

Australian/New Zealand Standard™

The use of ventilation and airconditioning in buildings

Part 1: Fire and smoke control in multi- compartment buildings



AS/NZS 1668.1:1998

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-062, Ventilation and Airconditioning. It was approved on behalf of the Council of Standards Australia on 12 June 1998 and on behalf of the Council of Standards New Zealand on 9 June 1998.

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The following are represented on Committee ME-062:

Air Conditioning and Mechanical Contractors Association of Australia
Air Conditioning and Refrigeration Equipment Manufacturers association of Australia
Australasian Fire Authorities Council
Australian Building Codes Board
Australian Institute of Building Surveyors
Australian Institute of Environmental Health
Australian Institute of Refrigeration, Air Conditioning and Heating
Chartered Institution of Building Services Engineers
Department of Contract and Management Services, W.A.
FPA Australia
Institution of Refrigeration Heating and Airconditioning Engineers. New Zealand
Insurance Council of Australia
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AS/NZS 1668.1:1998
(Incorporating Amendment No. 1)

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee M-062, Ventilation and Airconditioning, to supersede AS 1668.1—1991, *The use of mechanical ventilation and air-conditioning in buildings, Part 1: Fire and smoke control*.

This Standard incorporates Amendment No. 1 (November 2002). 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.

There is a considerable body of fire research which indicates that when a fire occurs in a multi-compartment building, the smoke from the fire is a far greater hazard to occupant safety than the fire itself, i.e.,

- (a) Smoke obscures vision, preventing occupants from finding safe escape routes.
- (b) Smoke hinders the fire brigade in its search and rescue operations.
- (c) Smoke can kill by asphyxiation or by poisoning people well before the temperature of the fire or smoke causes injury.

The fundamental purpose of this document is, therefore, life safety. Its objective is to provide standardized minimum requirements for mechanical air-handling and mechanical smoke control systems for use by designers, installers, inspectors and regulators of these systems. The Standard does not identify those buildings in which smoke control systems or pressurization systems are required. This is covered in the Building Code of Australia (BCA) or the New Zealand Building Code Handbook and approved documents, as applicable.

The first edition of AS 1668.1, published in 1974, prescribed a smoke control system intended to restrict the movement of smoke by way of airconditioning and ventilation ducting within a multistorey office building. This philosophy did not address smoke movement in a building by way of paths other than the air-handling system. Since the original publication, the Standard has changed, the zone pressurization system was added and the Standard has been applied (correctly and incorrectly) to buildings other than multistorey offices.

The objective of the Standard has also been expanded to limit smoke spread in a building by way of paths other than simply the ductwork. This revision looks deeper into the application of the Standard within buildings with varied uses, offers designers more options to find solutions for particular building types and further clarifies the intended application of the Standard.

The main technical changes made in this edition can be summarized as follows:

- (i) Five particular methods of active smoke control have been included, with a table indicating which one The Standard has been linked to AS 1670.1.
- (ii) More comprehensive testing clauses have been included.
- (iii) Requirements for power and indication wiring and smoke detection for system control have been revised.
- (iv) Requirements for non-electrical control systems have been added.
- (v) Recommendations on reliability have been included because of concerns over the long-term operational capabilities of highly complex systems.
- (vi) Protection of small exhaust duct penetrations in fire compartmentalization walls may now be by subduct rather than by fire dampers due to damper maintenance problems.

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.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard. Figures provided in this Standard are informative.

This Standard incorporates a 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 panel. The Commentary is for information only and does not need to be followed for compliance with the Standard.

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