



SLOVENSKI STANDARD

SIST EN 50292:2002

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Electrical apparatus for the detection of carbon monoxide in domestic premises – Guide on the selection, installation, use and maintenance

Electrical apparatus for the detection of carbon monoxide in domestic premises - Guide
on the selection, installation, use and maintenance

Elektrische Geräte für die Detektion von Kohlenmonoxid in Wohnhäusern - Leitfaden für
Auswahl, Installation, Benutzung und Instandhaltung

Appareils électriques pour la détection de monoxyde de carbone dans les locaux à
usage domestique - Guide de sélection, d'installation, d'utilisation et de maintenance

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EUROPEAN STANDARD

EN 50292

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English version

**Electrical apparatus for the detection of carbon monoxide
in domestic premises -
Guide on the selection, installation,
use and maintenance**

Appareils électriques pour la détection
de monoxyde de carbone dans les
locaux à usage domestique -
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This European Standard was approved by CENELEC on 2001-03-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 216, Gas detectors.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50292 on 2001-03-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2002-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-04-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given for information only. In this standard, annexes A and B are informative.

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Introduction

This European Standard is intended to be a guide for people who, in the course of their professional activities, are required to install apparatus for the detection of carbon monoxide (CO) in domestic premises. It is also aimed at anyone who might supply such detectors to members of the public for subsequent installation according to national regulations, so that advice may be given based on good engineering practice.

Apparatus for the detection of carbon monoxide are not a substitute for good installation and regular servicing of fuel burning appliances or regular cleaning of chimneys, although they may provide an added margin of reassurance for users. Domestic carbon monoxide detectors with or without some form of executive function may overcome fears of fuel safety and may be particularly beneficial in certain circumstances.

It is necessary to understand that carbon monoxide toxicity may have different consequences according to the physical condition of the individual. Thus, a carbon monoxide detector designed according to EN 50291 may not fully safeguard individuals with specific medical conditions.

Carbon monoxide detectors are not intended to be used as an alternative to a smoke alarm.

1 Scope

This guide provides information on the selection, installation, use and maintenance of apparatus for the detection of carbon monoxide, intended for continuous operation in domestic premises. It should be read in conjunction with EN 50291, together with any additional relevant national or local regulations.

The guide refers to the installation of two types of apparatus:

Type A apparatus - to provide a visual and audible alarm and an executive action in the form of an output signal that can be used to actuate directly or indirectly a ventilation or other ancillary device.

Type B apparatus - to provide a visual and audible alarm only.

This guide excludes apparatus:

- for the detection of combustible gases (see EN 50244);
- for industrial installations or commercial premises;
- for use in boats, caravans or mobile homes.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 50244	2000	Electrical apparatus for the detection of combustible gases in domestic premises - Guide on the selection, installation, use and maintenance
EN 50291	2001	Electrical apparatus for the detection of carbon monoxide in domestic premises - Test methods and performance requirements

EN 1775 1998 Gas supply - Gas pipework for buildings - Maximum operating pressure \leq 5 bar - Functional recommendations

3 Definitions

For the purposes of this guide the following definitions apply:

3.1

domestic premises

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

3.2

fixed installation

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

3.3

latching alarm

an apparatus which, once activated, requires deliberate action for deactivation

3.4

sensor

an assembly in which the sensing element is housed that may contain associated circuit component

3.5

sensing element

a device, the output of which will change in the presence of carbon monoxide

3.6

continuous operation

apparatus which is continuously powered with continuous or intermittent automatic sensing

3.7

gas detection apparatus

apparatus, which may also be generically termed "gas detector", comprising the sensor, remote sensor if applicable, alarm and any other circuit components, power supply and, for type A apparatus, a means of providing an output signal

3.8

volume ratio (V/V)(commonly referred to as concentration)

ratio of the volume of carbon monoxide to the volume of the gas mixture; often expressed in units of parts per million (ppm)

