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Irish Standard
I.S. EN 60079-15:2010

Explosive atmospheres -- Part 15: Equipment protection by type of protection n (IEC 60079-15:2010 (EQV))

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Incorporating amendments/corrigenda issued since publication:

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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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EN 60079-15

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Supersedes EN 60079-15:2005

English version

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

(IEC 60079-15:2010)

Atmosphères explosives - Partie 15: Protection du matériel par mode de protection "n" (CEI 60079-15:2010)

Explosionsfähige Atmosphäre - Teil 15: Geräteschutz durch Zündschutzart "n" (IEC 60079-15:2010)

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CENELEC

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

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Ref. No. EN 60079-15:2010 E

Foreword

The text of document 31/833/FDIS, future edition 4 of IEC 60079-15, prepared by IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-15 on 2010-05-01.

This European Standard supersedes EN 60079-15:2005.

The significant technical changes with respect to EN 60079-15:2005 are as follows:

– addition of equipment protection levels;

– removal of the requirements for energy-limited “nL” and associated energy limited apparatus “[nL]”;

– removal of the requirements for encapsulated Devices “nC”;

– requirements for electrical connections expanded and clarified;

– requirements for luminaire ballasts expanded and clarified;

– requirements for evaluation and testing of motor rotors clarified;

– 15 kV limit for equipment protection by type of protection "n" added;

– spacing requirement for voltages above 10 kV modified;

– requirements for restricted breathing enclosures modified;

– modification to requirements for motor rotors and stators;

– addition of Annex A (informative);

– undated references to IEC 60079-0 included.

This standard is to be used in conjunction with EN 60079-0.

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:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-05-01

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, ZY and ZZ have been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60079-15:2010 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 60034-5	NOTE	Harmonized as EN 60034-5.
IEC/TS 60034-17	NOTE	Harmonized as CLC/TS 60034-17.
IEC 60068-2-6	NOTE	Harmonized as EN 60068-2-6.
IEC 60079-7:2006	NOTE	Harmonized as EN 60079-7:2007 (not modified).
IEC 60079-17	NOTE	Harmonized as EN 60079-17.
IEC 60079-18	NOTE	Harmonized as EN 60079-18.
IEC 60079-29-2	NOTE	Harmonized as EN 60079-29-2.
IEC 60297 series	NOTE	Harmonized in EN 60297 series (not modified).

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –

Part 15: Equipment protection by type of protection "n"

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 60079-15 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This fourth edition cancels and replaces the third edition, published in 2005, and constitutes a technical revision.

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

- addition of equipment protection levels;
- removal of the requirements for energy-limited "nL" and associated energy limited apparatus "[nL]";
- removal of the requirements for encapsulated Devices "nC";
- requirements for electrical connections expanded and clarified;
- requirements for luminaire ballasts expanded and clarified;
- requirements for evaluation and testing of motor rotors clarified;

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– 15 kV limit for equipment protection by type of protection "n" added;
– spacing requirement for voltages above 10 kV modified;
– requirements for restricted breathing enclosures modified;
– modification to requirements for motor rotors and stators;
– addition of Annex A (informative);
– undated references to IEC 60079-0 included.

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

FDIS	Report on voting
31/833/FDIS	31/853/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 International Standard is to be read in conjunction with IEC 60079-0.

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: *Explosives atmospheres*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

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EXPLOSIVE ATMOSPHERES –

Part 15: Equipment protection by type of protection "n"

1 Scope

This part of IEC 60079 specifies requirements for the construction, testing and marking for Group II electrical equipment with type of protection, "n" intended for use in explosive gas atmospheres. This standard applies to electrical equipment where the rated voltage does not exceed 15 kV r.m.s. a.c. or d.c.

This part of IEC 60079 is applicable to non-sparking electrical equipment and also to electrical equipment with parts or circuits producing arcs or sparks or having hot surfaces which, if not protected in one of the ways specified in this standard, could be capable of igniting a surrounding explosive gas atmosphere. This standard describes several different methods by which this can be achieved which may be combined with other methods described in IEC 60079-0.

This standard supplements and modifies the general requirements of IEC 60079-0, except as indicated in Table 1. Where a requirement of this standard conflicts with a requirement of IEC 60079-0, the requirement of this standard takes precedence.

Table 1 – Relationship of this part to IEC 60079-0

Clause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-15		
Ed. 5.0 (2007) (informative)	**Ed. 6.0[1] (future edition)** (informative)	**Clause / Subclause title** (normative)	**Protected sparking nC**	**Non sparking nA**	**Restricted breathing nR**
4	4	Equipment grouping	Applies	Applies	Applies
4.1	4.1	Group I	Excluded	Excluded	Excluded
4.2	4.2	Group II	Applies	Applies	Applies
4.3	4.3	Group III	Excluded	Excluded	Excluded
4.4	4.4	Equipment for a particular explosive atmosphere	Applies	Applies	Applies
5.1	5.1	Environmental influences	Applies	Applies	Applies
5.1.1	5.1.1	Ambient temperature	Applies	Applies	Applies
5.1.2	5.1.2	External source of heating or cooling	Applies	Applies	Applies
5.2	5.2	Service temperature	Applies	Applies	Applies
5.3.1	5.3.1	Determination of maximum surface temperature	Applies	Applies	Applies
5.3.2.1	5.3.2.1	Group I electrical equipment	Excluded	Excluded	Excluded

[1] Under consideration.

