



SLOVENSKI STANDARD
oSIST prEN IEC 60079-29-0:2025
01-april-2025

Eksplzivne atmosfere - 29-0. del: Javljalniki plina - Splošne zahteve in preskusne metode in morebitni dodatni deli

Explosive atmospheres - Part 29-0: Gas detectors - General requirements and test methods, and possible supplementary parts

E DIN EN IEC 60079-29-0 Explosionsgefährdete Bereiche - Teil 29-0: Gaswarngeräte - Allgemeine Anforderungen und Prüfverfahren und mögliche ergänzende Normenteile.

Atmosphères explosives - Partie 29-0: Détecteurs de gaz - Exigences générales et méthodes d'essai, et parties supplémentaires possibles

Ta slovenski standard je istoveten z: prEN IEC 60079-29-0:2025

oSIST prEN IEC 60079-29-0:2025

<http://standards.slovenski-institut.si/standards/sist/01/60079-29-0:2025>

ICS:

13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
29.260.20	Električni aparati za eksplozivna ozračja	Electrical apparatus for explosive atmospheres

oSIST prEN IEC 60079-29-0:2025 **en**



31/1846/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC 60079-29-0 ED1

DATE OF CIRCULATION:

2025-02-07

CLOSING DATE FOR VOTING:

2025-04-04

SUPERSEDES DOCUMENTS:

31/1784/CDV, 31/1845/RVC

IEC TC 31 : EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

SECRETARIAT:

United Kingdom

SECRETARY:

Mr Tom Stack

OF INTEREST TO THE FOLLOWING COMMITTEES:

HORIZONTAL FUNCTION(S):

ASPECTS CONCERNED:

Safety

SUBMITTED FOR CENELEC PARALLEL VOTING

NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

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.

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TITLE:

Explosive atmospheres - Part 29-0: Gas detectors - General requirements and test methods, and possible supplementary parts.

PROPOSED STABILITY DATE: 2029

NOTE FROM TC/SC OFFICERS:

Please refer to 31/1847/INF for the circulation of the CDV with track changes.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

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**Part 29-0: Gas detection equipment –
General requirements and test methods**

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FOREWORD

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187 IEC 60079-29-0 has been prepared by the IEC technical committee 31: Equipment for explosive
188 atmospheres. It is an International Standard.

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

Draft	Report on voting
31/XX/FDIS	31/XX/RVD

190

191 Full information on the voting for its approval can be found in the report on voting indicated in
192 the above table.

193 The language used for the development of this International Standard is English.

194 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
195 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
196 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
197 described in greater detail at www.iec.ch/publications.

198 Users of this document are advised that interpretation sheets clarifying the interpretation of this
199 document can be published. Interpretation sheets are available from the IEC webstore and can
200 be found in the "history" tab of the page for each document.

201 A list of all parts in the IEC 60079-29 series, published under the general title *Explosive*
202 *atmospheres*, can be found on the IEC website.

203 The committee has decided that the contents of this document will remain unchanged until the
204 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
205 specific document. At this date, the document will be

- 206 • reconfirmed,
- 207 • withdrawn, or
- 208 • revised.

209

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212

INTRODUCTION

213 This part of IEC 60079-29 specifies general requirements, test methods and acceptance criteria
214 that apply to flammable, oxygen and toxic gas detection equipment intended to detect gases
215 and vapours and to provide an indication, alarm or other output function for personnel or
216 property protection in industrial and commercial applications.

217 Although a wide range of conditions can be encountered in practice, this document specifies
218 requirements to be fulfilled by gas detection equipment when tested under prescribed laboratory
219 conditions.

220 General and performance requirements for Type HM gas detection equipment intended for
221 occupational exposure measurement in the region of Occupational Exposure Limit Values are
222 set out in IEC 62990-1.

223 Consideration needs to also be given to the following relevant international standards:

224 IEC 60079-29-2, *Explosive atmospheres – Part 29-2: Gas detectors – Selection, installation,*
225 *use and maintenance of detectors for flammable gases and oxygen*

226 IEC 62990-2, *Workplace atmospheres – Part 2: Gas detectors – Selection, installation, use and*
227 *maintenance of detectors for toxic gases and vapours*

228 IEC 60079-29-3, *Explosive atmospheres – Part 29-3: Gas detectors – Guidance on functional*
229 *safety of fixed gas detection systems*

230

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EXPLOSIVE ATMOSPHERES –

Part 29-0: Gas detection equipment – General requirements and test methods

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238 1 Scope

239 This part of IEC 60079-29 specifies general requirements, test methods and acceptance criteria
240 that apply to flammable, oxygen and toxic gas detection equipment intended to detect gases
241 and vapours and to provide an indication, alarm or other output function for personnel or
242 property protection in industrial and commercial applications.

