

Irish Standard I.S. EN 60079-10-1:2015

Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres

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#### I.S. EN 60079-10-1:2015

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NSAI T +353 1 807 3800 1 Swift Square, F +353 1 807 3838 Sales: T +353 1 857 6730

Northwood, Santry

E standards@nsai.ie

F +353 1 857 6729

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I.S. EN 60079-10-1:2015 is the adopted Irish version of the European Document EN 60079-10-1:2015, Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres

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EUROPEAN STANDARD

EN 60079-10-1

NORME EUROPÉENNE

**EUROPÄISCHE NORM** 

December 2015

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Supersedes EN 60079-10-1:2009

#### **English Version**

Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres (IEC 60079-10-1:2015 + COR1:2015)

Atmosphères explosives - Partie 10-1: Classement des emplacements - Atmosphères explosives gazeuses (IEC 60079-10-1:2015 + COR1:2015)

Explosionsgefährdete Bereiche - Teil 10-1: Einteilung der Bereiche - Gasexplosionsgefährdete Bereiche (IEC 60079-10-1:2015 + COR1:2015)

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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

### **European foreword**

The text of document 31J/253/FDIS, future edition 2 of IEC 60079-10-1, prepared by SC 31J "Classification of hazardous areas and installation requirements", of IEC/TC 31 "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-10-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2018-10-13 the document have to be withdrawn

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

IEC 60079-10-2	NOTE	Harmonized as EN 60079-10-2.
IEC 61285:2004	NOTE	Harmonized as EN 61285:2004 (not modified).
IFC 60079-20-1	NOTE	Harmonized as FN 60079-20-1

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<sup>1)</sup> COR1:2015 applies to English version only.

EN 60079-10-1:2015

# **Annex ZA**

(normative)

# Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: <a href="https://www.cenelec.eu">www.cenelec.eu</a>.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60079-0	-	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-14	-	Explosive atmospheres - Part 14: Electrical installations design, selection and erection	EN 60079-14	-

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IEC 60079-10-1:2015/COR1:2015 - 1 -

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC 60079-10-1 Edition 2.0 2015-09

#### **EXPLOSIVE ATMOSPHERES -**

Part 10-1: Classification of areas – Explosive gas atmospheres

# **CORRIGENDUM 1**

# B.7.3 Release rate of evaporative pools

Replace the existing Equation (B.6) with the following new Equation (B.6)

$$W_{\rm e} = \frac{6.55 \ u_{\rm W}^{0.78} \ A_{\rm p} \ p_{\rm V} \ M^{0.667}}{R \times T} (kg/s) \tag{B.6}$$

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# IEC 60079-10-1

Edition 2.0 2015-09

# INTERNATIONAL STANDARD



**Explosive atmospheres –** 

Part 10-1: Classification of areas – Explosive gas atmospheres





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IEC Central Office Tel.: +41 22 919 02 11 3, rue de Varembé Fax: +41 22 919 03 00

CH-1211 Geneva 20 info@iec.ch Switzerland www.iec.ch

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# INTERNATIONAL STANDARD



**Explosive atmospheres –** 

Part 10-1: Classification of areas – Explosive gas atmospheres

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# - 2 - IEC 60079-10-1:2015 © IEC 2015

# CONTENTS

FC	DREWO	RD	6
IN	TRODU	CTION	9
1	Scop	e	10
2	Norm	ative references	10
3	Term	s and definitions	11
4	Gene	eral	15
	4.1	Safety principles	
	4.2	Area classification objectives	
	4.3	Explosion risk assessment	
	4.4	Competence of Personnel	
5	Area	classification methodology	
	5.1	General	
	5.2	Classification by sources of release method	
	5.3	Use of industry codes and national standards	
	5.4	Simplified methods	
	5.5	Combination of methods	
6	Relea	ase of flammable substance	
	6.1	General	19
	6.2	Sources of release	
	6.3	Forms of release	
	6.3.1	General	
	6.3.2		
	6.3.3		
	6.3.4	·	
	6.3.5		
	6.3.6	Vapours	22
	6.3.7	Liquid releases	22
	6.4	Ventilation (or air movement) and dilution	23
	6.5	Main types of ventilation	23
	6.5.1	General	23
	6.5.2	Natural ventilation	23
	6.5.3	Artificial ventilation	24
	6.5.4	Degree of dilution	25
7	Туре	of zone	26
	7.1	General	26
	7.2	Influence of grade of the source of release	26
	7.3	Influence of dilution	27
	7.4	Influence of availability of ventilation	27
8	Exter	nt of zone	27
9	Docu	mentation	28
	9.1	General	28
	9.2	Drawings, data sheets and tables	
Ar	nex A (	informative) Suggested presentation of hazardous areas	
	A.1	Hazardous area zones – Preferred symbols	30
	A.2	Hazardous area suggested shapes	

