

**AMERICAN NATIONAL STANDARD**

**ANSI/ISA-60079-7 (12.16.01)-2008 (R2013)**  
**Supercedes ANSI/ISA-60079-7 (12.16.01)-2002**

**Explosive Atmospheres - Part 7:  
Equipment protection by increased safety "e"**

**Approved 31 May 2013**

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This standard is issued jointly by ISA and Underwriters Laboratories Incorporated (UL). Comments or proposals for revisions on any part of the standard may be submitted to ISA or UL at any time. Revisions to this standard will be made only after processing according to the standards development procedures of ISA and UL. ***ISA and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue.***

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This ANSI/UL Standard for Safety, which consists of the fourth edition, is under continuous maintenance, whereby each revision is ANSI approved upon publication. 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 <http://csds.ul.com>.

**ISA**  
**ANSI/ISA-60079-7**  
*Fourth Edition*

**Underwriters Laboratories Inc.**  
**ANSI/UL 60079-7**  
*Fourth Edition*



**Explosive Atmospheres - Part 7:  
Equipment protection by increased safety "e"**

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## General Notes

This is the common ISA and UL standard for Explosive Atmospheres - Part 7: Equipment protection by increased safety "e". It is the fourth edition of ANSI/ISA-60079-7 and the fourth edition of ANSI/UL 60079-7. The document is a modification of the IEC document and includes U.S. deviations encompassing both additions and deletions of information.

ANSI/ISA-60079-7 and ANSI/UL 60079-7 contain identical requirements, and identical publication dates. The presentation and format of the standards material may differ between the two published standards.

This common standard was prepared by ISA and Underwriters Laboratories Inc. (UL).

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.

### Level of harmonization

This standard adopts the IEC text with deviations.

The requirements are presented in different formats. The ISA version of the standard illustrates the national differences from the IEC text through the use of legislative text (strike-out and underline). The UL version of the standard illustrates national differences immediately following the IEC text. National differences between the UL version and the ISA version shall be word for word except for editorial changes.

### Interpretations

The interpretation by the SDO of an identical or equivalent standard shall be based on the literal text to determine compliance with the standard in accordance with the procedural rules of the SDO. If more than one interpretation of the literal text has been identified, a revision shall be proposed as soon as possible to each of the SDOs to more accurately reflect the intent.

### UL Effective Date

The requirements in this standard are effective 15 October 2011.

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## Preface

This ISA standard is based on IEC Publication 60079-7. It is the intention of the ISA12 Committee to develop an ANSI Standard that is harmonized with IEC 60079-7 to the fullest extent possible.

This preface, as well as all footnotes and annexes, is included for information purposes and is not part of ANSI/ISA-60079-7 (12.16.01)-2008 (R2013).

The standards referenced within this document may contain provisions which, through reference in this text, constitute requirements of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the standards indicated within this document. Members of IEC and ISO maintain registers of currently valid International Standards. ANSI maintains registers of currently valid U.S. National Standards.

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This standard was approved for publication by the ISA Standards and Practices Board on 2 April 2013.

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## National Differences

### GENERAL

In the UL publication of this standard, National Differences from the text of International Electrotechnical Commission (IEC) Publication 60079-7, Explosive atmospheres - Part 7: Equipment protection by increased safety "e", copyright 2006, are indicated by notations (differences) and are presented in bold text.

In the ISA publication of this standard, National Differences are presented using legislative text (strike-out and underline). The national difference type is identified in an informative annex.

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 based on **safety practices**. These are differences for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

**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 or figure. 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 or figure 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, or figure of the base IEC text.

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## Foreword

The entire text of IEC 60079-7:2006 is included in this document. U.S. National Deviations are shown by ~~strikeout~~ through deleted text and underlining of added text. There are ten annexes in this standard. Annexes A and B are normative and form part of the requirements of this standard. Annexes C, D, E, F, G, H, I, J, and K are informative and are not considered part of this standard.

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## 1 Scope

This ~~part of IEC 60079 standard~~ specifies the requirements for the design, construction, testing and marking of electrical apparatus with type of protection increased safety "e" intended for use in Class I, Zone 1 hazardous (classified) locations explosive gas atmospheres. This standard applies to electrical apparatus where the rated voltage does not exceed 11 kV r.m.s. a.c. or d.c. Additional measures are applied to ensure that the apparatus does not produce arcs, sparks, or excessive temperatures in normal operation or under specified abnormal conditions.

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

NOTE Increased safety "e" can provide Equipment Protection Levels (EPL) Mb or Gb. For further information, see Annex I.

## 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 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-5, *Rotating electrical machines – Part 5: Degrees of protection provided by the internal design of rotating electrical machines (IP code) – Classification*

IEC 60044-6, *Instrument transformers – Part 6: Requirements for protective current transformers for transient performance*

IEC 60050(426), *International Electrotechnical Vocabulary (IEV) – Chapter 426: Electrical apparatus for explosive atmospheres*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders*

IEC 60064, *Tungsten filament lamps for domestic and similar general lighting purposes – Performance requirements*

IEC 60068-2-6, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60068-2-42, *Environmental testing – Part 2-42: Tests – Test Kc: Sulphur dioxide test for contacts and connections*

~~IEC 60079-0:2004, *Electrical apparatus for explosive gas atmospheres – Part 0: General requirements*~~