STANDARDS Australia

AS 2118.3—2010

Automatic fire sprinkler systems

Part 3: Deluge systems

Australian STANDARD

AS

Deluge systems

This Australian Standard® was prepared by Committee FP-004, Automatic Fire Sprinkler Systems. It was approved on behalf of the Council of Standards Australia on 10 June 2010. This Standard was published on 20 August 2010.

The following are represented on Committee FP-004:

- Association of Consulting Engineers Australia
- Australasian Fire and Emergency Service Authorities Council
- Australian Building Codes Board
- Australian Industry Group
- Australian Institute of Building Surveyors
- Consumers' Federation of Australia
- Department of Defence (Australia)
- Department of Human Services (Victoria)
- Engineers Australia
- Fire Protection Association Australia
- Independent Chairperson
- Insurance Council of Australia Limited
- National Fire Industry Association
- Testing Interests (Australia)

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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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Australian Standard®

Automatic fire sprinkler systems

Part 3: Deluge systems

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PREFACE

This Standard was prepared by the Standards Australia Committee FP-004, Automatic Fire Sprinkler Systems, to supersede AS 2118.3—1997, *Automatic fire sprinkler systems*, Part 3: *Deluge*.

This Standard is based on established industry practice for providing the most appropriate protection to special hazards encountered in modern society. Sources used by the committee include research and experience in several countries including the UK and USA. The technical content is essentially identical with the previous 1997 edition. A Foreword has been added covering deluge system design methodology.

The AS 2118 suite of sprinkler Standards has been restructured into two groups: Systems (AS 2118 series) and Component (AS 4118 series). The complete series comprises the following:

AS	
2118	Automatic fire sprinkler systems
2118.1	Part 1: General systems
2118.2	Part 2: Drencher systems
2118.3	Part 3: Deluge systems (this Standard)
2118.4	Part 4: Sprinkler systems for accommodation buildings not exceeding four storeys in height
2118.5	Part 5: Home fire sprinkler systems
2118.6	Part 6: Combined sprinkler and hydrant systems in multistorey buildings
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—Alarms valves (dry)
4118.1.8	Part 1.8: Components—Pressure-reducing valves
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.

Notes in this Standard are advisory only.

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FOREWORD

A deluge system is similar to a pre-action system except the sprinklers are open and the pipe is not pressurized with air. Deluge systems are connected to a water supply through a deluge valve that is opened by the operation of a smoke or heat detection system in the same areas as the open sprinklers or nozzles. When the detection system is activated water discharges through all of the sprinklers in the system. Deluge systems are used in places that are considered high hazard areas such as power plants, aircraft hangars and chemical storage or processing facilities.

This Standard covers deluge systems within buildings and includes provision for foam proportioning if required. Protected hazards include aircraft hangars, chemical manufacturers or processors, explosives and fireworks manufacturers, flammable liquid processing and handling facilities and similar premises. The Standard also recognises systems incorporating either non air-aspirating or air-aspirating open sprinklers.

Deluge fire protection systems are normally used in special hazard installations where an entire area application of water is required for protection. Typical applications may include flammable liquid handling and storage areas, aircraft hangars, and other high hazard installations where water is the most effective extinguishing agent. Deluge systems employ open sprinklers or spray nozzles attached to a piping system. The system is connected to a water supply through a deluge valve. This valve is opened by the operation of a fire detection system installed. Deluge systems may be activated by wet or dry pilot sprinklers, or electric detectors. When the deluge valve opens, water flows into the piping system and discharges from all open sprinklers and nozzles.

Deluge systems can be either automatic or manually operated. The design requirement and applied water density (flow per unit area) will depend on the specific hazard to be protected. Water is applied at a rate that will overcome the predicted fire hazard associated with the fuel load.

STANDARDS AUSTRALIA

Australian Standard
Automatic fire sprinkler systems

Part 3: Deluge systems

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design and installation of deluge fire sprinkler systems within buildings, with or without foam concentrate induction.

These systems are not suitable for use on materials that will react violently with water (e.g. metallic sodium), or which produce hazardous materials by reacting with water, or on fires involving electrical equipment where the electrical non-conductivity of the extinguishing agent is of first importance.

Water spray deluge systems employing medium or high velocity sprayer nozzles are not covered by this Standard.

1.2 OBJECTIVE

The objective of this Standard is to provide designers and installers with a set of requirements for the operation of specialized sprinkler installations in order to function in hazardous environments such as flammable liquid stores where open sprinklers deliver water or foam rapidly when quick opening valves operate following detection of flame, heat or smoke.

1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

1670 Automatic fire detection and alarm systems—System design, installation and commissioning (series)

1940 The storage and handling of flammable and combustible liquids

2118 Automatic fire sprinkler systems
2118.1 Part 1: General systems

2118 Fire sprinkler systems
2118.1 Part 1.1: Components—Sprinklers and sprayers
2118.2.1 Part 2.1: Piping—General

AS/NZS

3500 Plumbing and drainage
3500.0 Part 0: Glossary of terms
3500.1 Part 1: Water services

NFPA

409 Aircraft hangars