

Australian Standard™

**Components for the protection of
openings in fire-resistant separating
elements**

**Part 1: Service penetrations and control
joints**



This Australian Standard was prepared by Committee FP-019, Passive Fire Protection. It was approved on behalf of the Council of Standards Australia on 7 July 2005.

This Standard was published on 9 September 2005.

The following are represented on Committee FP-019:

Architectural Hardware Industry Association
Australasian Fire Authorities Council
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Industry Group
Building Research Association of New Zealand
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This Standard was issued in draft form for comment as DR 04101.

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 4072.1—2005

**Components for the protection of openings in fire-resistant separating elements
Part 1: Service penetrations and control joints**

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Technical Committee FP-019 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 3 March 2016.

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NOTES

Australian Standard™

Components for the protection of openings in fire-resistant separating elements

Part 1: Service penetrations and control joints

Originated as AS 4072.1—1992.
Second edition 2005.
Reissued incorporating Amendment No. 1 (March 2006).

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 6847 4

PREFACE

This Standard was prepared by the Standards Australia Committee FP-019, Passive Fire Protection, to supersede AS 4072.1—1992.

This Standard incorporates Amendment No. 1 (March 2006). 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 Standard is to provide the building industry with minimum requirements for the application of fire resistance tests and installation of fire protection systems for service penetrations and control joints through fire-resistant separating elements of construction, to facilitate the required fire resistance of the separating elements.

The previous edition included defined test configurations for the evaluation of penetration sealing systems and control joint sealing systems in fire-separating elements of construction, together with the application of test results. Requirements for standard configurations and permissible variations that do not require assessment have been moved from this Standard to AS 1530.4, *Methods for fire tests on building materials, components and structures*, Part 4: *Fire resistance test of elements of construction*, in line with the ISO 834 *Fire resistance tests—Elements of building construction*, Standards. As such, this Standard is to be used in conjunction with the appropriate clauses of AS 1530.4.

Clarity has been improved and provision has been made for greater flexibility in the assessment of alternative plastic pipe materials, due to the large increase in the range of plastic pipes available, thus reducing fire testing costs whilst providing for a reasonable level of confidence in the likely performance of the pipe fire protection systems.

This Edition includes advice on documentation of installations, to facilitate correct installation and record keeping, which has been identified as a significant problem in buildings constructed during the last 10 years.

This Standard will be referenced in the Building Code of Australia (BCA) by way of BCA 2006 to be published by 1 May 2006, thereby superseding the previous edition, AS 4072.1—1992.

The requirements for maintenance of service penetrations and control joints are not covered in this Standard.

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 incorporates a Commentary on some clauses. The Commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a panel. The Commentary is for information only and does not need to be followed for compliance with the Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 APPLICATION	4
1.3 NORMATIVE REFERENCED DOCUMENTS	4
1.4 DEFINITIONS	4
SECTION 2 DESIGN REQUIREMENTS	
2.1 GENERAL	8
2.2 MATERIALS	8
2.3 MOVEMENT	8
SECTION 3 DETERMINATION OF FIRE RESISTANCE AND CLASSIFICATION OF PENETRATION SYSTEMS	
3.1 FIRE RESISTANCE TESTING	9
3.2 CLASSIFICATION	9
SECTION 4 VARIATIONS PERMITTED SUBJECT TO FORMAL OPINION	
4.1 GENERAL	10
4.2 PREPARATION AND PRESENTATION OF FORMAL OPINIONS	10
4.3 VARIATIONS PERMITTED SUBJECT TO A FORMAL OPINION	11
4.4 METAL PIPES	11
4.5 ELECTRICAL AND COMMUNICATION CABLES	12
4.6 PLASTIC PIPES	13
4.7 CONTROL JOINTS	15
4.8 MISCELLANEOUS PENETRATING SERVICES	16
4.9 MULTIPLE PENETRATION SYSTEMS	16
APPENDICES	
A COMMENTARY	17
B DOCUMENTATION	22
C PHYSICAL PERFORMANCE OF CONTROL JOINT SEALS	26
BIBLIOGRAPHY	28

STANDARDS AUSTRALIA

Australian Standard

Components for the protection of openings in fire-resistant separating elements

Part 1: Service penetrations and control joints

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out minimum requirements for the construction, installation and application of fire resistance tests to sealing systems—

- (a) around penetrations through separating building elements that are required to have a fire resistance level (FRL) or, if applicable, a resistance to the incipient spread of fire; and
- (b) at control joints between building elements that are required to have a fire resistance level (FRL).

NOTES:

- 1 Explanatory notes and comment on the testing regime are included in Appendix A.
- 2 This Standard does not address smoke leakage through sealing systems around penetrations and at control joints. Other Standards, such as AS/NZS 1530.7, may be used for evaluating the potential for smoke spread.
- 3 The regulatory authority may require some evidence of compliance of the sealing systems installed in a building. Should this be the case, the recommended practice is given in Appendix B.

1.2 APPLICATION

The Standard is intended to complement the fire protection requirements of the *Building Code of Australia* (BCA) and to be read in conjunction with the appropriate clauses of AS 1530.4, which provides methods for determining the fire resistance of service penetrations and control joints.

1.3 NORMATIVE REFERENCED DOCUMENTS

The following referenced documents are indispensable for the application of this Standard. The latest edition of the referenced document (including any amendments) applies.

NOTE: For a list of informative documents referred to in this Standard, see Bibliography at the end of the document.

AS

- 1530 Methods for fire tests on building materials, components and structures
- 1530.4 Part 4: Fire resistance tests of elements of building construction

ABCB

- BCA Building Code of Australia

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Applicant

A company, corporation, organization, association, partnership, individual or manufacturer's registered agent who sponsors a test in accordance with this Standard.

