AS 2665—1983

Australian Standard®

Smoke/Heat venting systems—Design, installation and commissioning

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Air–conditioning and Refrigeration Equipment Manufacturers Association of Australia

Australian Uniform Building Regulations Coordinating Council

Commonwealth Fire Board

Confederation of Australian Industry

Department of Defence (Commonwealth)

Experimental Building Station

Fire Fighting Authorities

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PREFACE

This standard was prepared by the Association's Committee on Fire Venting. In the preparation of this standard consideration was given to research conducted by the Experimental Building Station and published in Report No UP 344, Venting Fires Through Roofs, Experimental Fires in an Aircraft Hangar, and to Fire Research Technical Paper No 10 published by U.K. Department of the Environment and Fire Officers' Committee Joint Fire Research Organization. Acknowledgement is made of the assistance received therefrom. Whereas this standard was prepared to provide minimum requirements for a venting system, provision is also made, for the use of a nomogram from Fire Research Technical Paper No 10 to be applied to areas in buildings of high fire load and risk.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
SMOKE/HEAT VENTING SYSTEMS — DESIGN, INSTALLATION AND COMMISSIONING

FOREWORD

To gain increased efficiency in assembly line operations, large single-storey buildings are favoured without dividing walls as these restrict mobility of conveyor lines and make operational changes and expansion difficult. The result of this, from a fire protection viewpoint, has been to make buildings vulnerable to large single areas of fire.

The heat and smoke contained within large areas involved in fire increase the difficulty of fire fighting since the fire brigade must enter these buildings to combat fire in central sections of the plant.

Vents are not a substitute for sprinklers or other extinguishing facilities. Their purpose is to exhaust heat and smoke from the building thus improving accessibility for the fire brigade and permitting close approach and direct action at the seat of the fire.

The provision of a fire venting system in conjunction with an automatic fire sprinkler system is of particular concern. If a vent opens before the operation of sprinklers, the products of combustion may be exhausted and, if a sprinkler head is not in their path, the sprinkler system may not be actuated. If the sprinklers operate before a vent, their action may cool the products of combustion and prevent the actuation of a vent. It is considered that sprinkler operation is the most important requirement, particularly a sprinkler installed in accordance with AS 2118 and connected to a fire brigade.

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SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out requirements for the design, installation and commissioning of a system of automatic smoke/heat release vents in conjunction with associated draught curtains in buildings.

NOTE: Principles of fire venting are discussed in Appendix B.

1.2 APPLICATION. Smoke/heat venting systems shall be designed and installed in accordance with Section 2 and shall be commissioned in accordance with Section 3.

1.3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1170	SAA Loading Code Part 2—Wind Forces
AS 1530	Methods for Fire Tests on Building Materials and Structures Part 1—Combustibility Test for Materials
AS 1562	Design and Installation of Metal Roofing
AS 2047	Aluminium Windows for Buildings
AS 2118	SAA Code for Automatic Fire Sprinkler Systems
AS 2208	Safety Glazing Materials for Use in Buildings (Human Impact Considerations)
AS 2427	Smoke/Heat Release Vents
AS 2484	Glossary of Terms Relating to Fire Tests.

1.4 DEFINITIONS. For the purpose of this standard, the definitions in AS 2484 and the following apply:

1.4.1 Abnormal fire hazard (area of)—an area as defined in Appendix A.

1.4.2 Automatic smoke/heat release vent—a vent complying with AS 2427.

NOTE: The term 'vent' when used in this standard is synonymous with 'automatic smoke/heat release vent'.

1.4.3 Draught curtain—a vertical structure used to divide a space immediately below the roof into compartments.

1.4.4 High risk areas—areas within an individual property where the fire load of readily ignited material (such as flammable liquid, loose paper, organic foams) exceeds 4500 MJ/m^2 of floor area of a compartment of not more than 1000 m^2 in area, e.g. dip tanks of flammable liquids in a metalwork manufacturing factory or woodwork processing or finishing areas.

NOTE: The NFPA* Fire Protection Handbook, 15th edition defines fire load as follows:

(a) *Low fire load*-an average of less than 1135 MJ/m^2, or 2270 MJ/ m^2 in limited isolated areas, e.g. offices, restaurants, hotels, hospitals, schools, museums and institutional or administrative buildings.

(b) *Moderate fire load*-an average between 1135 MJ/m^2 and 2270 MJ/m^2, but up to 4540 MJ/m^2 in limited isolated areas, e.g. retail shops, factories and workshops.

(c) *High fire load*-an average between 2270 MJ/m^2 and 4540 MJ/m^2, but up to 9080 MJ/m^2 in limited isolated areas, e.g. warehouses and other buildings used for bulk stores.

1.4.5 Regulatory Authority—an authority administering Acts of Parliament or Regulations under such Acts.

1.4.6 Safety wired glass—a single sheet of glass with wire completely embedded in the glass and which complies with the relevant test requirements of AS 2208.

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* National Fire Protection Association, Boston, Massachusetts, U.S.A.

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