3.9

output signal

a signal characterised by a standby and an activation state, by which action may be initiated. In many cases, such action will entail triggering an ancillary device

3.10

warm-up time

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

3.11

alarm set point

a fixed setting of the apparatus that determines the volume ratio and duration of exposure at which the apparatus will automatically initiate an alarm and, for type A apparatus, an output signal

3.12

fault signal

a visual, audible or other type of output indicating a faulty or failed apparatus

3.13

mains-powered apparatus

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

3.14

battery-powered apparatus

an apparatus designed to be powered by batteries only

4 Sources of carbon monoxide

4.1 General information

Carbon monoxide is a colourless, odourless, non-irritating gas which is classified as a chemical asphyxiant, whose toxic action is a direct result of the hypoxia produced by a given exposure (see annexes A and B).

4.2 Normal exposure levels

Carbon monoxide may be generated within the home or enter from outside. The normal average background levels of carbon monoxide in domestic premises, measured over periods of 1 h to 24 h is less than 10 ppm. In cases of climatic inversion, higher levels of carbon monoxide are possible.

4.3 Burning of carbonaceous materials for heating and cooking

Most of the carbon monoxide in the environment is produced during combustion of carbonaceous material, e.g. solid fuels (such as coal, coke and wood), liquid fuels (such as oil and petrol) and gaseous fuels (such as natural gas, town gas and liquified petroleum gas (LPG)).

It should be noted that town gas may contain a significant proportion of carbon monoxide prior to combustion.

The proportion and constituents of the combustion products from carbonaceous fuels will depend on the particular fuel and the combustion conditions.

Varying concentrations of carbon monoxide are produced from most combustion processes. Exhaust gases from burning solid and liquid fuels may contain significant concentrations of carbon monoxide: levels of 20 000 ppm - 50 000 ppm (2 % - 5 %) are not unexpected. Efficient burning of natural gas and LPG in well-designed burners in an excess of air will not produce significant flue concentrations of carbon monoxide, usually in the range 10 ppm - 200 ppm. However, poorly maintained and inefficient burners can produce considerably higher levels of carbon monoxide.

Flue reversal may occur under certain climatic conditions with appliances using combustion air taken from within the premises. This is a temporary phenomenon which may occur with certain types of appliance, even when correctly maintained.

4.3.1 Space and water heating

Solid, liquid and gaseous fuels may be used for space and water heating. They are used in a variety of ways, either as a local heat source or a remote central heat source, including:

- appliance with flue using room air;
- appliance without flue using room air;
- appliance with flue using external air.

In defective warm air systems, carbon monoxide may be distributed into remote rooms.

4.3.2 Cooking

Natural gas, town gas or LPG are the main fuels for cooking, generally using unflued appliances. In some cases, solid fuels are used in appliances which are fitted with flues.

It should be emphasised that barbecue grills using charcoal, emit very high amounts of carbon monoxide and should only be used outdoors.

4.4 Uncontrolled burning

Carbon monoxide is a major gaseous product from fires resulting from uncontrolled burning of carbonaceous material. Varying concentrations of carbon monoxide are produced, depending on the material, burning conditions, etc.

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4.5 Tobacco smoking

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Smoking produces a significant concentration of carbon monoxide.

4.6 Internal combustion engines

A major source of carbon monoxide in the non-industrial environment is the combustion engine. The concentration of carbon monoxide in exhaust gas is normally in the range 1 % - 3 % but may reach 7 % in a badly maintained or badly tuned engine.

The exhaust gases from internal combustion engines (vehicles or electricity generators for example) running in an enclosed space will quickly produce dangerous levels of carbon monoxide.

4.7 Multi-occupancy and multi-storey buildings

In multi-occupancy and multi-storey buildings, carbon monoxide produced in one area may be transported to and leak into another part of the building, e.g. across roof spaces, between floors, along ducting and in shared flues.