

Australian Standard™

Automatic fire sprinkler systems

Part 1: General requirements



Standards Australia

This Australian Standard was prepared by Committee FP/4, Automatic Sprinkler Installations. It was approved on behalf of the Council of Standards Australia on 15 October 1999 and published on 5 December 1999.

The following interests are represented on Committee FP/4:

- Association of Consulting Engineers Australia
- Australasian Fire Authorities Council
- A1 | Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Department of Defence (Australia)
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AS 2118.1—1999
(Incorporating Amendment No. 1)

Australian Standard™

Automatic fire sprinkler systems

Part 1: General requirements

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PREFACE

This Standard was prepared by the Standards Australia Committee FP/4, Automatic Sprinkler Installations, to supersede AS 2118.1 — 1995, *Automatic fire sprinkler systems, Part 1: Standard*.

This Standard incorporates Amendment No. 1 (June 2000). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure, or part thereof affected.

The objective of this edition is to include changes that reflect recent advances in technology and to refine the content for clarity and conciseness.

Significant changes have been made to Section 3 concerning exposure protection, and to Section 5 relating to protection of concealed spaces. Sections 10, 11 and 12, in respect to hydraulic calculation methods, have also received attention. Section 9, Light hazard class systems, has been entirely rewritten to include more useable and up-to-date parameters for the design of this class of system. The definitions clauses have been enlarged and the informative text for occupancy classification is set out in an appendix.

The revision to the AS 2118 suite of Standards has included Standards Australia's requirements to keep product and installation Standards separate. The series comprises the following:

AS

2118	Automatic fire sprinkler systems
2118.1	Part 1: General requirements
2118.2	Part 2: Wall wetting sprinklers (Drenchers)
2118.3	Part 3: Deluge
2118.4	Part 4: Residential
2118.5	Part 5: Domestic
2118.6	Part 6: Combined sprinkler and hydrant
2118.8	Part 8: Minor modifications
2118.9	Part 9: Piping support and installation
2118.10	Part 10: Approval documentation
4118	Fire sprinkler systems
4118.1.1	Part 1.1: Components—Sprinklers and sprayers
4118.1.2	Part 1.2: Components—Alarm valves (wet)
4118.1.3	Part 1.3: Components—Water motor alarms
4118.1.4	Part 1.4: Components—Valve monitors
4118.1.5	Part 1.5: Components—Deluge and pre-action valves
4118.1.6	Part 1.6: Components—Stop valves and non-return valves
4118.1.7	Part 1.7: Components—Alarm valves (dry)
4118.1.8	Part 1.8: Components—Pressure reducing valves
4118.1.9	Part 1.9: Components—Accelerators and exhausters
4118.2.1	Part 2.1: Piping—General

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

This Standard incorporates commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by 'C' preceding the clause number and is printed in italics in a box. The commentary is for information only and does not need to be followed for compliance with the Standard.

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FOREWORD

Automatic fire sprinkler systems provide an important level of fire protection to a building structure. Additionally, automatic fire sprinklers provide an important level of protection for the occupants of a building together with protection to the environment by minimizing the effects that a major structural fire could have. Sprinklers also safeguard against loss of plant, machinery, equipment and building contents generally as well as protecting a business by providing against loss of continuity of business operations. Sprinklers also conserve water during fire-fighting operations.

In modern buildings and indeed with older buildings that are being upgraded to meet the latest requirements in fire safety, there is need to consider other systems that impact on the function and operation of a sprinkler system. Other systems that can either interface with the sprinkler system, or be integrated in it, are automatic heat and smoke detectors, emergency warning and intercommunication systems and smoke control and air-handling systems. Hence, when designing sprinkler systems, it will be necessary to consider the interaction of sprinkler systems with other building fire safety systems in order to maximize protection and provide an optimal approach for the overall objectives of fire safety.

