BS EN 60079-13:2010

BSI Standards Publication

Explosive atmospheres

Part 13: Equipment protection by pressurized room "p"

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National foreword

This British Standard is the UK implementation of EN 60079-13:2010. It is identical to IEC 60079-13:2010.

The UK participation in its preparation was entrusted by Technical Committee GEL/31, British Electrotechnical Committee, to Subcommittee GEL/31/X, Equipment for explosive atmospheres.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments issued since publication

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EN 60079-13

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English version

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

(IEC 60079-13:2010)

Atmosphères explosives - Partie 13: Protection du matériel par salle à surpression interne "p" (CEI 60079-13:2010)

Explosionsfähige Atmosphäre - Teil 13: Geräteschutz durch überdruckgekapselte Räume (IEC 60079-13:2010)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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CENELEC

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

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Foreword

The text of document 31/878/FDIS, future edition 1 of IEC 60079-13, prepared by IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-13 on 2010-12-01.

This part of EN 60079 is to be read 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)	2011-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-12-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60079-13:2010 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 60079-17	NOTE	Harmonized as EN 60079-17.
IEC 60079-20-1	NOTE	Harmonized as EN 60079-20-1.
IEC 60079-29 series	NOTE	Harmonized in EN 60079-29 series (partially modified).
IEC 60529	NOTE	Harmonized as EN 60529.
IEC 61285	NOTE	Harmonized as EN 61285.
IEC 61511 series	NOTE	Harmonized in EN 61511 series (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-426	-	International Electrotechnical Vocabulary - Part 426: Equipment for explosive atmospheres	-	-
IEC 60079-0	-	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-2	-	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"	EN 60079-2	-
IEC 60079-10-1	-	Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres	EN 60079-10-1	-
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-

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EXPLOSIVE ATMOSPHERES –

Part 13: Equipment protection by pressurized room “p”

1 Scope

This part of IEC 60079 gives requirements for the design, construction, assessment and testing and marking of rooms protected by pressurization in:

- a room located in an explosive gas atmosphere or explosive dust atmosphere hazardous area that does not include an internal source of a flammable substance;
- a room located in an explosive gas atmosphere or explosive dust atmosphere hazardous area that includes an internal source of a flammable substance;
- a room located in a non-hazardous area that includes an internal source of a flammable substance.

NOTE If ventilation is used and pressurization is not used, then this part of IEC 60079 does not apply. The situation is covered by the requirements of IEC 60079-10-1.

A room may be a single room, multiple rooms, a complete building or a room contained within a building and includes inlet and outlet ducts. This part of IEC 60079 also includes requirements for associated equipment, safety devices and controls necessary to ensure that pressurization is established and maintained.

This part of IEC 60079 covers rooms or buildings that are constructed or assembled on site, which may be either on land or off-shore, designed to facilitate the entry of personnel and primarily intended for installation by an end-user and verification on site. The room may be located in an explosive gas atmosphere or a explosive dust atmosphere requiring equipment protection levels (EPL) Gb, Db, Gc or Dc.

This part of IEC 60079 does not specify the methods that may be required to ensure adequate air quality for personnel with regard to toxicity and temperature within the room.

NOTE 1 Whilst the scope of this part of IEC 60079 does not address toxicity it is vital that proper consideration is given to this aspect to ensure the safety of personnel. National regulations and requirements should be observed in this regard.

NOTE 2 There is a related standard IEC60079-2 (Equipment protection by pressurized enclosure) covering the different conditions encountered when using the pressurization technique.

NOTE 3 Maintenance needs are contained in Annex B until they are included IEC 60079-17.

NOTE 4 For the purposes of this part of IEC 60079, the terms "lower flammable limit (LFL)" and "lower explosive limit (LEL)" are deemed to be synonymous, and likewise the terms "upper flammable limit (UFL)" and "upper explosive limit (UEL)" are deemed to be synonymous. For ease of reference, the two abbreviations LFL and UFL may be used hereinafter to denote these two sets of terms. It should be recognized that particular authorities having jurisdiction may have overriding requirements that dictate the use of one of these sets of terms and not the other.

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 standard conflicts with a requirement of IEC 60079-0, the requirement of this standard takes precedence.

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Table 1 – Exclusion of specific clauses of IEC 60079-0

Clause of IEC 60079-0			
Ed. 4.0 (2004) (Informative)	**Ed. 5.0 (2007) (Informative)**	**Clause / subclause title (Normative)**	
4	4	Equipment grouping	Applies
4.1	4.1	Group I	Applies
4.2	4.2	Group II	Applies
4.3	4.3	Group III	Applies
4.4	4.4	Equipment for a particular explosive atmosphere	Applies
5.1	5.1	Environmental influences	Applies
5.1.1	5.1.1	Ambient temperature	Applies
5.1.2	5.1.2	External source of heating or cooling	Applies
5.2	5.2	Service temperature	Applies
5.3.1	5.3.1	Determination of maximum surface temperature	Applies
5.3.2.1	5.3.2.1	Group I electrical equipment	Applies
5.3.2.2	5.3.2.2	Group II electrical equipment	Applies
5.3.2.3	5.3.2.3	Group III electrical equipment	Applies
5.3.3	5.3.3	Small component temperature for Group I and Group II electrical equipment	Applies
6.1	6.1	General	Applies
6.2	6.2	Mechanical strength	Excluded
6.3	6.3	Opening times	Excluded
6.4	6.4	Circulating currents	Excluded
6.5	6.5	Gasket retention	Excluded
6.6	6.6	Electromagnetic and ultrasonic radiating equipment	Excluded
7	7	Non-metallic enclosures and parts of enclosure	Excluded
8	8	Metallic enclosures and metallic parts of enclosures	Excluded
9	9	Fasteners	Excluded
10	10	Interlocking devices	Excluded
11	11	Bushings	Excluded
12	12	Materials used for cementing	Excluded
13	13	Ex components	Excluded
14	14	Connection facilities and termination compartments	Excluded
15	15	Connection facilities for earthing and bonding conductors	Excluded
16	16	Entries into enclosures	Excluded
17	17	Supplementary requirements for rotating electrical machines	Excluded
18	18	Supplementary requirements for switchgear	Excluded
19	19	Supplementary requirements for fuses	Excluded

