

AS 1668.1—1991

Australian Standard<sup>®</sup>

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**The use of mechanical ventilation  
and air-conditioning in buildings**

**Part 1: Fire and smoke control**

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This Australian Standard was prepared by Committee ME/62, Mechanical Ventilation and Air-conditioning. It was approved on behalf of the Council of Standards Australia on 16 May 1991 and published on 1 July 1991.

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The following interests are represented on Committee ME/62:

Association of Consulting Engineers, Australia  
Australian Assembly of Fire Authorities  
Australian Construction Services  
Australian Institute of Environment Health  
Australian Institute of Refrigeration Air Conditioning and Heating  
Australian Uniform Building Regulations Coordinating Council  
Building Owners and Managers Association of Australia  
Council of Air Conditioning and Mechanical Contractors Associations of Australia  
Council of the City of Sydney  
Department of Health, New South Wales  
Fire Protection Industry Associations of Australia  
Insurance Council of Australia  
Metal Trades Industry Association of Australia  
Public Works Department, New South Wales

Additional interests participating in preparation of this Standard:

CSIRO, Division of Building, Construction and Engineering

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*This Standard was issued in draft form for comment as DR 85318.*

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**Part 1: Fire and smoke control**

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First published in part as AS 1668.1—1974.  
Second edition 1979.  
SAA MP47.C1 first published 1980.  
AS 1668.1—1979 and SAA MP47.C1—1980 revised and  
amalgamated as AS 1668.1—1991.

PUBLISHED BY STANDARDS AUSTRALIA  
(STANDARDS ASSOCIATION OF AUSTRALIA)  
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6979 4

## PREFACE

This Standard was prepared by the Standards Australia Committee on Mechanical Ventilation and Air-conditioning to supersede AS 1668, *The use of mechanical ventilation and air-conditioning in buildings*, Part 1—1979 *Fire precautions in buildings with air-handling systems*.

This revision has been written to enable reference by the *Building Code of Australia* (BCA).

A new format has been adopted to enhance information retrieval and to ensure general requirements of the Standard are more widely applicable. Operation of exhaust and supply systems under fire conditions are covered and smoke control systems for use in multi-compartment buildings have been specified as deemed-to-comply systems with the objectives stated within the Standard and the BCA. Alternative smoke control system arrangements are permitted, provided they are no less effective than the deemed-to-comply systems.

The Standard does not identify those buildings in which smoke control systems or pressurization systems are required; this is covered in the BCA.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

The Commentary to this Standard has been updated in line with this publication and is included as an appendix in this document. It is written in an advisory manner only, and does not form part of the Standard. It provides guidance on the application of the Standard by explaining the intent of the clauses.

References in the Commentary are those for the corresponding clauses in the body of the Standard and have a prefix 'C'.

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## STANDARDS AUSTRALIA

**Australian Standard**  
**The use of mechanical ventilation and air-conditioning in buildings**

**Part 1: Fire and smoke control**

## SECTION 1 GENERAL

**1.1 SCOPE** This Section sets out the documents referred to in this Standard, and the definitions that shall apply to this document.

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

AS

1530	Methods for fire tests on building materials, components and structures
1530.1	Part 1: Combustibility test for materials
1530.3	Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release
1530.4	Part 4: Fire-resistance test of elements of building construction
1603	Automatic fire detection and alarm systems
1603.4	Part 4: Control and indicating equipment
1668	The use of mechanical ventilation and air-conditioning in buildings
1668.2	Part 2: Mechanical ventilation for acceptable indoor air quality
1670	Automatic fire detection and alarm systems—System design, installation, and commissioning
1682	Fire dampers
1682.1	Part 1: Specification
1682.2	Part 2: Installation
2106	Methods for the determination of the flashpoint of flammable liquids (closed cup)
2484	Fire—Glossary of terms
2484.1	Part 1: Fire tests
3000	SAA Wiring Rules
3013	Electrical installations—Wiring systems for specific applications
3102	Approval and test specification for electric duct heaters
3772	Fire protection of cooking areas

**1.3 DEFINITIONS** For the purpose of this Standard, the definitions given in AS 2484.1 and those below apply.

**1.3.1 Shall** – indicates that a statement is mandatory.

**1.3.2 May** – indicates the existence of an option.

**1.3.3 Air**

**1.3.3.1 Atmospheric air** – as specifically defined in the following definitions, comprising gaseous components, expressed as volume or mass proportions normally of the order by volume of 21 percent oxygen, 78 percent nitrogen, 0.03 percent carbon dioxide and 0.97 percent of traces of other gases including hydrogen, neon, krypton, helium, ozone and xenon, and water vapour and contaminants.

**1.3.3.2 Exhaust air** – air, other than return air, removed from an enclosure by mechanical means, and discharged to atmosphere.

**1.3.3.3 Outdoor air** – air outside the building.

**1.3.3.4 Recycle air** – that portion of air removed from enclosures as return air and returned as part of the supply air, by mechanical means.

**1.3.3.5 Return air** – air removed from an enclosure by mechanical means. All of the return air may be expelled as spill air, or all or part of it may be recycled.

**1.3.3.6 Spill air** – that portion of return air that is not recycled.

**1.3.3.7 Smoke-spill air** – air drawn into the smoke-spill system during operation in the smoke-control mode.

**1.3.3.8 Supply air** – air introduced into an enclosure by mechanical means.



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