- 3 -

#### IEC 60079-10-1:2015 © IEC 2015

Symbols 35 B.2 Examples of grade of release......35 B.2.1 B.2.2 B.2.3 B.2.4 Sources giving a secondary grade of release......36 B.3 **B.4 B.5** Forms of release 40 B.6 **B.7** Release rate .......41 B.7.1 General .......41 B.7.2 Estimation of Release Rate ......41 B.7.3 Release rate of evaporative pools.......44 **B.8** Release from openings in buildings.......46 B.8.1 Openings as possible sources of release......46 B.8.2 B.8.3 C.1 C.2 General 49 C.3 Assessment of ventilation and dilution and its influence on hazardous area .......49 C.3.1 C.3.2 Effectiveness of ventilation ......50 C.3.3C.3.4 Assessment of ventilation velocity ......51 C.3.5 C.3.6 Dilution in a room ......53 C.3.7 Criteria for availability of ventilation .......55 C.4 Examples of ventilation arrangements and assessments......56 C.4.1 C.4.2 Jet release in a large building ......56 C.4.3 Jet release in a small naturally ventilated building ......57 C.4.4 Jet release in a small artificially ventilated building......57 C.4.5 C.4.6 C.4.7 C.5 Natural Ventilation in buildings......60 C.5.1 C.5.2 Wind induced ventilation ......60 Buoyancy induced ventilation......61 C.5.3 C.5.4 Combination of the natural ventilation induced by wind and buoyancy ..........63 Annex D (informative) Estimation of hazardous zones.......65 D.1 D.2 Estimating types of the zones ......65 Estimating the extent of the hazardous zone .......65 D.3 Annex E (informative) Examples of hazardous area classification .......68

# - 4 - IEC 60079-10-1:2015 © IEC 2015

E.1 General	68
E.2 Examples	68
E.3 Example case study for area classification	83
Annex F (informative) Schematic approach to classification of hazardous areas	93
F.1 Schematic approach to classification of hazardous areas	93
F.2 Schematic approach to classification of hazardous areas	94
F.3 Schematic approach to classification of hazardous areas	95
F.4 Schematic approach to classification of hazardous areas	
Annex G (informative) Flammable mists	
Annex H (informative) Hydrogen	99
Annex I (informative) Hybrid mixtures	101
I.1 General	101
I.2 Use of ventilation	101
I.3 Concentration limits	101
I.4 Chemical reactions	
I.5 Energy/Temperature limits	
I.6 Zoning requirements	
Annex J (informative) Useful equations in support to hazardous area classification	
J.1 General	
J.2 Dilution with air of a flammable substance release	
J.3 Estimate of the time required to dilute a flammable substance release	
Annex K (informative) Industry codes and national standards	
K.1 General	
Bibliography	106
Figure A.1 – Preferred symbols for hazardous area zones	30
Figure A.2 – Gas/vapour at low pressure (or at high pressure in case of unpredictable release direction)	33
Figure A.3 – Gas/vapour at high pressure	33
Figure A.4 – Liquefied gas	34
Figure A.5 – Flammable liquid (non boiling evaporative pool)	34
Figure B.1 – Forms of release	40
Figure B.2 – Volumetric evaporation rate of liquids	45
Figure C.1 – Chart for assessing the degree of dilution	52
Figure C.2 – Self diffusion of an unimpeded high velocity jet release	57
Figure C.3 – Supply only ventilation	
Figure C.4 – Supply and extraction ventilation	
Figure C.5 – Local extraction ventilation	60
Figure C.6 – Volumetric flow rate of fresh air per m <sup>2</sup> of equivalent effective opening	
area	63
Figure C.7 – Example of opposing ventilation driving forces	64
Figure D.1 – Chart for estimating hazardous area distances	66
Figure E.1 – Degree of dilution (Example No. 1)	69
Figure E.2 – Hazardous distance (Example No. 1)	70
Figure E.3 – Zone classification (Example No. 1)	70
Figure E.3 – Zone classification (Example No. 1)	

- 5 -

#### IEC 60079-10-1:2015 © IEC 2015

Figure E.5 – Hazardous distance (Example No. 2) ......73 Figure E.6 – Degree of dilution (Example No. 3) .......75 Figure E.7 – Hazardous distance (Example No. 3) .......76 Figure E.9 – Degree of dilution (Example No. 4) .......78 Figure E.11 – Zones classification (Example No. 4) ......79 Figure E.12 – Degree of dilution (Example No. 5) ......82 Figure E.13 – Hazardous distance (Example No. 5) .......83 Figure E.14 – Enclosed compressor handling natural gas ......85 Figure E.15 – Example of area classification for a compressor facility handling natural gas (elevation).......91 Figure E.16 – Example of area classification for a compressor facility handling natural Figure F.1 – Schematic approach to classification .......93 Figure F.2 – Schematic approach to classification for continuous grade releases......94 Figure F.3 – Schematic approach to classification for primary grade releases......95 Figure F.4 – Schematic approach to classification for secondary grade releases ......96 Table A.1 – Hazardous area classification data sheet – Part I: Flammable substance Table A.2 - Hazardous area classification data sheet - Part II: List of sources of release 32 Table B.1 – Suggested hole cross sections for secondary grade of releases.......39 Table B.2 – Effect of hazardous zones on openings as possible sources of release......47 Table E.1 – Compressor facility handling natural gas .......86 Table E.2 - Hazardous area classification data sheet - Part I: Flammable substance Table E.3 - Hazardous area classification data sheet - Part II: List of sources of release (1 of 2) 89 

