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Električne naprave za zaznavanje vnetljivih plinov v gospodinskih in neindustrijskih okoljih - 1. del: Preskusne metode in zahtevane lastnosti

Electrical apparatus for the detection of flammable gases in household and non-industrial premises - Part 1: Test methods and performance requirements

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Ta slovenski standard je istoveten z: prEN 50194-1

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ICS:

13.320

Alarmni in opozorilni sistemi Alarm and warning systems

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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Will supersede EN 50194-1:2009 and all of its
amendments and corrigenda (if any)

English Version

**Electrical apparatus for the detection of flammable gases in
household and non-industrial premises - Part 1: Test methods
and performance requirements**

To be completed

To be completed

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2022-04-08.

It has been drawn up by CLC/TC 216.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 50194-1:2022) has been prepared by Technical Committee CLC/TC 216 “Gas detectors”, the secretariat of which is held by BSI.

The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

This document will supersede EN 50194-1:2009 and all of its amendments and corrigenda (if any).

prEN 50194-1:2022 includes the following significant technical changes with respect to EN 50194 -1:2009:

Description	Clause
This document has been completely revised following the structure of the standard EN 50291-1:2018	All
End of Life indicator has been made mandatory and shall include an audible and visible warning	5.5
Guidance has been added for assessing battery capacity and expected life	8.2
Requirements for mains powered alarms with back-up supply have been added	8.5
The number of potential interference gases has been increased	
Tests have been added for an optional alarm silence facility	
Requirements have been added for apparatus using radio links	7
Added requirements for the use of batteries	5.10
Annex B has been added	Annex B
Comply with EN 50271 Standard for software	5.8
Defined type C apparatus for refrigerant gases	1
Bibliography has been added	
Annex C “A-deviations” has been removed	
Tests for stability in high humidity (non-condensing) and low humidity for Type C apparatus has been added	6.3.19 and 6.3.20
Ignition test for Hydrogen and Type C apparatus has been added	6.3.14
Tests for refrigerant poisoning and oil spray for Type C apparatus has been added	6.3.15
Revision of the Normative references	2

Introduction

This document will define test methods and performance requirements for all electrical equipment used for the gas detection in residential, household and not industrial application by means of measurement of one or more threshold alarm levels.

This document is addressed to the manufacturers of such equipment and test laboratories which validate it.

This document is an updated revision of the previous EN 50194-1 issued in 2009 and includes some new concepts of detection:

The term of domestic has been changed in household and not industrial premises in order to cover all the sites that at present are not covered from the industrial standard covered by IEC EN 60079-29-1, that means shops, small commercial office and in general where are installed household appliances.

This document implements also the range of the flammable gases to be detected. In these premises are now days present all the new flammable refrigerant gases and also in some North Countries also Ammonia at LFL level.

More and more also the fuel cell will be part of the residential and commercial premises and so it will be useful to consider in this new revision also the Hydrogen detection.

The last consideration is concerning the update performance introduced to align this new revision with the similar new standard issued on 2018 for Carbon Monoxide and other new Standards and concerning the digital and software technologies.

This document, in that sense, has been redesigned taking as guideline the last revision of EN 50191.

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1 Scope

This document specifies general requirements for the construction, testing and performance of electrically operated apparatus for the detection of flammable gases, designed for continuous operation in a fixed installation in domestic, in household and more generally in non-industrial premises. The apparatus can be mains or battery powered.

NOTE 1 Household premises are all the premises not classified as hazardous area or potentially explosive atmospheres according to the definition in EN 60079-0 and considered as performance under EN 60079-29-1.

Gas detectors or gas detection system, which may be installed where there may be a source of danger to the public, such as premises intended to be used in shops, in light industry and on farms, are within the scope of this document.

Additional requirements for apparatus to be used in recreational vehicles and similar premises are specified in EN 50194-2.

NOTE 2 For caravan holiday homes EN 50194-1 applies.

This document specifies three types of apparatus to operate in the event of an escape of town gas, natural gas or liquefied petroleum gas (LPG), Hydrogen and flammable refrigerant gases:

- Type A apparatus – to provide a visual and audible alarm and an executive action in the form of an output signal that can actuate directly or indirectly a shut-off device and/or other ancillary device in the event of an escape of town gas, natural gas (LNG) liquefied petroleum gas (LPG) and Hydrogen gases;
- Type B apparatus – to provide a visual and audible alarm only;
- Type C apparatus – to provide a visual and audible alarm and an executive action in the form of an output signal that can actuate directly or indirectly a shut-off device and/or other ancillary device in the event of an escape of flammable refrigerant gas A2L-A2-A3 as classified in ISO 817.

Apparatus complying with this document is not considered suitable for installation in potentially explosive atmospheres, where the EN 60079 series applies.

