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Australian Standard™

Fire detection and alarm systems

Part 6: Carbon monoxide fire detectors using electro-chemical cells

This Australian Standard was prepared by Committee FP-002, Fire Detection, Warning, Control and Intercom Systems. It was approved on behalf of the Council of Standards Australia on 20 September 2005.
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The following are represented on Committee FP-002:

Audio Engineering Society
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Australian Building Codes Board
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Australian Electrical and Electronic Manufacturers Association
Australian Government Analytical Laboratories, Scientific Services Laboratory
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PREFACE

This Standard was prepared by the Standards Australia Committee, FP-002, Fire Detection, Warning, Control and Intercom Systems, to supersede AS 1603.14—2001, *Automatic fire detection and alarm systems*, Part 14: *Point type carbon monoxide (CO) fire detectors*, which will be withdrawn 12 months after the publication of this Standard.

This Standard is identical with, and has been reproduced from, ISO 7240-6:2004, *Fire detection and alarm systems*, Part 6: *Carbon monoxide fire detectors using electro-chemical cells*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

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References to International Standard or other Publication			*Australian/New Zealand Standard*		
ISO			AS		
7240	Fire detection and alarm systems		7240	Fire detection and alarm systems	
7240-7	Part 7:	Point detectors using scattered light, transmitted light or ionization	7240.7	Part 7:	Point detectors using scattered light, transmitted light or ionization (ISO 7240-7:2003, MOD)
IEC			AS		
60068	Environmental testing		60068	Environmental testing	
60068-1	Part 1:	General and guidance	60068.1	General and guidance	
60068-2-1	Part 2:	Tests. Test A: Cold	60068.2.1	Tests—Test A: Cold	
60068-2-2	Part 2:	Tests. Test B: Dry heat	60068.2.1	Tests—Test B: Dry heat	
60068-2-6	Part 2:	Tests. Test Fc: Vibration (sinusoidal)	60068.2.6	Tests—Test Fc: Vibration (sinusoidal)	
60068-2-27	Part 2:	Tests. Test Ea and guidance: Shock	60068.2.27	Tests—Test Ea and guidance: Shock	
60068-2-30	Part 2:	Tests. Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)	60068.2.30	Tests—Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)	
60068-2-42	Part 2-42:	Tests—Test Kc: Sulpher dioxide test for contacts and connections	60068.2.42	Tests—Test Kc: Sulpher dioxide test for contacts and connections	
60068-2-78	Part 2-78:	Tests—Test Cab: Damp heat, steady state	60068.2.78	Tests—Test Cab: Damp heat, steady state	

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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INTRODUCTION

This part of ISO 7240 has been drawn up by the Sub-Committee ISO/TC 21/SC 3 and is based on a Standard prepared by Standards Australia International Technical Committee FP-002 "*Fire detection, warning, control and intercom systems*".

A fire detection and fire alarm system is required to function satisfactorily not only in the event of a fire, but also during and after exposure to conditions likely to be met in practice such as corrosion, vibration, direct impact, indirect shock and electromagnetic interference. Some tests specified are intended to assess the performance of the fire detectors under such conditions.

The performance of fire detectors is assessed from results obtained in specific tests; this part of ISO 7240 is not intended to place any other restrictions on the design and construction of such detectors.

Carbon monoxide (CO) fire detectors can react promptly to slow smouldering fires involving carbonaceous materials because CO does not depend solely on convection, but also moves by diffusion and CO fire detectors might be better suited to applications where other fire detection techniques are prone to false alarms, i.e. due to dust, steam and cooking vapours.

Whilst CO gas has greater mobility than smoke, it can be diluted by ventilation systems and be affected by convection currents. Hence the same considerations as for point smoke detectors should be taken into account. Recirculating systems confined to a single room have little effect on dilution, as this is similar to the natural diffusion of the CO gas.

CO fire detectors might be less affected by stratification than other types of fire detectors.

It is important that the location of CO fire detectors take into account areas where false operation or non-operation is likely. CO fire detectors might not be suitable for detecting fires involving

— clean-burning liquids;

— PVC-insulated cables;

— combustible metals;

— certain self-oxidizing chemicals;

— non-carbonaceous materials.

Some typical locations where it is important to carefully evaluate the use of CO fire detectors are as follows:

a) areas where CO gas may be present from exhausts and normal manufacturing processes.

EXAMPLES Car parks, car-park return air plenums, loading docks.

b) Generally cigarette smoke will not have sufficient CO present to cause alarms even though smoke may be clearly visible. However, in heavy smoking or incense-burning areas, it is important to measure the CO concentration before installing CO fire detectors.

This part of ISO 7240 includes a number of Electromagnetic Compatibility (EMC) immunity requirements. The details for these requirements have been taken from European standard EN 50130-4 "*Alarm Systems — Part 4: Electromagnetic compatibility — Product family standard: Immunity requirements for components of fire, intruder and social alarm systems*".

STANDARDS AUSTRALIA

Australian Standard

Fire detection and alarm systems
Part 6: Carbon monoxide fire detectors using electro-chemical cells

1 Scope

This part of ISO 7240 specifies requirements, test methods and performance criteria for point fire detectors using electro-chemical cells that operate using carbon monoxide detection principles for use in fire detection and alarm systems installed in buildings (see ISO 7240-1). CO fire detectors conforming to this part of ISO 7240 might not be suitable for other uses.

For the testing of other types of fire detectors, or smoke detectors working on different principles, this part of ISO 7240 should be used only for guidance. Fire detectors with special characteristics and developed for specific risks are not covered by this part of ISO 7240.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 209-1, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition*

ISO 7240-1, *Fire detection and alarm systems — Part 1: General and definitions*

ISO 7240-7. *Fire detection and alarm systems — Part 7: Point-type smoke detectors using scattered light, transmitted light or ionization*

IEC 60068-1, *Environmental testing — Part 1: General and guidance*

IEC 60068-2-1, *Environmental testing — Part 2: Tests. Tests A: Cold*

IEC 60068-2-2, *Environmental testing — Part 2: Tests. Tests B: Dry heat*

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

IEC 60068-2-27, *Environmental testing. Part 2: Tests. Test Ea and guidance: Shock*

IEC 60068-2-30, *Environmental testing — Part 2: Tests. Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60068-2-42, *Environmental testing — Part 2-42: Tests —Test Kc: Sulphur dioxide test for contacts and connections*

IEC 60068-2-78, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state*