



NSAI
Standards

Irish Standard
I.S. EN 60079-0:2012

Explosive atmospheres -- Part 0: Equipment - General requirements (IEC 60079-0:2011 (MOD))

I.S. EN 60079-0:2012

Incorporating amendments/corrigenda issued since publication:

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

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NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60079-0/A11

November 2013

ICS 29.260.20

English version

Explosive atmospheres -
Part 0: Equipment -
General requirements

Atmosphères explosives -
Partie 0: Matériel -
Exigences générales

Explosionsgefährdete Bereiche -
Teil 0: Betriebsmittel – Allgemeine
Anforderungen

This amendment A11 modifies the European Standard EN 60079-0:2012; it was approved by CENELEC on 2013-10-07. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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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

This document (EN 60079-0:2012/A11:2013) has been prepared by CLC/TC 31, "Electrical apparatus for potentially explosive atmospheres".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-10-07
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2016-10-07

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 94/9/EC.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60079-0

August 2012

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Supersedes EN 60079-0:2009

English version

Explosive atmospheres -
Part 0: Equipment -
General requirements
(IEC 60079-0:2011, modified)

Atmosphères explosives -
Partie 0: Matériel -
Exigences générales
(CEI 60079-0:2011, modifiée)

Explosionsgefährdete Bereiche -
Teil 0: Betriebsmittel – Allgemeine
Anforderungen
(IEC 60079-0:2011, modifiziert)

This European Standard was approved by CENELEC on 2012-04-02. 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.

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

This document (EN 60079-0:2012) consists of the text of IEC 60079-0:2011 prepared by IEC/TC 31 "Equipment for explosive atmospheres", together with the common modifications prepared by CLC/TC 31 "Electrical apparatus for potentially explosive atmospheres".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2013-04-02
at national level by publication of an identical
national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2015-04-02
with this document have to be withdrawn

This document supersedes EN 60079-0:2009.

The State of the Art is included in Annex ZY "Significant changes between this European Standard and EN 60079-0:2009".

For the significant changes with respect to EN 60079-0:2009, see Annex ZY.

Annexes which are additional to those in IEC 60079-0:2011 are prefixed "Z".

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 94/9/EC.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 60079-0:2011 was approved by CENELEC as a European Standard with agreed common modifications.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC/TS 60034-17	NOTE Harmonized as CLC/TS 60034-17.
IEC/TS 60034-25	NOTE Harmonized as CLC/TS 60034-25.
IEC 60034-29	NOTE Harmonized as EN 60034-29.
IEC 60079-10-1	NOTE Harmonized as EN 60079-10-1.
IEC 60079-10-2	NOTE Harmonized as EN 60079-10-2.
IEC 60079-14	NOTE Harmonized as EN 60079-14.
IEC 60079-17	NOTE Harmonized as EN 60079-17.
IEC 60079-19	NOTE Harmonized as EN 60079-19.
IEC 60079-27	NOTE Harmonized as EN 60079-27.
ISO/IEC 17000	NOTE Harmonized as EN ISO/IEC 17000.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –

Part 0: Equipment – General requirements

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 60079-0 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This sixth edition cancels and replaces the fifth edition, published in 2007, and constitutes a full technical revision.

The significant changes with respect to the previous edition are listed below:

- Relocation of definitions for energy limitation parameters to IEC 60079-11
- Addition of note to clarify that the non-metallic “enclosure” requirements are applied to other than “enclosures” by some of the subparts
- Expansion of material specification data for plastics and elastomers, including UV resistance
- Addition of alternative qualification for O-rings
- Addition of alternative criteria for surface resistance

- Addition of breakdown voltage limit for non-metallic layers applied to metallic enclosures
- Expansion of “X” marking options for non-metallic enclosure materials not meeting basic electrostatic requirements
- Clarification that non-metallic enclosure requirements also apply to painted or coated metal enclosures
- Clarification of test to determine capacitance of accessible metal parts with reduction in acceptable capacitance
- Addition of limits on zirconium content for Group III and Group II (Gb only) enclosures
- Introduction of “X” marking for Group III enclosures not complying with basic material requirements, similar to that existing for Group II
- Addition of button-head cap screws to permitted “Special Fasteners”
- Reference for protective earthing (PE) requirements for electrical machines to IEC 60034-1
- Clarification of terminology for cable glands, blanking elements, and thread adapters
- Addition of requirements for ventilating fans
- Addition of alternative construction for disconnectors
- Removal of voltage limits on plugs and sockets
- Addition of test requirements for arc-quenching test on plugs and sockets
- Update of cell and battery information to reflect latest standards
- Revision to impact test of glass parts
- Revision to impact test procedure to address “bounce” of impact head
- Clarification of the test requirements for “service” and “surface” temperature
- Addition of temperature rise tests for converter-fed motors
- Addition of alternative test method for thermal endurance
- Removal of “charging test” and addition of note providing guidance
- Clarification of test for the measurement of capacitance
- Addition of a “Schedule of Limitations” to certificates for Ex Components
- Clarification of the marking for multiple temperature classes
- Addition of marking for converter-fed motors
- Removal of IP marking for Group III
- Addition of specific instructions for electrical machines
- Addition of specific instructions for ventilating fans
- Update to informative Annex D on converter-fed motors
- Update to informative Annex E on temperature testing of motors
- Addition of informative Annex F, flowchart for testing of non-metallic enclosures and non-metallic parts of enclosures

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

FDIS	Report on voting
31/922/FDIS	31/939/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.