NOTE 3 Apparatus tested in accordance with EN 60079-29-1 will not necessarily comply with this document.

This document does not apply to any of the following:

- apparatus intended for the detection of dusts or mists in air;
- scientific or laboratory-based apparatus used only for analysis or measurement;
- apparatus used exclusively for process measurement purposes;
- apparatus for medical purposes;
- apparatus used for breath alcohol measurement;
- apparatus intended for the direct measurement of automotive exhaust gases;
- apparatus intended for use in industrial environments.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 437:2021, *Test gases. Test pressures. Appliance categories*

EN 1775, *Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations*

EN 50244, *Electrical apparatus for the detection of combustible gases in domestic premises - Guide on the selection, installation, use and maintenance*

EN 50270, *Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen*

EN 50271, *Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies*

EN 60079-29-1, *Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases*

EN 60335-1:2002, *Household and similar electrical appliances - Safety - Part 1: General requirements*

EN 60335-1:2012, *Household and similar electrical appliances - Safety - Part 1: General requirements*

IEC 60335-2-40:2018, *Household and similar electrical appliances. Safety Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60704-1:2010, *Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 1: General requirements*

ISO 817, *Refrigerants — Designation and safety classification*

EN ISO/IEC 80079-20-1:2019, *Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

3.1

ambient conditions

normal atmosphere surrounding the apparatus

3.2

clean air

air which is free from combustible gases, interfering and contaminating substances

3.3**non-industrial premises**

apparatus intended for use in residential, commercial and light-industrial environments, as described in EN 61000-6-1 and EN 61000-6-3

3.3.1**household premises**

any house or building being a place of residence or home of a household, family or person

Note 1 to entry: Also premises where a gas leakage can be a source of danger to the public, such as shops, light industry and farms, are within the scope of this document

Note 2 to entry: Household premises are all the premises not classified as hazardous area or potentially explosive atmospheres as definition in IEC 60079-0 and considered as performance under IEC 60079-29-1

3.4**fixed installation**

apparatus which is intended to have all parts except replaceable batteries permanently installed

3.5**latching alarm**

alarm which, once activated, requires deliberate action for resetting

3.6**lower flammable limit****LFL**

volume ratio of flammable gas or vapour in air below which an explosive gas atmosphere will not be formed

Note 1 to entry: Annex B of EN ISO/IEC 80079-20-1:2019 gives a list of flammability levels which are the internationally agreed basis for the type testing of devices. National regulations possibly use differing values for the LFL of some substances (for example the values for methane and propane, which were specified in older European Standards).

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3.7**sensor**

assembly in which the sensing element is housed and which may contain associated circuit components

3.8**sensing element**

part of the sensor which is sensitive to the gas/vapour to be measured, the output of which will change in the presence of flammable gas

3.8.1**integral sensor**

sensor module that is allocated inside one more bigger appliance or control system

[SOURCE: IEC 62990-1:2019]

3.9**volume ratio****V/V**

ratio of the volume of a component to the volume of the gas mixture

3.10**transmittable output signal**

signal characterised by a standby and an activation state by which action may be initiated

EXAMPLE Triggering a ventilation device.

prEN 50194-1:2022 (E)

3.11**warm-up time**

time interval between the time when the apparatus is switched on and the time when the apparatus is fully operational

3.12**alarm set point****pre-set alarm level**

fixed setting of the apparatus that determines the volume ratio of combustible gas at which the apparatus will automatically initiate an alarm and for Type A and Type C apparatus, an output signal

3.13**fault signal**

visual or audible signal indicating a faulty or failed apparatus

3.14**LPG**

butane, propane or mixtures thereof

3.14.1**flammable refrigerant gas**

refrigerant gas classified as safety group A2L, A2 or A3 according to ISO 817

3.15**mains powered apparatus**

apparatus designed to be powered by the domestic or household mains electrical supply, with or without additional power source

3.16**self-contained battery powered apparatus**

apparatus provided with an internal battery to provide the necessary amount of energy for a predefined duration of operation

3.17**continuous operation**

apparatus which is continuously powered with continuous or intermittent automatic sensing

3.18**recreational vehicle**

recreational vehicles considered by this document include recreational craft, caravans and motor caravans

NOTE Other motorised vehicles like trucks are known to have residential accommodation. They are not recreational vehicles but are considered as similar premises in respect of this document.

3.19**caravan holiday home**

transportable leisure accommodation vehicle that does not meet requirements for construction and use of road vehicles, that retains means for mobility and that is for temporary or seasonal occupation

[SOURCE: EN 13878:2003]

3.20**gas detection apparatus****detector**

apparatus comprising the sensor, remote sensor if applicable, alarm and other circuit components, power supply and for Type A and Type C apparatus a means of providing an output signal

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