



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60079-10-1:2019**  
**01-september-2019**

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**Eksplzivne atmosfere - 10-1. del: Razvrstitev prostorov - Eksplzivne plinske atmosfere**

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

Explosionsgefährdete Bereiche - Teil 10-1: Einteilung der Bereiche - Gasexplosionsgefährdete Bereiche

Atmosphères explosives - Partie 10-1: Classement des emplacements - Atmosphères explosives gazeuses

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**Ta slovenski standard je istoveten z: prEN IEC 60079-10-1:2019**

[kSIST prEN IEC 60079-10-1:2020](https://standards.iten.ai/catalog/standards/sist/783d01-10-1-2019/iec/60079-10-1-2019)

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**ICS:**

29.260.20	Električni aparati za eksplozivna ozračja	Electrical apparatus for explosive atmospheres
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# 31J/293/CDV

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IEC SC 31J : CLASSIFICATION OF HAZARDOUS AREAS AND INSTALLATION REQUIREMENTS	
SECRETARIAT: Croatia	SECRETARY: Mr Marino Kelava
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 18,SC 61D	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input checked="" type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING <input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING <b>Attention IEC-CENELEC parallel voting</b> The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.  The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

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

PROPOSED STABILITY DATE: 2025

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**EXPLOSIVE ATMOSPHERES –**

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

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## 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 bilingual version (2016-01) corresponds to the English version, published in 2015-09.

This third edition of IEC 60079-10-1 cancels and replaces the second edition, published in 2015, and constitutes a technical revision. The significant technical changes with respect to the previous edition are as follows:

235



Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Deleting item e) from the Scope exemptions	1			X
Introducing new terms and the definitions	3		X	
Introducing new clause <b>4.4.1 Zone of negligible extent</b>	4		X	X
Introducing new clause <b>5.3.1 Fuel gas installations</b>	5	X	X	X
Introducing <b>Figure 1 – Dilution volume</b>	7		X	
Upgrading <b>Table A.1</b> with UFL and its column 15 heading with the 'source of data'	Annex A		X	X
Updating the flow-chart in <b>Figure B.1</b>	Annex B			X
Updating equations for evaporation rate with the recent source modifications	Annex B		X	X
Updating the chart in <b>Figure B.2</b> according to the updated equations for evaporation rate and the ventilation velocity of 0,25 m/s	Annex B			X
Restructuring <b>Table C.1</b>	Annex C			X
Abolishing safety factor <b>k</b> and deleting it from the horizontal axis of the charts in <b>Figures C.1</b> and <b>D.1</b>	Annex C, D			X
Imposing limitations to the use of the chart in <b>Figure D.1</b>	Annex D		X	X
Updating and corrections in <b>Annex E</b>	Annex E			X
Upgrading <b>Annex G</b> on Flammable mists	Annex G		X	X
Introducing new clause <b>J.3 Room circulation airflow rates for releases arising from an enclosure with a fan</b>	Annex J		X	X
Introducing new items in <b>Table K.1</b>	Annex K		X	
Introducing new items in the Bibliography	Bibliography		X	X
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.				

236 **Explanations:**

237 **Definitions**

238 **Minor and editorial changes** clarification  
 239 decrease of technical requirements  
 240 minor technical change  
 241 editorial corrections

242 These are changes which modify requirements in an editorial or a minor technical way. They  
 243 include changes of the wording to clarify technical requirements without any technical change.

244 **Extension** addition of technical options

245 These are changes which add new or modify existing technical requirements, in a way that  
 246 new options are given, but without increasing requirements.

247 **Major technical changes** addition of technical requirements  
 248 increase of technical requirements

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

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

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

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

253 Full information on the voting for the approval of this standard can be found in the report on  
254 voting indicated in the above table.  
255

256 The French version of this standard has not been voted upon.

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

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

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

- 263 • reconfirmed,
- 264 • withdrawn,
- 265 • replaced by a revised edition, or
- 266 • amended.

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## INTRODUCTION

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

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## EXPLOSIVE ATMOSPHERES –

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

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#### 284 **1 Scope**

285 This part of IEC 60079 is concerned with the classification of areas where flammable gas or  
286 vapour hazards may arise and may then be used as a basis to support the proper design,  
287 construction, operation and maintenance of equipment for use in hazardous areas.

