SLOVENSKI STANDARD
SIST EN 50055:1997

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Electrical apparatus for the detection and measurement of combustible gases - Performance requirements for group I apparatus indicating up to 5 % (v/v) methane in air

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Elektrische Geräte für das Aufspüren und die Messung brennbarer Gase - Anforderungen an das Betriebsverhalten von Geräten der Gruppe I mit einem Meßbereich bis zu 5 % (V/V) Methan in Luft

Appareils électriques de détection et de mesure des gaz combustibles - Règles de performances des appareils du Groupe I pouvant indiquer jusqu'à 5 % (v/v) de méthane dans l'air

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ENGLISH VERSION

ELECTRICAL APPARATUS FOR THE DETECTION AND MEASUREMENT OF COMBUSTIBLE GASES PERFORMANCE REQUIREMENTS FOR GROUP I APPARATUS INDICATING UP TO 5 % (v/v) METHANE IN AIR

Appareils électriques de détection et de mesure des gaz combustibles Règles de performances des appareils du Groupe I pouvant indiquer jusqu'à 5 % (v/v) de méthane dans l'air

Elektrische Geräte für das Aufspüren und die Messung brennbarer Gase Anforderungen an das Betriebsverhalten von Geräten der Gruppe I mit einem Meßbereich bis zu 5 % (V/V) Methan in Luft

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Up-to-date list and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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CENELEC

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

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FOREWORD

This European Standard has been prepared by the CENELEC Subcommittee SC 31-9, Gas detectors.

The text of the draft was approved by CENELEC as EN 50055 on 10 December 1990.

The following dates were fixed:

- latest date of publication of an identical national standard	(dop)	1992-03-01
- latest date of withdrawal of conflicting national standards	(dow)	1992-03-01

For products which have complied with the relevant national standard before 1992-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-03-01.

Contents

European standards referred to in European Standard EN 50 055

EN 50 054 (1991) Electrical apparatus for the detection and measurement of combustible gases.
General requirements and test methods

1 Scope

1.1 This European Standard specifies performance requirements for Group I (as defined in European Standard EN 50 054) portable, transportable and fixed apparatus for the detection and measurement of methane concentrations in mine air. The apparatus, or parts thereof, are intended for use in mines susceptible to firedamps and shall meet the general requirements and test methods specified in European Standard EN 50 054.

NOTE. The use of Group I apparatus may not be permitted without the additional and prior approval of the relevant authority in mines under its jurisdiction, see Note 1 under clause 1.1 of European Standard EN 50 054.

1.2 This European Standard is restricted to apparatus intended for the detection and measurement of methane volume ratios in air from 0 % (v/v) up to but not exceeding 5 % (v/v).

2 Definitions

For the purposes of this European Standard, the definitions given in European Standard EN 50 054 apply.

3 General requirements

The apparatus shall comply with the general requirements specified in European Standard EN 50 054 and with the performance requirements specified in clause 4 of this European Standard.

Compliance shall be determined in accordance with the appropriate test requirements and methods, including initial calibration, specified in European Standard EN 50 054.

It shall be verified that the contents of the instruction manual are in accordance with the requirements specified in European Standard EN 50 054.

4 Performance requirements

4.1 General

The normal conditions for test are specified in clause 3.4 of EN 50 054. Compliance shall be determined in accordance with the test methods specified in clause 4.4 of EN 50 054.

4.2 Unpowered storage

After being submitted to the conditions specified in clause 4.4.2 of EN 50 054, the apparatus shall meet the requirements specified in 4.3 to 4.25 of this European Standard.

4.3 Calibration curve (not applicable to alarm-only apparatus)

After initial adjustment with the standard test gas, each of the three indications (after correction using the manufacturer's calibration curve, if necessary) obtained for each of four gas volume ratios distributed over the measuring range shall not differ from these volume ratios by more than ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater.

4.4 Drift (continuous duty apparatus)

The medium term variation shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater, in air and in the standard test gas.

In addition, the apparatus shall be run in a methane-air mixture (methane volume ratio 0.1 % (v/v) to 1.5 % (v/v)) for 5 days, readings being taken daily in clean air and in the standard test gas and the variation of the indication in the standard test gas shall not exceed ± 0.1 % (v/v) methane.

4.5 Drift (spot reading apparatus)

The variation of the indication shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater, in air and in the standard test gas.

4.6 Alarm

The alarm shall operate during every cycle of the test. If a latching alarm is provided, the manual reset action shall be checked during every cycle.

4.7 Temperature

The variation of the indication from that at 20 °C, over the temperature range -10 °C to +40 °C, shall not exceed ± 0.2 % (v/v) methane or ± 10 % of the indication, whichever is the greater, in air and in the standard test gas.

4.8 Pressure

The variation of the indication from that at 101.3 kPa, over a pressure range of 92 kPa to 115 kPa, shall not exceed ± 0.25 % (v/v) methane or ± 15 % of the indication, whichever is the greater, in air and in the standard test gas.

4.9 Humidity

The variation of the indication over a humidity range of 5 % relative humidity (r.h.) to 90 % r.h., at +40 °C, shall not exceed ± 0.2 % (v/v) methane or ± 10 % of the indication, whichever is the greater.

4.10 Air speed

The variation of the indication shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication whichever is the greater.

4.11 Pumping rate

The variation of the indication shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater.

4.12 Orientation

The variation of the indication shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater.

4.13 Vibration (applicable only to machine-mounted apparatus)

During the vibration test, the apparatus shall not suffer any loss of function and shall not give a false alarm or fault signal. The apparatus shall not suffer damage resulting in hazard or loss of function.

At the conclusion of the vibration test and after the apparatus sensor has then been exposed to clean air followed by the standard test gas, the deviation of the indication from that determined prior to the test shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater.

4.14 Drop test (applicable to portable apparatus and remote sensors)

The apparatus shall not suffer damage resulting in hazard or loss of function.

The variation of the indication shall not exceed ± 0.1 % (v/v) methane or ± 5 % of the indication, whichever is the greater.

4.15 Warm-up time (not applicable to spot-reading apparatus)

4.15.1 ***Fixed and transportable apparatus***. The apparatus shall warm-up in clean air to indicate zero to within ± 0.1 % (v/v) methane, in a time not exceeding 5 min, or longer if specified by the manufacturer, and no false alarms shall be generated.

The apparatus shall warm-up in the standard test gas to give a final indication to within ± 0.1 % (v/v) methane, in a time not exceeding 5 min, or longer if specified by the manufacturer.