SLOVENSKI STANDARD
SIST EN IEC 62990-2:2021

01-december-2021

Zrak na delovnem mestu - 2. del: Plinski detektorji - Izbira, vgraditev, uporaba in vzdrževanje detektorjev strupenih plinov in hlapov (IEC 62990-2:2021)

Workplace atmospheres - Part 2: Gas detectors - Selection, installation, use and maintenance of detectors for toxic gases and vapours (IEC 62990-2:2021)

Arbeitsplatzatmosphäre - Teil 2: Gasmessgeräte - Auswahl, Installation, Einsatz und Wartung von Gasmessgeräten für toxische Gase und Dämpfe (IEC 62990-2:2021)

Atmosphères des lieux de travail - Partie 2 : Détecteurs de gaz - Sélection, installation, utilisation et maintenance des détecteurs de gaz et de vapeurs toxiques (IEC 62990-2:2021)

Ta slovenski standard je istoveten z: **EN IEC 62990-2:2021**

ICS:

13.040.30	Kakovost zraka na delovnem mestu	Workplace atmospheres
13.320	Alarmni in opozorilni sistemi	Alarm and warning systems

SIST EN IEC 62990-2:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62990-2

July 2021

ICS 29.260.20

English Version

Workplace atmospheres - Part 2: Gas detectors - Selection, installation, use and maintenance of detectors for toxic gases and vapours (IEC 62990-2:2021)

Atmosphères des lieux de travail - Partie 2 : Détecteurs de gaz - Sélection, installation, utilisation et maintenance des détecteurs de gaz et de vapeurs toxiques (IEC 62990-2:2021)

Arbeitsplatzatmosphäre - Teil 2: Gasmessgeräte - Auswahl, Installation, Einsatz und Wartung von Gasmessgeräten für toxische Gase und Dämpfe (IEC 62990-2:2021)

This European Standard was approved by CENELEC on 2021-07-09. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

European foreword

The text of document 31/1566/FDIS, future edition 1 of IEC 62990-2, prepared by IEC/TC 31 “Equipment for explosive atmospheres” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62990-2:2021.

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 (dop) 2022–04–09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–07–09

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62990-2:2021 was approved by CENELEC as a European Standard without any modification.

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

IEC 60079-10-1	NOTE	Harmonized as EN IEC 60079-10-1
IEC 60079-0	NOTE	Harmonized as EN IEC 60079-0

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60079-29-2	-	Explosive atmospheres - Part 29–2: Gas detectors - Selection, installation, use and maintenance of detectors for flammable gases and oxygen	EN 60079-29-2	-
IEC 62990-1	-	Workplace atmospheres - Part 1: Gas-detectors - Performance requirements of detectors for toxic gases		-

IEC 62990-2

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INTERNATIONAL STANDARD

colour inside

Workplace atmospheres – Part 2: Gas detectors – Selection, installation, use and maintenance of detectors for toxic gases and vapours

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WORKPLACE ATMOSPHERES –

Part 2: Gas detectors – Selection, installation, use and maintenance of detectors for toxic gases and vapours

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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International Standard IEC 62990-2 has been prepared IEC technical committee 31: Equipment for explosive atmospheres and ISO technical committee 146: Air quality, sub-committee 2: Workplace atmospheres.

It is published as a double logo standard.

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

FDIS	Report on voting
31/1566/FDIS	31/1568/RVD

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

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

A list of all parts in the IEC 62990, published under the general title *Workplace atmospheres*, can be found on the IEC website.

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

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Toxic gas detection equipment can be used whenever there is the possibility of a hazard to life or adverse health effects caused by the accumulation of a toxic gas or vapour. Such equipment can provide a means of reducing the exposure to the hazard by detecting the presence of a toxic gas or vapour and issuing suitable audible or visual warnings. Gas detectors can also be used to initiate precautionary steps (for example, plant shutdown and evacuation).

Performance requirements for gas detection equipment for workplace atmospheres are set out in IEC 62990 series standards.

However performance capability alone cannot ensure that the use of such equipment will properly safeguard life and health where toxic gases and vapours might be present. The level of safety obtained depends heavily upon correct selection, installation, calibration and periodic maintenance of the equipment, combined with knowledge of the limitations of the detection technique required. This cannot be achieved without responsible informed management.

This document has been specifically written to cover all the functions necessary from selection to ongoing maintenance for a successful gas detection operation.