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

- 290 a) mines susceptible to firedamp;
- 291 b) the processing and manufacture of explosives;
- 292 c) catastrophic failures or rare malfunctions which are beyond the concept of normality dealt  
293 with in this standard (see 3.7.3, 3.7.4 and 4.5);
- 294 d) rooms used for medical purposes;
- 295 e) domestic premises;
- 296 f) where a hazard may arise due to the presence of combustible dusts or combustible flyings  
297 but the principles may be used in assessment of a hybrid mixture (refer also to  
298 IEC 60079-10-2).

299 NOTE Additional guidance on hybrid mixtures is provided in Annex I.  
<https://standards.iteh.ai/catalog/standards/sist/751fc41e-4d3b-4fb9-b736-11ec1fca11be/ksist-pr-en-iec-60079-10-1-2020>

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

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

306 Atmospheric conditions include variations above and below reference levels of 101,3 kPa  
307 (1 013 mbar) and 20 °C (293 K), provided that the variations have a negligible effect on the  
308 explosion properties of the flammable substances.

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

312 This standard does not take into account the consequences of ignition of an explosive  
313 atmosphere except where a zone is so small that if ignition did occur it would have negligible  
314 consequences (see 3.3.8 and 4.4.1).

#### 315 **2 Normative references**

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

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

321 IEC 60079-14, *Explosive atmospheres – Part 14: Electrical installations design, selection and*  
322 *erection*

### 323 **3 Terms and definitions**

324 For the purposes of this document, the terms and definitions given in IEC 60079-0 and the  
325 following apply.

326 NOTE Additional definitions applicable to explosive atmospheres can be found in IEC 60050-426.

#### 327 **3.1**

##### 328 **explosive atmosphere**

329 mixture with air, under atmospheric conditions, of flammable substances in the form of gas,  
330 vapour, dust, fibres, or flyings, which, after ignition, permits self-sustaining flame propagation

331 [SOURCE: IEC 60079-0:2013, 3.30]

#### 332 **3.2**

##### 333 **explosive gas atmosphere**

334 mixture with air, under atmospheric conditions, of flammable substances in the form of gas or  
335 vapour, which, after ignition, permits self-sustaining flame propagation

336 Note 1 to entry: Although a mixture which has a concentration above the upper flammable limit (UFL) is not an  
337 explosive gas atmosphere, it can readily become so and, generally for hazardous area classification purposes, it is  
338 advisable to consider it as an explosive gas atmosphere.

339 Note 2 to entry: There are some gases and vapours which are explosive with the concentration of 100 % (e.g.  
340 acetylene, CAS no. 74-86-2,  $C_2H_2$ ; monovinyl acetylene, CAS no. 689-97-4,  $C_4H_6$ ; 1-propyl nitrate (vapour), CAS  
341 no. 627-13-4,  $CH_3(CH_2)_2NO_2$ ; isopropyl nitrate (vapour), CAS no. 1712-64-7,  $(CH_3)_2CHONO_2$ ; ethylene oxide  
342 (vapour), CAS no. 75-21-8,  $(CH_2)_2O$ ; hydrazine (vapour), CAS no. 302-01-2,  $H_4N_2$ ).

343 [SOURCE: IEC 60079-0:2013, 3.32, modified (addition of Notes to entry)]

#### 344 **3.3**

##### 345 **hazardous areas and zones**

#### 346 **3.3.1**

##### 347 **hazardous area** (on account of explosive gas atmospheres)

348 area in which an explosive gas atmosphere is present or can be expected to be present, in  
349 quantities such that special precautions for the construction, installation and use of equipment  
350 are required

#### 351 **3.3.2**

##### 352 **non-hazardous area** (on account of explosive gas atmospheres)

353 area in which an explosive gas atmosphere is not expected to be present in quantities such  
354 that special precautions for the construction, installation and use of equipment are required

#### 355 **3.3.3**

##### 356 **zones**

357 hazardous area classification based on the frequency of the occurrence and duration of the  
358 explosive atmosphere

#### 359 **3.3.4**

##### 360 **zone 0**

361 an area in which an explosive gas atmosphere is present continuously or for long periods or  
362 frequently

363 Note 1 to entry: Both “long” and “frequently” are the terms which are intended to describe a very high likelihood of  
364 a potentially explosive atmosphere in the area. In that respect, those terms do not necessarily need to be  
365 quantified.

