core cables;
- reference to EN 60079-11 regarding the termination of intrinsically safe circuits;
- requirements for the assessment of an expanded and clarified intrinsically safe system regarding level of protection "ic", simple apparatus and faults in multi-core cables;
- introduction of predefined systems and merging of the system requirements for FISCO from EN 60079-27;
- addition of requirements for simple intrinsically safe systems containing both lumped inductance and lumped capacitance;
- addition of a method for testing the electrical parameters of cables;
- additional information for the use of simple apparatus in systems.

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

The following dates were fixed:

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|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-07-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2013-10-01 |

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.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60079-25:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60529	NOTE Harmonized as EN 60529.
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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60079-0	-	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-11	2006	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	2007
IEC 60079-14	2007	Explosive atmospheres - Part 14: Electrical installations design, selection and erection	EN 60079-14	2008
IEC 60079-15	-	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"	EN 60079-15	-
IEC 60079-27	2008	Explosive atmospheres - Part 27: Fieldbus intrinsically safe concept (FISCO)	EN 60079-27	2008
IEC 61158-2	-	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	EN 61158-2	-
IEC 61241-0	-	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements	EN 61241-0	-
IEC 61241-11	-	Electrical apparatus for use in the presence of combustible dust - Part 11: Protection by intrinsic safety 'iD'	EN 61241-11	-

Annex ZZ (informative)

Coverage of essential requirements of the directive 94/9/EC

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 safety requirements out of those given in Annex II of the EC Directive 94/9/EC:

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

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

ESR	Equivalent requirement in EN 60079-25:2010
1.0.1	fundamental basis of standard
1.0.2	Fundamental principle of intrinsic safety technique applied throughout this standard and apparatus standard EN 60079-11 and EN 60079-0
1.0.3	Requirement primarily met by apparatus standard EN 60079-11 and the maintenance requirements specified in EN 60079-14 and EN 60079-17.
1.0.4	EN 60079-0 Clause 5, Subclauses 6.1, 6.2, 7.2 and 7.3
1.0.5	Clause 14, EN 60079-0 Clause 29 and Foreword
1.0.6 a	Clause 4
1.1.1	EN 60079-0 Clause 8.1
1.1.3	EN 60079-0 Clause 7, 8, 12
1.2.1	The system and apparatus standards represent the latest state of the art
1.2.2	Requirement met by apparatus standard, EN 60079-0 Clause 13 and clause 13.2 of this standard
1.2.4	Clause 5 also covers Group III, details in EN 60079-0 and EN 60079-11
1.2.6	Covered by EN 60079-11
1.3.1	Sparks and hot surfaces covered in Clause 13 and in EN 60079-11. Other potential ignition sources covered in EN 60079-0
1.3.2	EN 60079-0, Subclause 7.4
1.3.3 to 1.3.5	EN 60079-0
1.4	EN 60079-0 and EN 60079-11
2.0.1 and 2.0.2	'ia' apparatus and systems in accordance with EN 60079-11 and this standard meet the 'two fault' criterion (M1) and 'ib' apparatus and systems in accordance with EN 60079-11 and this standard meet the 'one fault' criterion (M2) and the other criterions
2.1.1 and 2.1.2	'ia' apparatus and systems in accordance with EN 60079-11/EN 61241-11 and this standard meet the 'two fault' criterion (1G and 1D) and the other criterions
2.2.1 and 2.2.2	'ib' apparatus and systems in accordance with EN 60079-11/EN 61241-11 and this standard meet the 'one fault' criterion (2G and 2D) and the other criterions
2.3.1 and 2.3.2	'ic' apparatus and systems in accordance with EN 60079-11/EN 61241-11 and this standard meet the 'safe in normal operation' criterion (3G and 3D) and the other criterions

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EXPLOSIVE ATMOSPHERES –

Part 25: Intrinsically safe electrical systems

1 Scope

This part of IEC 60079 contains the specific requirements for construction and assessment of intrinsically safe electrical systems, type of protection “i”, intended for use, as a whole or in part, in locations in which the use of Group I, II or III apparatus is required.

NOTE 1 This standard is intended for use by the designer of the system who may be a manufacturer, a specialist consultant or a member of the end-user's staff.

This standard supplements and modifies the general requirements of IEC 60079-0 and the intrinsic safety standard IEC 60079-11. Where a requirement of this standard conflicts with a requirement of IEC 60079-0 or IEC 60079-11, the requirement of this standard takes precedence.

This standard supplements IEC 60079-11, the requirements of which apply to electrical apparatus used in intrinsically safe electrical systems.

The installation requirements of Group II or Group III systems designed in accordance with this standard are specified in IEC 60079-14.

NOTE 2 Group I installation requirements are presently not provided in IEC 60079-14.

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 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-11:2006, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”*

IEC 60079-14:2007, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*

IEC 60079-15, *Electrical apparatus for explosive gas atmospheres – Part 15: Construction, test and marking of type of protection “n” electrical apparatus*

IEC 60079-27:2008, *Explosive atmospheres – Part 27: Fieldbus intrinsically safe concept (FISCO)*

IEC 61158-2, *Industrial communication networks – Fieldbus specifications – Part 2: Physical layer specification and service definition*

IEC 61241-0, *Electrical apparatus for use in the presence of combustible dust – Part 0: General requirements*

IEC 61241-11, *Electrical apparatus for use in the presence of combustible dust – Part 11: Protection by intrinsic safety 'iD'*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions, specific to intrinsically safe electrical systems, apply. They supplement the terms and definitions which are given in IEC 60079-0 and IEC 60079-11.

3.1.1

intrinsically safe electrical system

assembly of interconnected items of electrical apparatus, described in a descriptive system document, in which the circuits or parts of circuits, intended to be used in an explosive atmosphere, are intrinsically safe circuits

3.1.2

certified intrinsically safe electrical system

intrinsically safe electrical system conforming to 3.1.1 for which a certificate has been issued confirming that the electrical system complies with IEC 60079-25

3.1.3

uncertified intrinsically safe electrical system

intrinsically safe electrical system conforming to 3.1.1 for which the knowledge of the electrical parameters of the items of certified intrinsically safe electrical apparatus, certified associated apparatus, simple apparatus and the knowledge of the electrical and physical parameters of the interconnecting wiring permit the unambiguous deduction that intrinsic safety is preserved

3.1.4

descriptive system document

document in which the items of electrical apparatus, their electrical parameters and those of the interconnecting wiring are specified

3.1.5

system designer

person who is responsible for the descriptive system document, has the necessary competence to fulfil the task and who is empowered to enter into the commitments on behalf of his employer

3.1.6

maximum cable capacitance

C_c

maximum capacitance of the interconnecting cable that can be connected into an intrinsically safe circuit without invalidating intrinsic safety

3.1.7

maximum cable inductance

L_c

maximum inductance of the interconnecting cable that can be connected into an intrinsically safe circuit without invalidating intrinsic safety