AS 4429—1999
(Incorporating Amendment No. 1)



Australian Standard™

# Methods of test and rating requirements for smoke-spill fans



Standards Australia

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Air-Conditioning and Refrigeration Equipment Manufacturers Association of Australia

Australian Chamber of Commerce and Industry

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# Methods of test and rating requirements for smoke-spill fans

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# PREFACE

This Standard was prepared by the Standards Australia Committee ME/13, Industrial Fans, to supersede AS 4429(Int)—1996.

*This Standard incorporates Amendment No. 1 (June 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.*

This Standard is based on Draft European Standard prEN 12101-3, *Smoke and heat control systems*, Part 3: *Specification for powered smoke and heat exhaust ventilators*. The time/temperature performance requirements for smoke-spill fans used in buildings in Australia are specified by AS/NZS 1668.1:1998, *The use of ventilation and airconditioning in buildings*, Part 1: *Fire and smoke control in multi-compartment buildings*, and the range of time/temperature categories is not as wide as that specified in prEN 12101.3. This Standard provides methods for testing smoke-spill fans and their electric motors over the range covered by prEN 12101.3 and rates them accordingly.

The changes made to the Standard have been essentially editorial to better clarify the intended application of the test methodology and rating system. Tests carried out in accordance with AS/NZS 4429(Int):1996 are deemed to comply with the test requirements of this Standard.

The objective of this document is to provide a standardized methodology for the testing and rating of fans to be used in a smoke-spill mode for use by manufacturers and specifiers of these products.

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.

# CONTENTS

# FOREWORD

Smoke and heat exhaust ventilation systems are used widely to create smoke-free areas beneath a buoyant smoke layer and to create negative pressures in fire-affected compartments. These actions assist in evacuating people from a building, reducing fire and smoke damage, facilitating firefighting and retarding the lateral spread of fire. When, in the event of a fire, air and the products of combustion are exhausted from a building by mechanical means, a powered fan (known as a smoke-spill fan) is generally used. Therefore, it is essential that the smoke-spill fan operates fully and reliably under high temperature conditions when called upon to do so.

STANDARDS AUSTRALIA

# Australian Standard

# Methods of test and rating requirements for smoke-spill fans

## SECTION 1 SCOPE AND GENERAL

### 1.1 SCOPE

This Standard classifies smoke-spill fans and sets out laboratory test methods and procedures used to rate their performance (and that of their motors). Fans are rated in terms of their suitability to operate continuously without significant loss of performance, for a specified time at a specified air temperature. This Standard deals only with laboratory type-testing and does not consider the testing of smoke-spill fans after they have been installed in a building.

### 1.2 APPLICATION

The method of test used to specify the rating of smoke-spill fans depends on the type of smoke-spill fan, and shall be selected from the three test configurations presented in Section 5. Electric motors shall be tested as part of the smoke-spill fan or separately, as presented in Section 6.

Sections 2 and 3 cover the four different classifications of smoke-spill fans, specify preferred electric motor insulation types and bearing details and provide four categories of ratings for smoke-spill fans and their motors, based on the stated tested performance criteria. Schedules for selecting a reduced number of smoke-spill fans (or motors) so that a range of either can be rated and approved are given in Section 4. Sections 5, 6, 7 and 8 prescribe the test methods and the reporting format for the test results.

NOTE: Under the terms of this Standard it is preferable that smoke-spill fans are tested as a single unit, i.e. impellor, fan casing, motor and associated components, although allowance is made for the motor to be tested separately. There is no allowance under this Standard for the impellor and fan casing to be tested separately from each other.

### 1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1199 Sampling procedures and tables for inspection by attributes
1399 Guide to AS 1199—Sampling procedures and tables for inspection by attributes
1668 The use of mechanical ventilation and air-conditioning in buildings
1668.2 Part 2: Mechanical ventilation for acceptable indoor-air quality
1851 Maintenance of fire protection equipment
1851.6 Part 6: Management procedures for maintaining the fire and smoke control features of air-handling systems
2936 Industrial fans—Determination of performance characteristics (known as the SAA Fan Test Code)

AS/NZS
1668 The use of ventilation and airconditioning in buildings
1668.1 Part 1: Fire and smoke control in multi-compartment buildings