AS 6183—2011

Australian Standard®

# Fire protection equipment—Carbon dioxide extinguishing systems for use on premises—Design and installation (ISO 6183:2009, MOD)

This Australian Standard® was prepared by Committee FP-011, Special Hazard Fire Protection Systems. It was approved on behalf of the Council of Standards Australia on 10 March 2011.
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The following are represented on Committee FP-011:

- Australian Industry Group
- Australian Museum
- Chamber of Commerce & Industry Queensland
- CSIRO Manufacturing and Materials Technology
- Engineers Australia
- Fire Protection Association Australia
- National Fire Industry Association
- Society of Fire Protection Engineers Australasian Chapter
- Security Providers Association of Australia

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This Standard was issued in draft form for comment as DR AS 6183.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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# PREFACE

This Standard was prepared by the Standards Australia Committee FP-011, Special Hazard Fire Protection Systems, to supersede the requirements for carbon dioxide extinguishing systems from AS 4214—2002, *Gaseous fire extinguishing systems.*

This Standard is an adoption with national modifications and has been reproduced from ISO 6183:2009, *Fire protection equipment—Carbon dioxide extinguishing systems for use on premises—Design and installation*, and has been varied as indicated to take account of Australian conditions. The modifications are specified in Appendix ZZ.

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

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

Detailed requirements for the design and installation of marine $CO_2$ systems are provided in Annex ZB (Marine) of AS ISO 14520.1 *Gaseous fire-extinguishing systems—Physical properties and system design,* Part 1: *General requirements (ISO 14520-1:2006, MOD)*.

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

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# INTRODUCTION

This International Standard is intended for use by those concerned with purchasing, designing, installing, testing, inspecting, approving, operating and maintaining carbon dioxide ($CO_2$) extinguishing systems.

This International Standard applies only to carbon dioxide fixed fire-extinguishing systems in buildings and other premises on land. Although the general principles could well apply to other uses (e.g. maritime use), for these other uses additional considerations will almost certainly have to be taken into account and the application of the requirements given in this International Standard is therefore unlikely to be fully satisfactory. General information about carbon dioxide as an extinguishing medium is given in Annex D. This can be useful background information for those unfamiliar with the characteristics of this medium.

It has been assumed in the preparation of ISO 6183 that the execution of its provisions will be entrusted to those persons appropriately qualified and experienced in the specification, design, installation, testing, approval, inspection, operation and maintenance of systems and equipment, for whose guidance it has been prepared, and who can be expected to exercise a duty of care to avoid unnecessary release of carbon dioxide. New requirements to minimize the need to release carbon dioxide during testing and commissioning procedures are included in this edition. These are linked to the inclusion of enclosure integrity testing.

Carbon dioxide has for many years been a recognized effective medium for the extinction of flammable liquid fires as well as fires in the presence of electrical and ordinary Class A hazards. Nevertheless, it ought not be forgotten, in the planning of comprehensive schemes, that there could be hazards for which this media is not suitable, or that in certain circumstances or situations there can be dangers in its use requiring special precautions.

The use of carbon dioxide is no longer recommended for total flooding of occupied areas. ISO 14520 provides requirements for other extinguishing agents that can be more appropriately used in these areas.

It is important that the fire protection of a building or plant be considered as a whole. Carbon dioxide systems form only a part, though an important part, of the available facilities. It cannot be assumed that their adoption necessarily removes the need to consider supplementary measures, such as the provision of portable fire extinguishers or other mobile appliances for first aid or emergency use, or to deal with special hazards.

Advice on these matters can be obtained from the appropriate manufacturer of the carbon dioxide or the extinguishing system. Information can also be sought from the appropriate fire authority, the health and safety authorities and insurers. In addition, reference will need to be made, as necessary, to other national standards and statutory regulations of the particular country.

It is essential that firefighting equipment be carefully maintained to ensure instant readiness when required. Routine maintenance is liable to be overlooked or given insufficient attention by the owner of the system. It is, however, neglected at peril to the lives of occupants of the premises and at the risk of crippling financial loss. The importance of maintenance cannot be too highly emphasized. Inspection — preferably by a third party — should include an evaluation concluding that the extinguishing system continues to provide adequate protection for the risk (protected zones as well as state of the art can change over time).

AUSTRALIAN STANDARD

# Fire protection equipment—Carbon dioxide extinguishing systems for use on premises—Design and installation (ISO 6183:2009, MOD)

## 1 Scope

This International Standard specifies requirements and gives recommendations for the design, installation, testing, maintenance and safety of fixed carbon dioxide firefighting systems in buildings, plant or other structures. It is not applicable to extinguishing systems on ships, in aircraft, on vehicles and mobile fire appliances, or to below-ground systems in the mining industry; nor does it apply to carbon dioxide pre-inerting systems.

Design of systems where unclosable opening(s) exceed a specified area and where the opening(s) can be subject to the effect of wind is not specified, although general guidance on the procedure to be followed in such cases is given (see 7.4.3.2).

## 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 1182:2002, *Reaction to fire tests for building products — Non-combustibility test*

ISO 3864-1:2002, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 5923:1989, *Fire protection — Fire extinguishing media — Carbon dioxide*

ISO 14520-1:2006, *Gaseous fire extinguishing systems — Physical properties and system design — Part 1: General requirements*

ISO 16003:2008, *Components for fire extinguishing systems using gas — Requirements and test methods — Container valve assemblies and their actuators; selector valves and their actuators; nozzles; flexible and rigid connectors; and check valves and non-return valves*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1**
**approved**
acceptable to a relevant **authority** (3.2)

NOTE In determining the acceptability of installations or procedures, equipment or materials, the authority could base acceptance on compliance with the appropriate standards.