

**Plahvatusohtlikud keskkonnad. Osa 17:
Elektripaigaldiste kontroll ja korrashoid**

**Explosive atmospheres -- Part 17: Electrical installations
inspection and maintenance**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN 60079-17:2014 sisaldab Euroopa standardi EN 60079-17:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 60079-17:2014 consists of the English text of the European standard EN 60079-17:2014.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.03.2014.	Date of Availability of the European standard is 14.03.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English version

**Explosive atmospheres -
Part 17: Electrical installations inspection and maintenance
(IEC 60079-17:2013)**

Atmosphères explosives -
Partie 17: Inspection et entretien des
installations électriques
(CEI 60079-17:2013)

Explosionsgefährdete Bereiche -
Teil 17: Prüfung und Instandhaltung
elektrischer Anlagen
(IEC 60079-17:2013)

This European Standard was approved by CENELEC on 2013-12-24. 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.

CENELEC

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

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

Foreword

The text of document 31J/224/FDIS, future edition 5 of IEC 60079-17, prepared by SC 31J, Classification of hazardous areas and installation requirements, of IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-17:2014.

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) 2014-09-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-12-24

This document supersedes EN 60079-17:2007.

EN 60079-17:2014 includes the following significant technical changes with respect to EN 60079-17:2007:

- Equipment specific inspection tables for luminaires, heating systems and motors have been added into Annex A to supplement the general protection concept tables.
- Document has been updated to complement the changes made to EN 60079-14 for initial inspection.

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.

Endorsement notice

The text of the International Standard IEC 60079-17:2013 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 60079-5	NOTE	Harmonised as EN 60079-5.
IEC 60079-6	NOTE	Harmonised as EN 60079-6.
IEC 60079-18	NOTE	Harmonised as EN 60079-18.
IEC 60079-26	NOTE	Harmonised as EN 60079-26.
IEC 60079-28	NOTE	Harmonised as EN 60079-28.
IEC 60204-1	NOTE	Harmonised as EN 60204-1.

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	9
4 General requirements	11
4.1 Documentation.....	11
4.2 Qualification of personnel	11
4.3 Inspections	11
4.3.1 General	11
4.3.2 Grades of inspection.....	12
4.3.3 Types of inspection.....	13
4.4 Periodic inspections	13
4.4.1 Personnel.....	13
4.4.2 Fixed installations.....	13
4.4.3 Movable equipment.....	14
4.5 Continuous supervision by skilled personnel	14
4.5.1 Concept.....	14
4.5.2 Objectives	14
4.5.3 Responsibilities	15
4.5.4 Frequency of inspection.....	15
4.5.5 Documents	16
4.5.6 Training	16
4.6 Maintenance requirements.....	16
4.6.1 Remedial measures and alterations to equipment.....	16
4.6.2 Maintenance of flexible cables.....	17
4.6.3 Withdrawal from service.....	17
4.6.4 Fastenings and tools.....	17
4.7 Environmental conditions	17
4.8 Isolation of equipment.....	18
4.8.1 Installations other than intrinsically safe circuits	18
4.8.2 Intrinsically safe installations live maintenance	19
4.9 Earthing and equipotential bonding	20
4.10 Specific conditions of use	20
4.11 Movable equipment and its connections.....	20
4.12 Inspection schedules (Tables 1 to 3).....	20
4.12.1 General	20
4.12.2 Equipment is appropriate to the EPL/zone requirements of the location.....	20
4.12.3 Equipment group	20
4.12.4 Equipment maximum surface temperature	20
4.12.5 Equipment circuit identification	20
4.12.6 Cable gland	21
4.12.7 Type of cable.....	21
4.12.8 Sealing	21

	4.12.9	Fault loop impedance or earthing resistance	21
	4.12.10	Insulation resistance	21
	4.12.11	Overload protection	21
	4.12.12	Lamps and luminaires	21
5		Additional inspection schedule requirements	22
	5.1	Type of protection “d” – Flameproof enclosure (see Table 1 and IEC 60079-1)	22
	5.2	Type of protection “e” – Increased safety (see Table 1 and IEC 60079-7)	22
	5.3	Type of protection “i” – Intrinsic safety (see Table 2 and IEC 60079-11).....	22
	5.3.1	General	22
	5.3.2	Documentation	22
	5.3.3	Labelling.....	23
	5.3.4	Unauthorized modifications.....	23
	5.3.5	Associated apparatus (safety interface) between intrinsically safe and non-intrinsically safe circuits	23
	5.3.6	Cables	23
	5.3.7	Cable screens.....	23
	5.3.8	Point-to-point connections	23
	5.3.9	Earth continuity of non-galvanically isolated circuits	23
	5.3.10	Earth connections to maintain the integrity of the intrinsic safety	24
	5.3.11	Intrinsically safe circuit earthing and/or insulation	24
	5.3.12	Separation between intrinsically safe and non-intrinsically safe circuits	24
	5.4	Type of protection “p” and “pD” – Pressurized enclosure (see Table 3, IEC 60079-2 and IEC 61241-4)	24
	5.5	Type of protection “n” (see Table 1 or 2 and IEC 60079-15).....	24
	5.5.1	General	24
	5.5.2	Restricted breathing enclosures	25
	5.6	Type of protection “t” and “tD” – Protection by enclosure (see Table 1 and IEC 60079-31 and IEC 61241-1)	25
	5.7	Types of protection “m” and “mD” (encapsulation), “o”, (oil-immersion) “op” (optical radiation) and “q” (powder-filling).....	25
6		Inspection tables	25
		Annex A (informative) Typical inspection procedure for periodic inspections	30
		Annex B (normative) Knowledge, skills and competencies of responsible persons, technical persons with executive function and operatives.....	31
	B.1	Scope	31
	B.2	Knowledge and skills	31
	B.2.1	Responsible persons and technical persons with executive function	31
	B.2.2	Operative/technician (inspection and maintenance)	31
	B.3	Competencies	32
	B.3.1	General	32
	B.3.2	Responsible persons and technical persons with executive function	32
	B.3.3	Operative/technician	32
	B.4	Assessment	32
		Annex C (informative) Fitness-for-purpose assessment	33
	C.1	Background.....	33

