

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Explosive atmospheres –**  
**Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases**

**Atmosphères explosives –**  
**Partie 29-1: Détecteurs de gaz – Exigences d'aptitude à la fonction des détecteurs de gaz inflammables**

<https://standards.iteh.ai/catalog/standards/iec/4401682a-60b7-49fc-be1e-b36e97bce1ad/iec-60079-29-1-2016>



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**IEC 60079-29-1**  
Edition 2.0 2016-07

**EXPLOSIVE ATMOSPHERES –**

**Part 29-1: Gas detectors –  
Performance requirements of detectors for flammable gases**

**INTERPRETATION SHEET 1**

This interpretation sheet has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
31/1456/DISH	31/1462/RVDISH

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

<https://standards.iteh.ai/catalog/standards/iec/4401682a-60b7-49fc-be1e-b36e97bce1ad/iec-60079-29-1-2016>

In accordance with Administrative Circular AC/42/2004: New procedures for interpretation of standards, Annex 2: New text for ISO/IEC Directives (IEC Supplement), there has been a request for formal interpretation of the Air Velocity test acceptance criterion in the performance standard IEC 60079-29-1:2016.

**Question:**

Is the acceptance criteria for the Air Velocity test to be assessed based upon variation from the 0 m/s reading?

**Interpretation:**

Some of the performance tests are intended to be an accuracy based assessment from the applied gas concentration (eg. Short Term Stability and Calibration Curve). Other performance tests are intended to be a variation based assessment from a known baseline (eg. Baseline at 20 °C for Temperature test and baseline at 100 kPa for Pressure test).

**Interpretation:**

No, for general purpose equipment evaluation to two gases is essential in order to get representative test results. Therefore, all tests need to be conducted for the two gases unless otherwise specified (e.g. EMC as outlined in IEC 60079-29-1/AMD1:—1).

**iTeh Standards**  
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[IEC 60079-29-1:2016](https://standards.iteh.ai/catalog/standards/iec/4401682a-60b7-49fc-be1e-36e97bce1ad/iec-60079-29-1-2016)

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<sup>1</sup> Under preparation. Stage at the time of publication: IEC/CCDV 60079-29-1/AMD1:2019.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**IEC 60079-29-1**  
Edition 2.0 2016-07

**EXPLOSIVE ATMOSPHERES –**

**Part 29-1: Gas detectors –  
Performance requirements of detectors for flammable gases**

**INTERPRETATION SHEET 2**

This interpretation sheet has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
31/1457/DISH	31/1467/RVDISH

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

<https://standards.iteh.ai/catalog/standards/iec/4401682a-60b7-49fc-be1e-b36e97bce1ad/iec-60079-29-1-2016>

In accordance with Administrative Circular AC/42/2004: New procedures for Interpretation of standards, Annex 2: New text for ISO/IEC Directives (IEC Supplement), there has been a request for formal interpretation of the required testing for each general purpose test gas for performance standard IEC 60079-29-1:2016, Subclause 5.3.2 (c), by the Australian National Committee. The requirement is stated as follows:

- c) Methane, and propane or butane for equipment intended for general purpose flammable gas detection (in order to get representative results, e.g. concerning sensitivity, response times and drift).

**Question:**

Is the interpretation of this text that propane or butane required tests are only Calibration and adjustment (5.4.3), Short-term stability (5.4.4.2), and Time of response (5.4.15)?



In review of the air velocity acceptance criteria, the format is the same as the Short Term Stability and Calibration Curve and therefore this is intended to be an accuracy based assessment.

**iTeh Standards**  
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[IEC 60079-29-1:2016](#)

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### EXPLOSIVE ATMOSPHERES –

#### Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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**IEC 60079-29-1 edition 2.1 contains the second edition (2016-07) [documents 31/1257/FDIS and 31/1266/RVD], the contents of the interpretation sheets 1 and 2 (2019-04), and its amendment 1 (2020-03) [documents 31/1525/FDIS and 31/1533/RVD].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.**

International Standard IEC 60079-29-1 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This second edition of IEC 60079-29-1 constitutes a technical revision.

Significant technical changes between IEC 60079-29-1, Edition 1 (2007), and IEC 60079-29-1, Edition 2 (2016), is as listed below:

Significant changes with respect to IEC 60079-29-1:2007:

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Measuring range up to 20 % LEL (Modified requirements)	All		X	
Definitions (Additional clarifications)	3	X		
Manufacturer's claims (special applications requirements)	4.1.1	X		
General construction (Malfunction effects on safety related function)	4.2.1			C1
General indicating devices (portable equipment with visual and audible indication)	4.2.2.1			C2
Suppression of indication and measured values below zero (functional limits)	4.2.2.5			C3
Fault signals (Fault indication below minimum voltage limit, sensor disconnection and zero drift condition)	4.2.4			C4
Adjustments (Zero and sensitivity adjustments)	4.2.5			C5
Marking (Portable equipment protective case)	4.3		X	
Instruction Manual (Additions and clarifications)	4.4			C6
Samples and sequence of tests (Optical filter special sensitivity limits, and modification considerations)	5.2.2		X	
Preparation of equipment before testing (separate gas detection control units)	5.2.3	X		
Test gas (methane, and propane or butane for general purpose gas detector)	5.3.2			C7
General test methods (selectable range and wiring worst case conditions)	5.4.1		X	
Calibration curve (fixed volume fractions)	5.4.3.2			C8
Response to different gases (semiconductor and catalytic high gas concentration exposure)	5.4.3.3			C9
Stability (duration of test method)	5.4.4		X	
Alarm set point(s) (alarm set point test method)	5.4.5	X		
Temperature (portable) (temperature range and stabilization period)	5.4.6			C10
Temperature (all other equipment) (temperature range and stabilization period)	5.4.6		X	

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Pressure (tolerance on pressure measurement)	5.4.7	X		
Humidity of test gas (test method clarification)	5.4.8	X		
Air velocity (test method clarification)	5.4.9	X		
Flow rate for aspirated equipment (test method clarification)	5.4.10	X		
Vibration (test method clarification)	5.4.12	X		
Drop test for portable and transportable equipment (Automatic re-starting or shut-down requirement clarification)	5.4.13	X		
Warm-up time (user prompt requirement)	5.4.14			C11
High gas concentration operation above the measuring range (test method and requirement clarification)	5.4.16	X		
Battery capacity (test method clarification)	5.4.17	X		
Power supply variation (minimum supply voltage fault limit)	5.4.18			C12
Poisons (applicable only to Group I apparatus with catalytic or semiconductor sensors) (test method clarification)	5.4.20.2	X		
Electromagnetic compatibility (test methods and requirements)	5.4.21			C13
Field calibration kit (test method clarification)	5.4.22	X		
Software function (supporting documentation)	5.4.23		X	
Determination of time of response (test method clarification)	Annex B		X	

NOTE 1 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. More guidance may be found by referring to the Redline Version of the standard.

Explanations:

## A) 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, or a reduction in level of existing requirement.

### 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.