STANDARDS AUSTRALIA

Australian Standard

Automatic fire sprinkler systems

Part 1: General requirements

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design and installation of automatic fire sprinkler systems in buildings. It also provides for occupancy classification.

NOTE: See Appendix A for details of occupancy classification.

1.2 OBJECTIVE

The objective of this Standard is to provide designers and installers with minimum requirements for the design and installation of automatic fire sprinkler systems.

1.3 APPLICATION

This Standard is referenced in the Building Code of Australia (BCA) by way of BCA Amendment No. 6 published on 1 January 2000, and supersedes the previous edition of AS 2118.1—1995, which will be withdrawn 12 months from the date of publication of this edition.

1.4 NEW DESIGNS AND INNOVATIONS

Any alternative materials, designs, methods of assembly, procedures, and similar, that do not comply with the specific requirements of this Standard, or are not mentioned in it, but that give equivalent results to those specified, are not necessarily prohibited.

1.5 REFERENCED DOCUMENTS

The documents referred to in this Standard are listed in Appendix B.

1.6 DEFINITIONS

For the purpose of this Standard the definitions given in AS 2484.1, AS 2484.2, AS/NZ 3500.0 and those below apply.

1.6.1 Alarm signalling equipment (ASE)

Equipment complying with AS 4428.6.

1.6.2 Alarm valve

A non-return valve which allows the water to enter the installation and operate the alarms when the installation pressure falls below the water supply pressure.

1.6.3 Assumed area of operation

An area containing the maximum number of sprinklers considered likely to operate when involved in a fire. The assumed area of operation is different in each hazard class.

1.6.4 Building owner

The owner of a building or the authorized representative of the owner.

1.6.5 Compartment

A space that is completely enclosed by walls and a ceiling. The walls of the compartment enclosure may have openings to an adjoining space, provided there is a minimum depth of 200 mm from the ceiling to the top of the opening.

1.6.6 Effective height

The height of the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units) from the floor of the lowest storey providing egress to a road or open space.

1.6.7 Encapsulated

Completely enclosed by a plastic sheet on the sides and top as applicable to pallet loads of goods or packages. Individual cartons enclosed on the top and sides with plastic and cartons waterproofed by coatings on the exterior surface are also considered to be encapsulated.

1.6.8 Fire and draught stop

A partition or bulkhead, extending from end to end and top to bottom of a concealed space, installed to delay the spread of fire and constructed from imperforate materials which are non-shatterable under fire conditions.

NOTES:

- 1 Examples of acceptable fire and draught stops include the following:
 - (a) Structural features such as a reinforced beam or steel joist extending to or through the ceiling, and a brick wall extended up through the ceiling to the floor above.
 - (b) A purpose-built partition mounted on wood or steel framework, constructed of 10 mm gypsum board, 0.6 mm sheet steel or 7 mm high-density tempered hardboard.
- 2 Only the following apertures are permitted:
 - (a) Openings for the passage of individual pipes, conduits and airconditioning ducts, provided that such openings are reasonably close fitting.
 - (b) Openings not exceeding 2 m in width for the passage of groups of pipes, conduits and airconditioning ducts, protected by a 'cut-off' sprinkler or sprinklers as required to provide full protection to such openings.

1.6.9 Installation

The portion of a sprinkler system downstream from and inclusive of a control assembly.

1.6.10 Listed

Sprinkler equipment or materials demonstrated to meet appropriate standards or which have been tested in a specified manner and found suitable for use.

NOTE: Various organizations produce lists of equipment suitable for use in fire sprinkler systems. The means for identifying listed equipment may vary with each organization concerned with product evaluation. Some organizations do not recognize equipment as listed unless it is also labelled. For identifying and nominating a product as listed, reference should be made to the method used by the organization that has listed the equipment

1.6.11 Monitoring service

A constantly attended remote controlling station which receives fire alarm signals and transfers the signals to a firefighting service via a permanently connected telecommunications link.