243 NOTE 1 The term gas detection equipment is often referred to as the term gas detector.

244 NOTE 2 The terms 'gas' and 'gases' used in this document are also intended to include 'vapour' and 'vapours'.

245 This document applies to the following gas detection equipment:

- 246 • Gas detection equipment Type "FL" intended for the detection of flammable gases:
 - 247 – Type FL-Group I, in mines susceptible to firedamp;
 - 248 – Type FL-Group II, in locations other than mines susceptible to firedamp; and
 - 249 – Type FL-OP, open path gas detection equipment for flammable gases.
- 250 • Gas detection equipment Type "O2" intended for the detection of Oxygen:
 - 251 – Type O2-DE, detection of oxygen deficiency or oxygen enrichment; and
 - 252 – Type O2-IN, inertisation as measuring function for explosion protection.

253 NOTE 3 Inertisation is an explosion protection technique where an explosive atmosphere is purged with inert gas.

- 254 • Gas detection equipment Type "TX" intended for the detection of toxic gases:
 - 255 – Type TX-SM, detection in areas for safety monitoring applications and typically using
256 alarm signalling;
 - 257 – Type TX-HM, occupational exposure measurement in the region of occupational
258 exposure limit values; and

259 NOTE 4 Type TX-HM gas detection equipment performance requirements reside in IEC 62990-1.

- 260 – Type TX-OP, open path gas detection equipment for toxic gases.

261 NOTE 5 This document addresses equipment giving a level of performance suitable for general purpose
262 applications. Specific applications might require particular tests or evaluations that are additional to and separate
263 from the compliance with this document.

264 NOTE 6 Although the focus of this standard is gas detection equipment for use in 'explosive atmospheres', this
265 standard can be applicable to detection in areas not formally classified as 'explosive atmospheres'.

266 NOTE 7 Refrigerant gas detection equipment used for life, health and safety area monitoring are within the scope
267 of this standard or IEC 62990-1.

268 This document is not applicable to equipment:

- 269 – used for medical applications;
- 270 – used only in laboratories for analysis or measurement;
- 271 – used only for process monitoring or control purposes (such as a gas analyser);
- 272 – used in the domestic environment;
- 273 – used in environmental air pollution monitoring;
- 274 – used for flue gas analysis;
- 275 – used for sampling systems external to the gas detection equipment;

- 276 – with samplers and concentrators such as sorbents or paper tape having an irreversible
277 indication;
278 – consisting of a passive optical receiver without a dedicated optical source.
279 – incorporated within appliances that use refrigerants.

280 **2 Normative references**

281 The following documents are referred to in the text in such a way that some or all of their content
282 constitutes requirements of this document. For dated references, only the edition cited applies.
283 For undated references, the latest edition of the referenced document (including any
284 amendments) applies.

285 IEC 62990-1, *Workplace atmospheres – Part 1: Gas detectors – Performance requirements of*
286 *detectors for toxic gases*

287 IEC 62990-2, *Workplace atmospheres – Part 2: Gas detectors – Selection, installation, use and*
288 *maintenance of detectors for toxic gases and vapours*

289 IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

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

291 IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

292 IEC 61000-4-29, *Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement*
293 *techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port*
294 *immunity tests*

295 IEC 61326-1, *Electrical equipment for measurement, control and laboratory use – EMC*
296 *requirements – Part 1: General requirements*

297 ISO/IEC 80079-20-1, *Explosive atmospheres – Part 20-1: Material characteristics for gas and*
298 *vapour classification – Test methods and data*

299 **3 Terms and definitions**

300 For the purposes of this document, the following terms and definitions apply.

301 ISO and IEC maintain terminology databases for use in standardization at the following
302 addresses:

- 303 • IEC Electropedia: available at <https://www.electropedia.org/>
- 304 • ISO Online browsing platform: available at <https://www.iso.org/obp>

305 **3.1 Gas properties**

306 **3.1.1**

307 **ambient air**

308 <gas detection>

309 normal atmosphere surrounding the equipment

310 **3.1.2**

311 **clean air**

312 <gas detection>

313 air that is free of gases or vapours to which the sensor is sensitive or which influence the
314 performance of the sensor

315 **3.1.3**
316 **reference air**
317 <gas detection>
318 air with an oxygen volume fraction of $(21 \pm 0,4)$ %

319 **3.1.4**
320 **zero test gas**
321 <gas detection>
322 gas, that is free of the gas(es) to be measured and interfering and contaminating substances,
323 the purpose of which is calibration/adjustment of the equipment zero

324 **3.1.5**
325 **standard test gas**
326 <gas detection>
327 test gas with a composition specified to be used for all tests unless otherwise stated

328 **3.1.6**
329 **flammable gas**
330 <gas detection>
331 DEPRECATED: combustible gas
332 gas or vapour which, when mixed with air in a certain proportion, will form an explosive
333 atmosphere

334 Note 1 to entry: For the purposes of this part of IEC 60079-29, the term "flammable gas" includes flammable
335 vapours.