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Clause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-15		
Ed. 5.0 (2007) (informative)	**Ed. 6.0[1] (future edition)** (informative)	**Clause / Subclause title** (normative)	**Protected sparking nC**	**Non sparking nA**	**Restricted breathing nR**
5.3.2.2	5.3.2.2	Group II electrical equipment	Applies	Applies	Applies
5.3.2.3	5.3.2.3	Group III electrical equipment	Excluded	Excluded	Excluded
5.3.3	5.3.3	Small component temperature for Group I and Group II electrical equipment	Applies	Applies	Excluded
6.1	6.1	General	Applies	Applies	Applies
6.2	6.2	Mechanical strength	Applies	Applies	Applies
6.3	6.3	Opening times	Excluded	Excluded	Applies
6.4	6.4	Circulating currents	Applies	Applies	Applies
6.5	6.5	Gasket retention	Applies	Applies	Applies
6.6	6.6	Electromagnetic and ultrasonic radiating equipment	Applies	Applies	Applies
7.1.1	7.1.1	Applicability	Applies	Applies	Applies
7.1.2	7.1.2	Specification of materials	Applies	Applies	Applies
7.1.3	7.1.2.2	Plastic materials	Applies	Applies	Applies
7.1.4	7.1.2.3	Elastomeric materials	Applies	Applies	Applies
7.2	7.2	Thermal endurance	Applies	Applies	Applies
7.3	7.3	Resistance to light	Applies	Applies	Applies
7.4	7.4	Electrostatic charges on external non-metallic materials	Applies	Applies	Applies
7.5	9.1	Threaded holes	Applies	Applies	Applies
8.1.1	8.2	Group I	Excluded	Excluded	Excluded
8.1.2	8.3	Group II	Applies	Applies	Applies
8.1.3	8.4	Group III	Excluded	Excluded	Excluded
8.2	9.1	Threaded holes	Applies	Applies	Applies
9.1	9.1	General	Applies	Applies	Applies
9.2	9.2	Special fasteners	Excluded	Excluded	Excluded
9.3	9.3	Holes for special fasteners	Excluded	Excluded	Excluded
10	10	Interlocking devices	Excluded	Excluded	Excluded
11	11	Bushings	Applies	Applies	Applies
12	12	Materials used for cementing	Modified	Modified	Modified
13	13	Ex components	Applies	Applies	Applies
14	14	Connection facilities and termination compartments	Modified	Modified	Modified
15	15	Connection facilities for earthing and bonding conductors	Applies	Applies	Applies

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Clause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-15		
Ed. 5.0 (2007) (informative)	**Ed. 6.0[1] (future edition)** (informative)	**Clause / Subclause title** (normative)	**Protected sparking nC**	**Non sparking nA**	**Restricted breathing nR**
16	16	Entries into enclosures	Applies	Applies	Applies
17	17	Supplementary requirements for rotating electrical machines	Excluded	Modified	Excluded
18	18	Supplementary requirements for switchgear	Applies	Applies	Applies
19	19	Supplementary requirements for fuses	Modified	Modified	Modified
20	20	Supplementary requirements for plugs and sockets	Modified	Modified	Modified
21	21	Supplementary requirements for luminaires	Modified	Modified	Modified
22	22	Supplementary requirements for caplights and handlights	Applies	Applies	Applies
23	23	Equipment incorporating cells and batteries	Modified	Modified	Modified
24	24	Documentation	Applies	Applies	Applies
25	25	Compliance of prototype or sample with documents	Applies	Applies	Applies
26.1	26.1	General	Applies	Applies	Applies
26.2	26.2	Test configuration	Applies	Applies	Applies
26.3	26.3	Tests in explosive test mixtures	Applies	Applies	Applies
26.4	26.4	Tests of enclosures	Applies	Applies	Applies
26.4.1.1	26.4.1.1	Metallic enclosures, metallic parts of enclosures and glass parts of enclosures	Applies	Applies	Applies
26.4.1.2.1	26.4.1.2.1	Group I electrical equipment	Excluded	Excluded	Excluded
26.4.1.2.2	26.4.1.2.2	Group II and Group III electrical equipment	Applies	Applies	Applies
26.4.2	26.4.2	Resistance to impact	Applies	Applies	Applies
26.4.3	26.4.3	Drop test	Applies	Applies	Applies
26.4.4	26.4.4	Acceptance criteria	Applies	Applies	Applies
26.4.5	26.4.5	Degree of protection by enclosure	Applies	Applies	Applies
26.5	26.5	Thermal tests	Applies	Applies	Applies
26.6	26.6	Torque test for bushings	Applies	Applies	Applies
26.7	26.7	Non-metallic enclosures or non-metallic parts of enclosures	Modified	Modified	Modified
26.8	26.8	Thermal endurance to heat	Modified	Modified	Modified

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