### 366 **3.3.5**

#### 367 **zone 1**

368 area in which an explosive gas atmosphere is likely to occur occasionally in normal operation

### 369 **3.3.6**

#### 370 **zone 2**

371 an area in which an explosive gas atmosphere is not likely to occur in normal operation but, if  
372 it does occur, it will exist for a short period only

373 Note 1 to entry: Indications of the frequency of the occurrence and duration of the explosive atmosphere can be  
374 taken from codes or standards relating to specific industries or applications.

375 [SOURCE: IEC 60050-426:2009, 426-03-05]

### 376 **3.3.7**

#### 377 **extent of zone**

378 distance in any direction from the source of release to where a gas/air mixture will be diluted  
379 by air to a concentration below the lower flammable limit

### 380 **3.3.8**

#### 381 **zone NE**

382 a zone of negligible extent such that if ignition did occur it would have negligible  
383 consequences

384 Note 1 to entry: A zone NE would also imply a negligible release rate.

385 Note 2 to entry: Zones of negligible extent could be Zone 0 NE, Zone 1 NE or Zone 2 NE.

### 386 **3.4**

#### 387 **releases**

#### 388 **3.4.1**

##### 389 **source of release**

390 a point or location from which a flammable gas, vapour, mist or liquid may be released into  
391 the atmosphere so that an explosive gas atmosphere could be formed

392 [SOURCE: IEC 60050-426:2009, 426-03-06, modified (addition of "mist")]

#### 393 **3.4.2**

##### 394 **continuous grade of release**

395 release which is continuous or is expected to occur frequently or for long periods

396 Note 1 to entry: Both “frequently” and “long” are the terms which are intended to describe a very high likelihood of  
397 a potential release. In that respect, those terms do not necessarily need to be quantified.

#### 398 **3.4.3**

##### 399 **primary grade of release**

400 release which can be expected to occur periodically or occasionally during normal operation

#### 401 **3.4.4**

##### 402 **secondary grade of release**

403 release which is not expected to occur in normal operation and, if it does occur, is likely to do  
404 so only infrequently and for short periods

**3.4.5****release rate**

quantity of flammable gas, liquid, vapour or mist emitted per unit time from the source of release

**3.5****ventilation and dilution****3.5.1****ventilation**

movement of air and its replacement with fresh air due to the effects of wind, temperature gradients, or artificial means (for example, fans or extractors)

Note 1 to entry: Fresh air is intended to be synonymous with the term 'clean air' used in IEC 60079-13. Both terms mean air that is essentially free of flammable gas or vapour.

**3.5.2****dilution**

the mixing of flammable vapour or gas with air which, over time, will reduce the flammable concentration

**3.5.3****dilution volume**

the volume in the vicinity of a source of release where the concentration of flammable gas or vapour is not diluted to a safe level

Note 1 to entry: In certain instances, the volumes under 3.5.3 and 3.5.5 could be the same.

**3.5.4****background concentration**

the mean concentration of flammable substance within the volume under consideration outside of the release plume or jet

**3.5.5****volume under consideration**

the volume served by the ventilation in the vicinity of the release being considered

Note 1 to entry: For an enclosed space this could be an entire room or part of a larger space where the considered ventilation will dilute the gas or vapour from a given source of release. Outdoors, this is the volume around a source of release where an explosive mixture could form. In congested outdoor places this volume could be dictated by the partial enclosure provided by the surrounding objects.

**3.6****properties of flammable substance****3.6.1****flammable substance**

substance which is itself flammable, or is capable of producing a flammable gas, vapour or mist

**3.6.2****flammable liquid**

liquid capable of producing a flammable vapour under any foreseeable operating conditions

Note 1 to entry: An example of a foreseeable operating condition is one in which the flammable liquid is handled at temperatures close to or above its flash point.

Note 2 to entry: This definition is used for the classification of hazardous areas and may be different from the definition of flammable liquids used for other purposes e.g. codes for classification of flammable liquids for transport.