WORKPLACE ATMOSPHERES –

Part 2: Gas detectors – Selection, installation, use and maintenance of detectors for toxic gases and vapours

1 Scope

This document gives guidance on the selection, installation, use and maintenance of electrical equipment used for the measurement of toxic gases and vapours in workplace atmospheres. The primary purpose of such equipment is to ensure safety of personnel and property by providing an indication of the concentration of a toxic gas or vapour and warning of its presence.

This document is applicable to equipment whose purpose is to provide an indication, alarm or other output function to give a warning of the presence of a toxic gas or vapour in the atmosphere and in some cases to initiate automatic or manual protective actions. It is applicable to equipment in which the sensor automatically generates an electrical signal when gas is present.

For the purposes of this document, equipment includes:

a) fixed equipment;

b) transportable equipment, and

c) portable equipment.

This document is intended to cover equipment defined within IEC 62990-1, but can provide useful information for equipment not covered by that document.

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.

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62990-1 and the following apply.

NOTE 1 Certain definitions within IEC 62990-1 are repeated below for the convenience of the reader.

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

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

NOTE 2 Additional definitions applicable to explosive atmospheres can be found in Chapter 426 of the International Electrotechnical Vocabulary (IEC 60050-426).

3.1
toxic gas
gas or vapour that can be harmful to human health and/or the performance of persons due to its physical or physico-chemical properties

Note 1 to entry: For the purpose of this document, the term “toxic gas” includes “toxic vapours”.

3.2
interfering gas
any gas other than the gas to be detected, including water vapour, which affects the indication

3.3
clean air
air that is free of gases or vapours to which the sensor is sensitive or which influence the performance of the sensor

3.4
zero gas
gas recommended by the manufacturer, which is free of toxic gases and interfering and contaminating substances, the purpose of which is calibration or adjustment of the equipment zero

3.5
volume fraction
quotient of the volume of a specified component and the sum of the volumes of all components of a gas mixture before mixing, all volumes referring to the pressure and the temperature of the gas mixture

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

3.6
occupational exposure limit value
OELV
limit of the time-weighted average of the concentration of a chemical agent in the air within the breathing zone of a worker in relation to a specified reference period

Note 1 to entry: The term “limit value” is often used as a synonym for “occupational exposure limit value”, but the term “occupational exposure limit value” is preferred because there is more than one limit value (e.g., biological limit value and occupational exposure limit value).

Note 2 to entry: Occupational exposure limit values (OELVs) are often set for reference periods of 8 h, but can also be set for shorter periods or concentration excursions.

[SOURCE: ISO 18158:2016, 2.1.5.4, modified (Note 2 to entry is shortened)]

3.7
exposure (by inhalation)
situation in which a chemical agent is present in air that is inhaled by a person

3.8
time weighted average concentration
TWA concentration
concentration of gas in air averaged over a reference period

3.9
fixed equipment
equipment fastened to a support, or otherwise secured in a specific location, when energized

3.10
transportable equipment
equipment not intended to be carried by a person during operation, nor intended for fixed installation

3.11
portable equipment
equipment intended to be carried by a person during its operation

Note 1 to entry: Portable equipment is battery powered and includes, but is not limited to;

a) hand-held equipment, typically less than 1 kg, which requires use of only one hand to operate,

b) personal monitors, similar in size and mass to the hand-held equipment, that are continuously operating while they are attached to the user, and,

c) larger equipment that can be operated by the user while it is carried either by hand, by a shoulder strap or carrying harness and which might or might not have a hand directed probe.

3.12
aspirated equipment
equipment that samples the atmosphere by drawing it to the sensor

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

3.13
alarm-only equipment
equipment with an alarm but not having an indication of measured value

3.14
sensing element
part of the sensor which is sensitive to the gas or vapour to be measured

3.15
sensor
assembly in which the sensing element is housed and that can also contain associated circuit components

3.16
remote sensor
sensor which is installed separately, but is connected to a gas detection control unit, gas detection transmitter, or transportable or portable equipment

3.17
gas detection transmitter
fixed gas detection equipment that provides a conditioned electronic signal or output indication to a generally accepted industry standard (such as 4 to 20 mA), intended to be utilized with separate gas detection control units or signal processing data acquisition, central monitoring and similar systems, which typically process information from various locations and sources including, but not limited to gas detection equipment