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Clause of IEC 60079-0			
Ed. 4.0 (2004) (Informative)	**Ed. 5.0 (2007) (Informative)**	**Clause / subclause title (Normative)**	
20	20	Supplementary requirements for plugs and sockets	Excluded
21	21	Supplementary requirements for luminaires	Excluded
22	22	Supplementary requirements for caplights and handlights	Excluded
23	23	Equipment incorporating cells and batteries	Excluded
24	24	Documentation	Applies
25	25	Compliance of prototype or sample with documents	Excluded
26	26	Type tests	Excluded
27	27	Routine tests	Applies
28	28	Manufacturers responsibility	Applies
29.1	29.1	Location	Applies
29.2	29.2	General	Applies
NR	29.3	Ex marking for explosive gas atmospheres	Applies
NR	29.4	Ex marking for explosive dust atmospheres	Applies
29.3	29.5	Combined types of protection	Applies
NR	29.6	Multiple types of protection	Applies
NR	29.7	Ga using two independent Gb types of protection	Excluded
29.5	29.8	Ex components	Excluded
29.6	29.9	Small equipment and small Ex components	Excluded
29.7	29.10	Extremely small equipment and extremely small Ex components	Excluded
29.8	29.11	Warning markings	Applies
NR	29.12	Alternate marking of equipment protection levels (EPLs)	Applies
29.9	29.13	Cells and batteries	Excluded
29.10	29.14	Examples of marking	Applies
30	30	Instructions	Applies
Annex A	Annex A	Supplementary requirements for Ex cable glands	Excluded
Annex B	Annex B	Requirements for Ex components	Excluded
Annex C	Annex C	Example of rig for resistance to impact test	Applies
NR	Annex D	Introduction to an alternative risk assessment method encompassing “equipment protection levels” for Ex equipment	Applies
Applies – This requirement of IEC 60079-0 is applied without change. Excluded – This requirement of IEC 60079-0 does not apply.			

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Clause of IEC 60079-0			
Ed. 4.0 (2004) (Informative)	Ed. 5.0 (2007) (Informative)	Clause / subclause title (Normative)	
NOTE The applicable requirements of IEC 60079-0 are identified by the clause title which is normative. This table was written against the specific requirements of IEC 60079-0, Ed 6.0. The clause numbers for the 6th and previous edition are shown for information only. This is to enable the General Requirements IEC 60079-0, Ed 5.0, to be used where necessary with this part of IEC 60079. Where there were no requirements for the 5th edition but there are for the 6th edition (indicated by NR against the 5th edition only), or where is a conflict between requirements, the 6th edition requirements should be considered.			

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 60050(426), *International Electrotechnical Vocabulary – Part 426: Equipment for explosive atmospheres*

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-2, *Explosive atmospheres – Part 2: Equipment protection by pressurized enclosure "p"*

IEC 60079-10-1, *Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050(426) and IEC 60079-0 as well as the following terms and definitions apply

NOTE Unless otherwise specified, the terms "voltage" and "current" mean the r.m.s. values of an alternating, direct or composite voltage or current.

3.1
airlock
means of egress, consisting of two interdependent doors designed to maintain the internal pressure of the room in order to prevent the entry of a surrounding explosive atmosphere

3.2
alarm
piece of apparatus that generates a visual or audible signal that is intended to attract attention

3.3
clean air
air that is essentially free of contaminants or foreign matter and contains no more than trace amounts of flammable vapour or gas

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3.4
containment system
parts within the room or building containing the flammable substance that may constitute an internal source of release

NOTE The containment system may extend beyond the room or building.

3.5
dilution
continuous supply of a clean air, after purging, at such a rate that the concentration of a flammable mixture inside the room is maintained at a value below the explosive limits except in a dilution area

NOTE For safety reasons, dilution to a level lower than the LEL may be required if associated with the potential release there is an additional toxic or asphyxiant risk. Further guidance can be found in IEC 61285.

3.6
dilution area
area in the vicinity of a source of release where it cannot be demonstrated that the concentration of flammable gas or vapour is diluted to a safe concentration

3.7
flammable substance
gases, vapours, liquids or mixtures thereof that are capable of being ignited

3.8
ignition-capable equipment
ICE
equipment which in normal operation constitutes a source of ignition for a specified explosive gas atmosphere

3.9
internal source of flammable substance
point or location from which a flammable substance may be released into the room or building such that an explosive gas atmosphere could be formed

3.10
limited release
release of flammable gas or vapour, the maximum flow rate of which can be predicted

3.11
limiting value
lowest concentration value of the lower flammable limit (LFL) of each component involved, taking account of the most onerous conditions of concentration that may occur from every source of release within the room

3.12
lower flammable limit
LFL
volume fraction of flammable gas or vapour in air below which an explosive gas atmosphere will not form, expressed as a percentage (see IEC 60079-20-1)

NOTE This is also known as Lower Explosive Limit (LEL).

3.13
upper flammable limit
UFL
volume fraction of flammable gas or vapour in air above which an explosive gas atmosphere will not form, expressed as a percentage (see IEC 60079-20-1)

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