336 [SOURCE: IEC 60079-10-1:2020, 3.6.4, modified – "or vapour" dropped from term and one note
337 to entry added. Admitted and deprecated terms also added]

338 **3.1.7**
339 **toxic gas**
340 <gas detection>
341 gas or vapour that can be harmful to human health and/or the performance of persons due to
342 its physical or physico-chemical properties

343 **3.1.8**
344 **poisons**
345 <gas detection>
346 <for sensing elements> substances that lead to temporary or permanent change of
347 performance, particularly loss of sensitivity of the sensing element

348 **3.1.9**
349 **volume fraction**
350 V/V
351 quotient of the volume of a specified component and the sum of the volumes of all components
352 of a gas mixture before mixing

353 Note 1 to entry: The volume fraction and volume concentration take the same value if, at the same state conditions,
354 the sum of the component volumes before mixing and the volume of the mixture are equal. However, because the
355 mixing of two or more gases at the same state conditions is usually accompanied by a slight contraction or, less
356 frequently, a slight expansion, this is not generally the case.

357 Note 2 to entry: All volumes are with respect to the pressure and the temperature of the gas mixture.

358 **3.2 Structure (or composition) of gas detection equipment**

359 **3.2.1**
360 **alarm-only equipment**
361 <gas detection>
362 equipment with an alarm but not having an indication of measured value

363 **3.2.2**
364 **aspirated equipment**
365 <gas detection>
366 equipment that samples the gas by drawing it to the gas sensor

367 Note 1 to entry: A hand operated or electric pump is often used to draw gas to the sensor.

368 **3.2.3**
369 **automatically aspirated equipment**
370 <gas detection>
371 aspirated equipment with an integral pump or separate pump, which is connected directly to the
372 equipment

373 **3.2.4**
374 **diffusion equipment**
375 <gas detection>
376 equipment in which the transfer of gas from the atmosphere to the sensor takes place without
377 aspirated flow

378 **3.2.5**
379 **fixed equipment**
380 equipment fastened to a support, or otherwise secured in a specific location when energized

381 [SOURCE: IEC 60079-0:2017, 3.31.2]

382 **3.2.6**
383 **portable equipment**
384 <gas detection>
385 equipment intended to be carried by a person during its operation

386 Note 1 to entry: Portable equipment carried by a person during its operation is sometimes referred to as hand-held
387 equipment.

388 Note 2 to entry: Portable gas detection equipment, typically less than 1 kg, may be operated by only one hand.

389 Note 3 to entry: Larger equipment can be operated by the user while it is carried either by hand, by a shoulder strap
390 or carrying harness.

391 [SOURCE: IEC 60079-0:2017, 3.31.4, modified – addition of Note 2 and 3 to entry]

392 **3.2.7**
393 **transportable equipment**
394 equipment not intended to be carried by a person during operation, nor intended for fixed
395 installation

396 [SOURCE: IEC 60079-0:2017, 3.31.5]

397 **3.2.8**
398 **gas detection transmitter**
399 fixed gas detection equipment that provides a conditioned electronic signal or output indication
400 to a generally accepted industry standard (such as 4 to 20 mA), intended to be utilized with
401 separate gas detection control units or signal processing data acquisition, central monitoring
402 and similar systems, which typically process information from various locations and sources
403 including, but not limited to gas detection equipment

404 **3.2.9**
405 **gas detection control unit**
406 equipment intended to provide display indication, alarm functions, output contacts or alarm
407 signal outputs or any combination when operated with remote sensor(s)

408 **3.2.10**
409 **separate gas detection control unit**
410 equipment intended to provide display indication, alarm functions, output contacts or alarm
411 signal outputs or any combination when operated with gas detection transmitter(s)

412 **3.2.11**
413 **equipment with integral sensor(s)**
414 <gas detection>
415 equipment that provides display indication, alarm functions, output contacts or alarm signal
416 outputs using a sensor which is within or directly assembled to the equipment housing

417 **3.2.12**
418 **accessory**
419 <gas detection>
420 component which can be fitted to the equipment for a special purpose and that is referenced in
421 the instructions

422 EXAMPLE: External gas pump, sampling probe, hoses, collecting cone, weather protection device.

423 **3.3 Sensors**

424 **3.3.1**
425 **sensing element**
426 <gas detection>
427 part of the sensor that is sensitive to the gas or vapour to be measured

428 **3.3.2**
429 **measuring principle** (<https://standards.iteh.ai>)
430 <gas detection>
431 principle that makes the sensing element or the sensor sensitive to the gas or vapour to be
432 measured

433 **3.3.3**
434 **sensor** (<https://standards.iteh.ai/catalog/standards/sist/6f400188-80a5-4f89-8518-460b79b3ce32/osist-pren-iec-60079-29-0-2025>)
435 <gas detection>
436 assembly in which the sensing element is housed and that may also contain associated circuit
437 components

438 **3.3.4**
439 **integral sensor**
440 <gas detection>
441 sensor that is within or directly assembled to a gas detection control unit, gas detection
442 transmitter, or to transportable or portable equipment

443 **3.3.5**
444 **remote sensor**
445 <gas detection>
446 sensor that is installed separately, but is connected to a gas detection control unit, gas detection
447 transmitter, or to transportable or portable equipment

448 **3.4 Supply of gas to equipment**

449 **3.4.1**
450 **sample line**
451 <gas detection>
452 means by which the gas being sampled is conveyed to the sensor

453 Note 1 to entry: Accessories such as filters or water traps are often included in the sample line.