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### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### **EXPLOSIVE ATMOSPHERES –**

# Part 10-1: Classification of areas -**Explosive gas atmospheres**

#### **FOREWORD**

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International Standard IEC 60079-10-1 has been prepared by subcommittee 31J: Classification of hazardous areas and installation requirements, of IEC technical committee 31: Equipment for explosive atmospheres.

This second edition of IEC 60079-10-1 cancels and replaces the first edition, published in 2008, and constitutes a technical revision. The significant technical changes with respect to the previous edition are as follows:

**-6-**

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**-7-**

			Туре		
Changes	Clause	Minor and editorial changes	Extension	Major technical changes	
Complete restructuring and dividing into sections to identify possible methodologies for classifying hazardous areas and to provide further explanation on specific assessment factors	Main body of the text	X	X	Х	
Introducing new terms and the definitions	3		Х		
Introducing clauses for alternative methods of area classification	5		Х	Х	
Updating examples for presentation of hazardous area classification	Annex A		Х	Х	
Updating calculations for release rate	Annex B		Х	Х	
Complete re-write with a new approach based upon the degree of dilution instead of the degree of ventilation	Annex C		Х	Х	
Introduced as a new Annex for zone extents	Annex D		х		
Updated with new examples to explain the methodology set forth in Annexes A, B, C and D	Annex E			Х	
Update of the flow chart illustrating the area classification procedure by dividing it into four sections	Annex F		х		
Introduced as a new Annex on hydrogen	Annex H		Х		
Introduced as a new Annex on hybrid mixtures	Annex I		х		
Introduced as a new Annex with supplementary equations	Annex J		Х		
Introduced as a new Annex for reference to national and industry codes with specific examples of hazardous area classification	Annex K		Х		

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.

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**Explanations:** 

**Definitions** 

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.

**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.

Major technical changesaddition of technical requirementsincrease of technical requirements

These are changes to technical requirements (addition, increase of the level or removal).

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

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

FDIS	Report on voting	
31J/253/FDIS	31J/256/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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

The contents of the corrigendum of November 2015 have been included in this copy.

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**-9** -

# **INTRODUCTION**

In areas where dangerous quantities and concentrations of flammable gas or vapour may arise, protective measures need to be applied in order to reduce the risk of explosions. This part of IEC 60079 sets out the essential criteria against which the ignition hazards can be assessed, and gives guidance on the design and control parameters which can be used in order to reduce such hazards.

- 10 - IEC 60079-10-1:2015 © IEC 2015

#### **EXPLOSIVE ATMOSPHERES –**

# Part 10-1: Classification of areas – Explosive gas atmospheres

### 1 Scope

This part of IEC 60079 is concerned with the classification of areas where flammable gas or vapour hazards may arise and may then be used as a basis to support the proper selection and installation of equipment for use in hazardous areas.

It is intended to be applied where there may be an ignition hazard due to the presence of flammable gas or vapour, mixed with air, but it does not apply to:

- a) mines susceptible to firedamp;
- b) the processing and manufacture of explosives;
- c) catastrophic failures or rare malfunctions which are beyond the concept of abnormality dealt with in this standard (see 3.7.3 and 3.7.4);
- d) rooms used for medical purposes;
- e) commercial and industrial applications where only low pressure fuel gas is used for appliances e.g. for cooking, water heating and similar uses, where the installation is compliant with relevant gas codes;
- f) domestic premises;
- g) where a hazard may arise due to the presence of combustible dusts or combustible flyings but the principles may be used in assessment of a hybrid mixture (refer also IEC 60079-10-2).

NOTE Additional guidance on hybrid mixtures is provided in Annex I.

Flammable mists may form or be present at the same time as flammable vapour. In such case the strict application of the details in this standard may not be appropriate. Flammable mists may also form when liquids not considered to be a hazard due to the high flash point are released under pressure. In these cases the classifications and details given in this standard do not apply. Information on flammable mists is provided in Annex G.

For the purpose of this standard, an area is a three-dimensional region or space.

Atmospheric conditions include variations above and below reference levels of 101,3 kPa (1 013 mbar) and 20 °C (293 K), provided that the variations have a negligible effect on the explosion properties of the flammable substances.

In any process plant, irrespective of size, there may be numerous sources of ignition apart from those associated with equipment. Appropriate precautions will be necessary to ensure safety in this context. This standard is applicable with judgement for other ignition sources.

This standard does not take into account the consequences of ignition of an explosive atmosphere.

#### 2 Normative references

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