C.2	Need for a fitness-for-purpose assessment	33
C.3	Approach	33
C.4	Ignition sources	33
C.5	Contents of the fitness-for-purpose assessment.....	33
C.5.1	General	33
C.5.2	Scope	33
C.5.3	Equipment and its application	34
C.5.4	Description	34
C.5.5	Function of the product including the location	34
C.5.6	Specification	34
C.5.7	Standards compliance	34
C.5.8	Documents	35
C.5.9	Product sample.....	35
C.5.10	Equipment label.....	35
C.5.11	Training of personnel.....	35
Annex D (informative)	Example of motor checks	36
Bibliography.....		37
Figure A.1	– Typical inspection procedure for periodic inspections.....	30
Table 1	– Inspection schedule for Ex “d”, Ex “e”, Ex “n” and Ex “t/tD”	25
Table 2	– Inspection schedule for Ex “i” installations.....	28
Table 3	– Inspection schedule for Ex “p” and “pD” installations	29

This document is a Preview generated by EVS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –**Part 17: Electrical installations inspection and maintenance**

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 60079-17 has been prepared by subcommittee 31J: Classification of hazardous areas and installation requirements, of IEC technical committee 31: Equipment for explosive atmospheres.

This fifth edition cancels and replaces the fourth edition published in 2007 and constitutes a technical revision.

The significant technical changes with respect to the previous edition are as follows:

- Equipment specific inspection tables for luminaires, heating systems and motors have been added into Annex A to supplement the general protection concept tables.
- Document has been updated to complement the changes made to IEC 60079-14 for initial inspection.

The text of this standard is based on the following documents:

FDIS	Report on voting
31J/224/FDIS	31J/229/RVD

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

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

This International Standard is to be used in conjunction with IEC 60364-6.

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

The committee has decided that the contents of this publication 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.

INTRODUCTION

Electrical installations in hazardous areas possess features specially designed to render them suitable for operations in such atmospheres. It is essential for reasons of safety in those areas that, throughout the life of such installations, the integrity of those special features is preserved. This standard provides the details for initial inspection and on-going inspections as either;

- a) regular periodic inspections thereafter, or,
- b) continuous supervision by skilled personnel.

When necessary, maintenance may also be needed.

Correct functional operation of hazardous area installations does not mean, and should not be interpreted as meaning, that the integrity of the special features referred to above is preserved.

Inspections are carried out in accordance with this standard, however for older installations the details for the equipment and installations requirements should be referenced to the standards applied at the date of the installation.

NOTE Standards applied at the date of installation may not have been IEC standards.

EXPLOSIVE ATMOSPHERES –

Part 17: Electrical installations inspection and maintenance

1 Scope

This part of the IEC 60079 series applies to users and covers factors directly related to the inspection and maintenance of electrical installations within hazardous areas only, where the hazard may be caused by flammable gases, vapours, mists, dusts, fibres or flyings.

It does not include:

- other fundamental installation and inspection requirements for electrical installations;
- the verification of electrical equipment;
- the repair and reclamation of explosion protected equipment (see IEC 60079-19).

This standard supplements the requirements of IEC 60364-6.

In the case of dusts, fibres or flyings the level of housekeeping may influence the inspection and maintenance requirements.

This standard is intended to be applied where there can be a risk due to the presence of explosive gas or dust mixtures with air or combustible dust layers under normal atmospheric conditions. It does not apply to:

- underground mining areas,
- dusts of explosives that do not require atmospheric oxygen for combustion,
- pyrophoric substances.

2 Normative references

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.

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

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

IEC 60079-2, *Explosive atmospheres – Part 2: Equipment protection by pressurized enclosures "p"*

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

IEC 60079-10-1, *Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres*

IEC 60079-10-2, *Explosive atmospheres – Part 10-2: Classification of areas – Combustible dust atmospheres*

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

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

IEC 60079-15, *Explosive atmospheres – Part 15: Equipment protection by type of protection "n"*

IEC 60079-19, *Explosive atmospheres – Part 19: Equipment repair, overhaul and reclamation*

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

IEC 60364-6, *Low-voltage electrical installations – Part 6: Verification*

IEC 61241-4, *Electrical apparatus for combustible dust atmospheres – Part 4: Type of protection "pD"*

3 Terms and definitions

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

NOTE Additional definitions applicable to explosive atmospheres can be found in IEC 60050-426.

3.1

close inspection

inspection which encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, such as loose bolts, which will be apparent only by the use of access equipment

EXAMPLE Steps, (where necessary), and tools.

Note 1 to entry: Close inspections do not normally require the enclosure to be opened, or the equipment to be de-energized.

3.2

continuous supervision

frequent attendance, inspection, service, care and maintenance of the electrical installation by skilled personnel who have experience in the specific installation and its environment in order to maintain the explosion protection features of the installation in satisfactory condition

3.3

detailed inspection

inspection which encompasses those aspects covered by a close inspection and, in addition, identifies those defects, such as loose terminations, which will only be apparent by opening the enclosure, and/or using, where necessary, tools and test equipment

3.4

hazardous area

area in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of equipment

Note 1 to entry: For the purposes of this standard, an area is a three-dimensional region or space.