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

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of a new edition.

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.

The contents of the corrigendum of November 2012 have been included in this copy.

EXPLOSIVE ATMOSPHERES –

Part 0: Equipment – General requirements

1 Scope

This part of IEC 60079 specifies the general requirements for construction, testing and marking of electrical equipment and Ex Components intended for use in explosive atmospheres.

The standard atmospheric conditions (relating to the explosion characteristics of the atmosphere) under which it may be assumed that electrical equipment can be operated are:

- temperature -20 °C to $+60\text{ °C}$;
- pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar); and
- air with normal oxygen content, typically 21 % v/v.

This standard and other standards supplementing this standard specify additional test requirements for equipment operating outside the standard temperature range, but further additional consideration and additional testing may be required for equipment operating outside the standard atmospheric pressure range and standard oxygen content, particularly with respect to types of protection that depend on quenching of a flame such as 'flameproof enclosure "d"' (IEC 60079-1) or limitation of energy, 'intrinsic safety "i"' (IEC 60079-11).

NOTE 1 Although the standard atmospheric conditions above give a temperature range for the atmosphere of -20 °C to $+60\text{ °C}$, the normal ambient temperature range for the equipment is -20 °C to $+40\text{ °C}$, unless otherwise specified and marked. See 5.1.1. It is considered that -20 °C to $+40\text{ °C}$ is appropriate for most equipment and that to manufacture all equipment to be suitable for a standard atmosphere upper ambient temperature of $+60\text{ °C}$ would place unnecessary design constraints.

NOTE 2 Requirements given in this standard result from an ignition hazard assessment made on electrical equipment. The ignition sources taken into account are those found associated with this type of equipment, such as hot surfaces, mechanically generated sparks, mechanical impacts resulting in thermite reactions, electrical arcing and static electric discharge in normal industrial environments.

NOTE 3 It is acknowledged that, with developments in technology, it may be possible to achieve the objectives of the IEC 60079 series of standards in respect of explosion prevention by methods that are not yet fully defined. Where a manufacturer wishes to take advantage of such developments, this International Standard, as well as other standards in the IEC 60079 series, may be applied in part. It is intended that the manufacturer prepare documentation that clearly defines how the IEC 60079 series of standards has been applied, together with a full explanation of the additional techniques employed. The designation "Ex s" has been reserved to indicate special protection. A standard for special protection "s", IEC 60079-33, is in preparation.

NOTE 4 Where an explosive gas atmosphere and a combustible dust atmosphere are, or may be, present at the same time, the simultaneous presence of both should be considered and may require additional protective measures.

This standard does not specify requirements for safety, other than those directly related to the explosion risk. Ignition sources like adiabatic compression, shock waves, exothermic chemical reaction, self ignition of dust, naked flames and hot gases/liquids, are not addressed by this standard.

NOTE 5 Such equipment should be subjected to a hazard analysis that identifies and lists all of the potential sources of ignition by the electrical equipment and the measures to be applied to prevent them becoming effective.

This standard is supplemented or modified by the following standards concerning specific types of protection:

- IEC 60079-1: Gas – Flameproof enclosures "d";
- IEC 60079-2: Gas – Pressurized enclosures "p";

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- IEC 60079-5: Gas – Powder filling "q";
- IEC 60079-6: Gas – Oil immersion "o";
- IEC 60079-7: Gas – Increased safety "e";
- IEC 60079-11: Gas – Intrinsic safety "i";
- IEC 60079-15: Gas – Type of protection "n";
- IEC 60079-18: Gas and dust – Encapsulation "m";
- IEC 60079-31: Dust – Protection by enclosure "t"
- IEC 61241-4: Dust – Pressurization "pD".

NOTE 6 Additional information on types of protection for non-electrical equipment can be found in ISO/IEC 80079-36 (to be published).

This standard is supplemented or modified by the following equipment standards:

IEC 60079-13: Explosive atmospheres – Part 13: Equipment protection by pressurized room "p"

IEC 60079-25: Explosive atmospheres – Part 25: Intrinsically safe electrical systems

IEC 60079-26: Explosive atmospheres – Part 26: Equipment with equipment protection level (EPL) Ga

IEC 60079-28: Explosive atmospheres – Part 28: Protection of equipment and transmission systems using optical radiation

IEC 62013-1: Caplights for use in mines susceptible to firedamp – Part 1: General requirements – Construction and testing in relation to the risk of explosion

IEC 60079-30-1: Explosive atmospheres – Part 30-1: Electrical resistance trace heating – General and testing requirements.

This standard with the additional standards mentioned above, are not applicable to the construction of

- electromedical apparatus,
- shot-firing exploders,
- test devices for exploders, and
- shot-firing circuits.

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: Classification of degrees of protection provided by the enclosures of rotating electrical machines (IP Code)*

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

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