

Australian Standard<sup>®</sup>

---

**Fire sprinkler systems**

**Part 1.1: Components—  
Sprinklers and sprayers**

---

This Australian Standard was prepared by Committee FP/4, Automatic Sprinkler Installations. It was approved on behalf of the Council of Standards Australia on 6 February 1996 and published on 5 June 1996.

---

The following interests are represented on Committee FP/4:

Asset Services  
Australian Building Codes Board  
Australian Chamber of Commerce and Industry  
Australian Chamber of Manufactures  
Australian Fire Authorities Council  
Australian Fire Protection Association  
Australian Water and Sewerage Authorities  
Commonwealth Fire Board  
CSIRO—Division of Building, Construction and Engineering  
Department of Defence  
Fire Protection Industry Association  
Institution of Engineers, Australia  
Insurance Council of Australia  
Master Plumbers and Mechanical Services Association of Victoria  
Melbourne Water  
New Zealand Fire Equipment Association  
Telstra  
Testing Interests  
The Association of Consulting Engineers, Australia

---

**Review of Australian Standards.** *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

*Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.*

*Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.*

---

*This Standard was issued in draft form for comment as DR 92183.*

Australian Standard<sup>®</sup>

---

**Fire sprinkler systems**

**Part 1.1: Components—  
Sprinklers and sprayers**

---

## PREFACE

This Australian Standard was prepared by the Joint Australia/New Zealand Standards Committee FP/4 on Automatic Sprinkler Installations, to supersede in part AS 2118—1982, *Automatic fire sprinkler systems*, and is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

The revisions to AS 2118 include Standards Australia's requirements to keep product and installation Standards separate. When complete the series will comprise:

### AS

- 2118 Automatic fire sprinkler systems
- 2118.1 Part 1: Standard
- 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 to installed systems
- 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
- 4118.2.1 Part 2.1: Piping—General

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

This Standard is based on but not equivalent to ISO 6182.1:1993, which it is anticipated will replace this Standard at a later date. The assistance obtained from ISO is hereby acknowledged.

### © Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

## CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE . . . . .	5
1.2 NEW DESIGNS AND INNOVATIONS . . . . .	5
1.3 REFERENCED DOCUMENTS . . . . .	5
1.4 DEFINITIONS . . . . .	6
1.5 DEEMED TO SATISFY . . . . .	6
1.6 INTERPRETATION OF SPECIFIED LIMITING VALUES . . . . .	7
SECTION 2 TYPES OF SPRINKLERS	
2.1 TYPE OF SPRINKLER ACCORDING TO TYPE OF HEAT RESPONSIVE ELEMENT . . . . .	8
2.2 TYPE OF SPRINKLER ACCORDING TO WATER DISTRIBUTION . . . . .	8
2.3 TYPE OF SPRINKLER ACCORDING TO MOUNTING POSITION . . . . .	12
2.4 SPECIAL TYPES OF SPRINKLER . . . . .	12
SECTION 3 REQUIREMENTS	
3.1 DIMENSIONS . . . . .	13
3.2 UPGRADING OF SPRINKLER INSTALLATIONS . . . . .	13
3.3 NOMINAL RELEASE TEMPERATURES . . . . .	13
3.4 OPERATING TEMPERATURES . . . . .	13
3.5 WATER FLOW AND DISTRIBUTION . . . . .	14
3.6 FUNCTION . . . . .	14
3.7 STRENGTH OF SPRINKLER BODY . . . . .	15
3.8 STRENGTH OF RELEASE ELEMENT . . . . .	15
3.9 LEAK RESISTANCE . . . . .	15
3.10 HEAT EXPOSURE . . . . .	15
3.11 THERMAL SHOCK . . . . .	15
3.12 CORROSION . . . . .	15
3.13 INTEGRITY OF SPRINKLER COATING . . . . .	16
3.14 WATER HAMMER . . . . .	16
3.15 DYNAMIC HEATING . . . . .	16
3.16 RESISTANCE TO HEAT . . . . .	16
3.17 RESISTANCE TO VIBRATION . . . . .	16
3.18 RESISTANCE TO IMPACT . . . . .	16
3.19 CRIB FIRE PERFORMANCE . . . . .	16
3.20 LATERAL DISCHARGE . . . . .	17
3.21 30 DAY LEAKAGE RESISTANCE . . . . .	17
3.22 VACUUM RESISTANCE . . . . .	17
SECTION 4 TEST METHODS	
4.1 GENERAL . . . . .	18
4.2 EXAMINATION . . . . .	18
4.3 DETERMINATION OF SERVICE LOAD . . . . .	18
4.4 LEAK-RESISTANCE TEST . . . . .	20
4.5 FUNCTIONAL TEST . . . . .	20

4.6	TESTING THE CHARACTERISTICS OF THE HEAT RESPONSIVE ELEMENT .....	20
4.7	HEAT EXPOSURE TEST .....	26
4.8	THERMAL SHOCK TEST FOR GLASS BULB SPRINKLERS .....	26
4.9	STRENGTH TEST FOR RELEASE ELEMENTS .....	27
4.10	WATER FLOW TEST .....	27
4.11	WATER DISTRIBUTION TEST .....	27
4.12	CORROSION TESTS .....	36
4.13	TESTS FOR SPRINKLER COATINGS .....	37
4.14	HEAT-RESISTANCE TEST .....	38
4.15	WATER-HAMMER TEST .....	38
4.16	VIBRATION TEST .....	38
4.17	IMPACT TEST .....	38
4.18	CRIB FIRE TEST .....	40
4.19	30 DAY LEAKAGE TEST .....	44
4.20	VACUUM TEST .....	45
	SECTION 5 MARKING .....	46
	APPENDICES	
	A BIBLIOGRAPHY .....	47
	B NOTES ON THE STRENGTH TEST FOR RELEASE ELEMENTS .....	48

## STANDARDS AUSTRALIA

**Australian Standard**  
**Fire sprinkler systems**

## Part 1.1: Components—Sprinklers and sprayers

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard specifies the performance and testing of metallic element and frangible glass bulb sprinklers and sprayers, as listed in Table 1.1.

NOTE: Sprinklers and sprayers will be referred to throughout this text as sprinklers.

Whilst this Standard recognizes that there are sprinklers other than those listed in Table 1.1, the acceptance of these sprinklers is dependent on their documented approval and listing by a recognized authority.

Full testing procedures for sprinklers not listed in Table 1.1 are not necessarily included in this Standard.

**TABLE 1.1**  
**SPRINKLERS BY NOMINAL SIZE, DEFLECTOR**  
**TYPE AND K FACTOR**

Nominal size mm	Nominal thread size, mm	Deflector	K factor
10	10	SP SU	5.7 ±0.3
15	15	SP SU CU/P WU/P	8.0 ±0.4
20	20	SP SU CU/P WH	11.5 ±0.6

**1.2 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. Advice on such matters can be sought from Standards Australia, but the specified approval remains the prerogative of the regulatory authority.

**1.3 REFERENCED DOCUMENTS** The following documents are referred to in this Standard:

- AS  
2118 Automatic fire sprinkler systems  
2118.1 Part 1: Standard