



UL 60079-17

STANDARD FOR SAFETY

Explosive Atmospheres – Part 17: Electrical
Installations Inspection and Maintenance

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UL Standard for Safety for Explosive Atmospheres – Part 17: Electrical Installations Inspection and Maintenance, UL 60079-17

Fifth Edition, Dated May 12, 2017

Summary of Topics

Adoption of IEC 60079-17, Explosive Atmospheres – Part 17: Electrical Installations Inspection and Maintenance (fifth edition issued by IEC November 2013) as a new IEC-based UL standard, UL 60079-17 (IEC 60079-17:2013) with US Differences.

The requirements are substantially in accordance with Proposal(s) on this subject dated July 15, 2016 and February 17, 2017.

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ANSI/UL 60079-17-2017

UL 60079-17

Standard for Explosive Atmospheres – Part 17: Electrical Installations

Inspection and Maintenance

Fifth Edition

May 12, 2017

This ANSI/UL Standard for Safety consists of the Fifth Edition.

The most recent designation of ANSI/UL 60079-17 as an American National Standard (ANSI) occurred on May 12, 2017. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page or Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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Preface (UL)

This UL Standard is based on IEC Publication 60079-17: fifth edition Explosive atmospheres – Part 17: Electrical installations inspection and maintenance. IEC publication 60079-17 is copyrighted by the IEC.

Efforts have been made to synchronize the UL edition number with that of the corresponding IEC standard with which this standard is harmonized. As a result, one or more UL edition numbers have been skipped to match that of the IEC edition number.

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Note – Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

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National Differences from the text of International Electrotechnical Commission (IEC) Publication 60079-17, Explosive Atmospheres – Part 17: Equipment Installations Inspection and Maintenance, copyright 2013 are indicated by notations (differences) and are presented within the body of the UL printed standard in bold text using legislative mark-ups (strike-out and underline).

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are national differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

DR – These are National Differences based on the **national regulatory requirements**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

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 nongovernmental 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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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.

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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

1DV DR Modification of Clause 1 to replace with the following:

This ~~part of the IEC 60079 standard 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 NFPA 70B~~.

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.

Where references are made to other IEC 60079 standards, the reference requirements found in these standards apply as modified by any applicable U.S. National Differences.

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.

2DV DR Modification of Clause 2 references to replace with the following:

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"~~

ISA 60079-10-1, Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres

ISA 60079-10-2, Explosive atmospheres — Part 10-2: Classification of areas — Combustible dust atmospheres

ISA 60079-29-1 (12.13.01), Explosive atmospheres — Part 29-1: Gas Detectors — Performance Requirements for Detectors for Flammable Gases

NFPA 70, National Electrical Code

NFPA 70B, Recommended Practice for Electrical Equipment Maintenance

NFPA 70E, Standard for Electrical Safety in the Workplace

UL 121203 Portable Electronic products suitable for use in Class I and II, Division 2, Class I, Zone 2 and Class III, Division 1 and 2 hazardous (classified) locations

UL 60079-0 Explosive atmospheres — Part 0: Equipment — General requirements

UL 60079-1 Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"

UL 60079-2 Explosive atmospheres — Part 2: Equipment protection by pressurized enclosures "p"

UL 60079-7 Explosive atmospheres — Part 7: Equipment protection by increased safety "e"

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UL 60079-11 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"

UL 60079-15 Explosive atmospheres – Part 15: Equipment protection by type of protection "n"

UL 60079-31 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "d"

3 Terms and definitions

3DV DR Modification of the first paragraph and NOTE, to replace with the following:

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

3.4DV DR Modification of Clause 3.4 to add the following Note 2 after Note 1:

Note 2 to entry: The National Electrical Code defines hazardous areas as hazardous (classified) locations.

3.5

initial inspection

inspection of all electrical equipment, systems and installations before they are brought into service

3.6

inspection

action comprising careful scrutiny of an item carried out either without dismantling, or with the addition of partial dismantling as required, supplemented by means such as measurement, in order to arrive at a reliable conclusion as to the condition of an item

3.7

maintenance

combination of any actions carried out to retain an item in, or restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required functions

3.8

live maintenance

maintenance activities carried out while circuits are energized

3.9

non-hazardous area

area in which an explosive atmosphere is not expected to be present in quantities such as to require special precautions for the construction, installation and use of equipment

3.9DV DR Modification of Clause 3.9 to add the following Note:

Note to entry: The National Electrical Code refers to non-hazardous areas as unclassified locations.

3.10

periodic inspection

inspection of all electrical equipment, systems and installations carried out on a routine basis

3.11

sample inspection

inspection of a representative proportion of the electrical equipment, systems and installations

3.12

skilled personnel

persons whose training has included instruction on the various types of protection and installation practices, the requirements of this standard, the relevant national regulations/company rules applicable to the installation and on the general principles of area classification

3.13

technical person with executive function

person providing technical management of the skilled personnel, having adequate knowledge in the field of explosion protection, having familiarity with the local conditions, having familiarity with the installation and who has overall responsibility and control of the inspection systems for the electrical equipment within hazardous areas