IEC 60079-15

Edition 5.0 2017-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

Atmosphères explosives –
Partie 15: Protection du matériel par mode de protection «n»

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

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

FOREWORD

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

This fifth edition cancels and replaces the fourth edition, published in 2010, and constitutes a technical revision.

This edition includes the following significant changes with respect to the previous edition:

The text of this International Standard is based on the following documents:

FDIS	Report on voting
31/1339/FDIS	31/1355/RVD

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

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

This International Standard is to be read in conjunction with IEC 60079-0.

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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

		Type		
Changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Requirements for enclosed break devices have been removed	-			C1
Requirements for type of protection “nA” has been removed	-			C2
Scope has been updated to allow equipment with internal working voltages over 15 kV such as starters for HID luminaires	1		X	
Definition for cable sealing box removed	3	X		
Definitions for creepage distance and clearance removed as they are now in 60079-0	3	X		
Definition of non-sparking device “nA” removed, as the concept has been transferred to 60079-7	3			C1
Definition of duty cycle removed	3	X		
Definition of enclosed break device moved as the concept has been transferred to 60079-1	3			C1
Definition of hermetically sealed device revised	3	A1		
Definition for normally sparking device added	3.2	X		
Small component temperature clause removed, part of moving type of protection “nA” to 60079-7	5			C2
Minimum degree of protection requirements; clearance, creepage and separation requirements; determination of working voltage; conformal coating; CTI requirement; Insulation between conductive parts and measurement of creepage and clearance requirements have been removed.	6			C2
Connection facilities and terminal compartment requirements have been removed				C2
Supplementary requirements for non-sparking electrical rotating machines have been removed	-			C2
Supplementary requirements for non-sparking fuses and fuse assemblies have been removed	-			C2
Supplementary requirements for non-sparking plugs and sockets have been removed	-			C2
Supplementary requirements for non-sparking luminaires have been removed	-			C2
Supplementary requirements for equipment incorporating non-sparking cells and batteries have been removed	-			C2
Supplementary requirements for non-sparking low power equipment have been removed	-			C2
Supplementary requirements for non-sparking current transformers have been removed	-			C2
Requirements for other non-sparking electrical equipment have been removed	-			C2
General supplementary requirements for equipment producing arcs, sparks or hot surfaces have been removed	-			C2
Requirements for enclosed break devices have been removed	-			C1
Voltage and current limitations added for non-incendive components.	7.2			C6

		Type		
Changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
The requirements for sealed devices have been extended to require more documentation,	9.1		X	
The +20K requirement for luminaire materials has been removed	9.5			C2
Notes 1-3 have been removed, as this information is covered elsewhere	10.1	X		
Entry device requirements added	10.1		X	
Industrial standard compliance and battery requirements added	10.2.1.2		X	
The exemption for manually operated sparking devices moved to here, creepage and clearance requirements in industrial standards added for switching devices, and cell and battery requirements added	10.2.1.2		X	
Requirements for cable glands and conduit entries have been clarified	10.2.3	X		
Requirements for gasketed windows expanded to allow a removable window mounted in a frame.	10.2.5.2		X	
Requirement to include documentation on the thermal stability of gaskets or seals added	10.2.6			C4
Requirements reworded for clarity	10.2.7	X		
Requirements for “nR” enclosures fitted with fans added.	10.2.9			C5
Type test requirements for enclosed break “nC” and “nA” equipment removed				C1, C2
The dielectric test after the leakage test for sealed devices has been eliminated unless the results of the leakage test are uncertain.	11.2.2		X	
Tests for sealed devices, screw lampholders, starters, lamps, ignitors, and ignitor pulses for luminaires have been removed	-			C2
All testing for batteries has been removed	-			C2
All testing for electrical machines removed	-			C2
Routine test requirements rewritten for sealed components, non-incendive components and restricted breathing equipment to take out the testing for enclosed break and nA equipment	12			C1, C2
Preparation of non-incendive component samples	11.1.1			C3
Marking requirements modified to remove labelling requirements for enclosed break components, nA equipment, and batteries.	-			C1, C2
Documentation requirements modified to remove labelling requirements for enclosed break components, nA equipment, and batteries.	14			C1, C2
The instruction section has been expanded to include new requirements	15		X	
Annex A has been removed.	-			C2

NOTE The technical changes referred to include the significance of technical changes in the revised IEC Standard, but they do not form an exhaustive list of all modifications from the previous version.

Explanation of the types of changes:

A) Definitions

1) **Minor and editorial changes:**

- Clarification
- Decrease of technical requirements
- Minor technical change
- Editorial corrections

These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change, or a reduction in level of existing requirement.

2) **Extension:** Addition of technical options

These are changes which add new or modify existing technical requirements in a way that new options are given, but without increasing requirements for equipment that was fully compliant with the previous standard. Therefore, these will not have to be considered for products in conformity with the preceding edition.

3) **Major technical changes:**

- addition of technical requirements
- increase of technical requirements

These are changes to technical requirements (addition, increase of the level or removal) made in a way that a product in conformity with the preceding edition will not always be able to fulfil the requirements given in the later edition. These changes have to be considered for products in conformity with the preceding edition. For these changes additional information is provided in Clause B below.

NOTE These changes represent current technological knowledge. However, these changes should not normally have an influence on equipment already placed on the market.

B) Information about the background of changes

A1 – It was determined that this was already covered by the sealed device definition

C1 – Enclosed break devices "nC" are now designated as "dc" and the requirements are located in IEC 60079-11:2011.

C2 – Type of protection "nA" is now designated as type of protection "ec" and the requirements for "ec" equipment are located in IEC 60079-7:2015.

C3 – Test time for the preparation of non-incendive component samples has been specified.

C4 – Additional documentation requirements for seals and gaskets.

C5 – As the pressure inside an enclosure fitted with fans can be affected by the operation of the fan, it is now specified that the restricted breathing test is conducted with fans operating and stationary.

C6 – The limitations from IEC 60079-15 Ed 3 were added.

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” which includes; sealed devices “nC”, hermetically sealed devices “nC”, non-incendive components “nC” and restricted breathing enclosures “nR” intended for use in explosive gas atmospheres. This part of IEC 60079 applies to electrical equipment where the rated input voltage does not exceed 15 kV r.m.s. AC or DC including where the internal working voltages of the Ex product exceeds 15 kV, for example starters for HID luminaires.

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

Table 1 – Relationship of IEC 60079-15 to IEC 60079-0

Clause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-15	
Ed. 6.0 (2011) (informative)	**Ed. 7.0[1] (future edition)** (informative)	**Clause / Subclause title** (normative)	**Protected sparking “nC”**	**Restricted breathing “nR”**
3	3	Definitions	Applies	Applies
4	4	Equipment grouping		
4.1	4.1	Group I	Excluded	Excluded
4.2	4.2	Group II	Applies	Applies
4.3	4.3	Group III	Excluded	Excluded
4.4	4.4	Equipment for a particular explosive atmosphere	Applies	Applies
5	5	Temperatures		
5.1	5.1	Environmental influences	Applies	Applies
5.2	5.2	Service temperature	Applies	Applies
5.3	5.3	Maximum surface temperature		
5.3.1	5.3.1	Determination of maximum surface temperature	Applies	Applies
5.3.2	5.3.2	Limitation of maximum surface temperature		
5.3.2.1	5.3.2.1	Group I equipment	Excluded	Excluded
5.3.2.2	5.3.2.2	Group II equipment	Applies	Applies
5.3.2.3	5.3.2.3	Group III equipment	Excluded	Excluded

[1] Under preparation. Stage at the time of publication: IEC/FDIS 60079-0:2017.