

Electrical apparatus for the detection and measurement of oxygen — Performance requirements and test methods

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British Standard

ICS 19.080; 71.040.40

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National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 13 and a back cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 February 1999

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ISBN 0 580 30676 3

Amendments issued since publication

Amd. No.	Date	Text affected

English version

Electrical apparatus for the detection and measurement of oxygen — Performance requirements and test methods

Appareils électriques de détection et de mesure d'oxygène — Règles de fonctionnement et méthodes d'essais

Elektrische Geräte für das Aufspüren und die Messung von Sauerstoff — Anforderungen an das Betriebsverhalten und Prüfmethoden

This European Standard was approved by CENELEC on 12 September 1998.

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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.

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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 second edition of the European Standard was prepared by SC 31-9, Electrical apparatus for the detection and measurement of combustible gases to be used in industrial and commercial potentially explosive atmospheres, of Technical Committee CENELEC TC 31, Electrical apparatus for explosive atmospheres, on the basis of EN 50104:1995 and an amendment thereto.

This amendment was approved by CENELEC on 1996-12-09 for incorporation into a new edition of EN 50104.

This European Standard replaces EN 50104:1995.

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) 1999-01-01
- latest date which the national standards conflicting with the EN have to be withdrawn (dow) 1999-01-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and covers essential requirements of EC Directive 94/9/EC.

Annexes designated “informative” are given for information only.

In this standard, annexes A and B are informative.

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1 Scope

This European Standard specifies performance requirements and test methods for portable, transportable and fixed electrical apparatus for the measurement of the oxygen concentration in gas mixtures indicating up to 25 % (V/V).

This European Standard applies to apparatus intended for commercial and industrial safety applications, including integral sampling systems of aspirated apparatus. In the case of inert gas purging, this European Standard applies also to apparatus with an oxygen measuring function for explosion protection. It does not apply to external sampling systems, nor laboratory, scientific or medical equipment nor those which are used exclusively for process control.

NOTE The most commonly used oxygen sensors in commercial equipment for industrial application are:

- a) paramagnetic sensors;
- b) electrochemical sensors (aqueous and solid electrolytes).

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate place 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 50081-1:1992, *Electromagnetic compatibility — Generic emission standard — Part 1: Residential, commercial and light industry*.

EN 50081-2:1993, *Electromagnetic compatibility — Generic emission standard — Part 2: Industrial environment*.

EN 50082-1:1997, *Electromagnetic compatibility — Generic immunity standard — Part 1: Residential, commercial and light industry*.

EN 50082-2:1995, *Electromagnetic compatibility — Generic immunity standard — Part 2: Industrial environment*.

EN 60068-2-6:1995, *Environmental testing — Part 2: Tests — Test Fc: Vibration (sinusoidal)*.

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1

oxygen alarm apparatus

portable, transportable or fixed apparatus to monitor the oxygen concentration in gas mixtures, which measures autonomously and continuously or cyclically, warns and optionally switches, indicates, registers and stores

3.2

fixed apparatus

an apparatus which is intended to have all of its parts permanently installed

3.3

transportable apparatus

an apparatus that is not intended to be portable, but which can readily be moved from one place to another

3.4

portable apparatus

apparatus that has been designed to be readily carried from place to place and to be used while being carried

NOTE The portable apparatus is battery powered. Portable apparatus includes the following apparatus, but is not limited only to them:

- small hand-held apparatus, typically weighing less than 1 kg, suitable for single-handed operation;
- personal monitors, similar in size and weight to the hand-held apparatus, which are continuously ready to be operated (but not necessarily continuously sensing) while attached to the user; and
- larger apparatus up to 5 kg that can be operated by the user while suspended by hand, by a shoulder strap or by a carrying case; it may or may not have a hand-directed probe.

3.5

continuous-duty apparatus

an apparatus which is continuously powered and that continuously senses the oxygen concentration at every measuring point

3.6

cyclically operated apparatus

an apparatus that senses several measuring points at time intervals

3.7

alarm-only apparatus

an apparatus having an alarm but not having a meter or other indicating device

3.8

measuring principle

type of physical or physico-chemical detection principle and the measurement procedure to determine the measured value

3.9

measuring signal

signal of the sensor that is either not amplified or amplified with a constant factor

3.10

sensor

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