1.4.2 Control joint

A joint, between or within discrete elements of construction, that allows for relative movement of the elements.

1.4.3 Fire resistance level (FRL)

The nominal grading period, in minutes, that is determined by subjecting a specimen to the standard time temperature curve regime as set out in AS 1530.4, to specify—

- (a) structural adequacy;
- (b) integrity; and
- (c) insulation,

which are expressed in that order.

NOTES:

- 1 For example, a building element with an FRL of 120/60/30 will maintain, when tested in accordance with AS 1530.4—
 - (a) structural adequacy for a period of 120 min;
 - (b) integrity for a period of 60 min; and
 - (c) insulation for a period of 30 min.
- 2 AS 1530.4 generally only requires service penetrations and control joints to be assessed against the criteria of integrity and insulation and the FRL is expressed in terms of, (–/YY/ZZ).

1.4.4 Fire-stopping

The system or materials used to maintain the fire resistance of the fire-separating element at joints or where services pass through the element.

1.4.5 Fire-separating element

Floors, roofs, floor/ceilings, roof/ceilings, walls and other separating elements of construction having a fire resistance level determined in accordance with the fire resistance test.

1.4.6 Fire resistance test

A test in accordance with AS 1530.4 using the standard time temperature regime.

1.4.7 Floor waste

A grated inlet within a graded floor intended to drain the floor.

1.4.8 Formal opinion

The written opinion, by a registered testing authority, prepared in accordance with Clause 4.2 of this Standard. Also referred to as 'assessment'.

1.4.9 Multiple penetration systems

Systems where large service openings are provided in a fire-separating element and are filled with infill material through which the services penetrate and are sealed individually or in groups to the infill material rather than to the parent element.

1.4.10 Penetration

An aperture through a fire-separating element for the passage of a service or services.

1.4.11 Penetration seal

The system used to maintain the fire resistance of the fire-separating element at the position where there is provision for services to pass through the element.

1.4.12 Penetration system

The assembly for test consisting of the penetrating service or services and the penetration seal, media or devices, together with any service-supporting construction.

1.4.13 Registered testing authority

An organization that is defined as such in the BCA.

1.4.14 Regulatory authority

An authority administering Acts of Parliament or regulations under such Acts.

1.4.15 Resistance to the incipient spread of fire (in respect of a ceiling membrane)

The ability of the membrane to insulate the space between the ceiling and roof, or ceiling and floor above, so as to limit the temperature rise on combustible materials in this space to a level that will not permit the rapid and general spread of fire throughout the space, as specified in AS 1530.4.

1.4.16 Service

A system or element used for the functioning of the building, such as a cable, conduit, pipe, duct, chimney, trunking, or the like.

1.4.17 Service-supporting construction

Mechanical support provided in the form of clips, ties, hangers, ladder racks or trays, or any device designed to carry the load of the penetrating service.

1.4.18 Shall

Indicates that a statement is mandatory.

1.4.19 Should

Indicates a recommendation.

1.4.20 Tested specimen

The complete test assembly, consisting of the fire-separating element and penetration system which, when subjected to the fire resistance test, fulfils all the test requirements.

1.4.21 Vertical separating element

A vertical construction, such as a wall, that divides buildings into fire compartments or zones, or separates a building from an adjoining building to resist the spread of fire.

The main types of vertical separating elements are as follows:

- (a) *Masonry* Generally constructed from identical units, for example, brickwork, concrete blockwork, and gypsum blocks. Where a bonding material is used it is of a type generally used with the masonry unit.
- (b) *Prefabricated* Discrete prefabricated panels that are fixed to each other along the long edges. Examples are gypsum board with a paper honeycomb core, wood-based panels, strawboard panels or laminated sheets with tongued and grooved edges.

- (c) *Framed* Walls comprising framing members clad with board, which may be framed products such as steel, wood or aluminium whilst the boards may be typically gypsum board, calcium silicate board, cement particleboard, wood composite board, steel or mineral fibre board. These walls have a cavity, which may be wholly or partly filled with an insulating material.
- (d) *Other types* In situ concrete, rendered panels, and laminated walls.

SECTION 2 DESIGN REQUIREMENTS

2.1 GENERAL

The design of openings in separating elements shall be such that no appreciable structural loads are transferred to the penetration seal or penetrating services unless satisfactory performance simulating the imposed loading conditions has been demonstrated in the fire resistance test.

All service penetrations shall be considered to be non-load-bearing, unless specified by the applicant.

If floor openings are required to have a load-bearing capacity, the system shall comply with the relevant structural and loading Standards.

NOTES:

- 1 In trafficable areas, appropriate signage and a barrier to prevent access to non-load-bearing service penetration systems should be provided where necessary.
- 2 The design of the sealing system should take into account all the conditions to which it can reasonably be expected to be exposed. The sealing system should be capable of meeting these conditions for its anticipated life.
- 3 A sealing system for a control joint should be capable of withstanding the movements that are likely to occur for the application in which it is used without cracking, splitting or adhesion failure.
- 4 Joints should only be used in applications where the expected movement is not greater than the amplitude for which a specimen performed satisfactorily in this test.
- 5 Appendix C provides a list of documents that can be used to evaluate the physical performance of control joint seals.

2.2 MATERIALS

Unless otherwise specified by the regulatory authority, no restriction shall be imposed on the materials of construction of the sealing system, provided that the tested specimen satisfies the requirements of this Standard.

2.3 MOVEMENT

Control joint seals shall allow relative movement between the adjoining elements. Seals around penetrating services shall allow for the expected relative movement between the service and the penetrated element.