Australian Standard®

Methods for fire tests on building materials, components and structures

Part 4: Fire-resistance tests of elements of building construction

This Australian Standard was prepared by Committee BD/18, Fire Tests. It was approved on behalf of the Council of Standards Australia on 3 October 1997 and published on 5 December 1997.

The following interests are represented on Committee BD/18:

Australian Building Codes Board

Australian Chamber of Commerce and Industry

Australian Fire Authorities Council

Australian Institute of Building

Australian Wool Testing Authority

Building Research Association of New Zealand

Bureau of Steel Manufacturers of Australia

Cement & Concrete Association of Australia

CSIRO—Division of Building Construction and Engineering

Fire Protection Association of Australia

National Association of Forest Industries

New Zealand Fire Protection Association

Plastics and Chemicals Industries Association

Scientific Services Laboratory

Society of Fire Protection Engineers NZ

Testing interests (Australia)

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Part 4: Fire-resistance tests of elements of building construction

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD/18, Fire Tests, to supersede AS 1530.4—1990.

This Standard is the result of a consensus among the representatives on the Joint Committee that it be produced as an Australian Standard.

The test method follows the basic principles and procedures contained in ISO 834: 1975, *Fire-resistance tests—Elements of building construction*. Relatively minor departures from the ISO recommendations have been made only where specific performance requirements for elements of building construction have been traditionally acceptable in Australia.

This edition addresses furnace control and furnace thermocouples so as to achieve uniformity with ISO 834.

Technical changes in this edition have been made to Sections 1, 2, 5, 6, 8 and 10, and changes of an editorial nature have been made to bring the Standard into line with current Standards Australia style.

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

Page

SECTION 1 SCOPE AND GENERAL
1.1 SCOPE 6
1.2 PRINCIPLE 6
1.3 APPLICATION 6
1.4 REFERENCED DOCUMENTS 7
1.5 DEFINITIONS 7
1.6 LINEAR DIMENSIONS 8

SECTION 2 GENERAL REQUIREMENTS
2.1 FURNACE 9
2.2 MEASUREMENT OF TEMPERATURE 9
2.3 MEASUREMENT OF TIME 12
2.4 MEASUREMENT OF DEFLECTION 12
2.5 MEASUREMENT OF EMITTED RADIANT HEAT FLUX 12
2.6 RECORDING OF TEMPERATURE 12
2.7 TEST SPECIMEN 12
2.8 LOADING AND RESTRAINT 13
2.9 TEST PROCEDURE 14
2.10 OBSERVATIONS 17
2.11 CRITERIA OF FAILURE 18
2.12 TEST RESULTS 18
2.13 DETERMINATION OF FIRE-RESISTANCE 19
2.14 REPORTING OF RESULTS 19

SECTION 3 WALLS AND PARTITIONS
3.1 APPLICATION OF SECTION 20
3.2 TEST SPECIMEN 20
3.3 INSTRUMENTATION 20
3.4 LOADING AND RESTRAINT 20
3.5 TEST PROCEDURE 20
3.6 OBSERVATIONS 21
3.7 CRITERIA OF FAILURE 21

SECTION 4 FLOORS, ROOFS, FLOOR/CEILING SYSTEMS AND ROOF/CEILING SYSTEMS
4.1 APPLICATION OF SECTION 22
4.2 TEST SPECIMEN 22
4.3 INSTRUMENTATION 22
4.4 LOADING AND RESTRAINT 25
4.5 TEST PROCEDURE 25
4.6 OBSERVATIONS 25
4.7 CRITERIA OF FAILURE 25
4.8 TEST RESULTS—INCIPIENT SPREAD OF FIRE 26
4.9 TEST REPORT 26

Page

SECTION 5 COLUMNS
5.1 APPLICATION OF SECTION 27
5.2 TEST SPECIMEN—SIZE 27
5.3 INSTRUMENTATION 27
5.4 LOADING AND RESTRAINT 27
5.5 TEST PROCEDURE—HEAT EXPOSURE 28
5.6 OBSERVATIONS 28
5.7 CRITERIA OF FAILURE—STRUCTURAL ADEQUACY 28
5.8 DETERMINATION OF FIRE-RESISTANCE 28

SECTION 6 BEAMS, GIRDERS AND TRUSSES
6.1 APPLICATION OF SECTION 29
6.2 TEST SPECIMEN 29
6.3 INSTRUMENTATION 29
6.4 LOADING AND RESTRAINT 30
6.5 TEST PROCEDURE 30
6.6 OBSERVATIONS 30
6.7 CRITERIA OF FAILURE—STRUCTURAL ADEQUACY 30
6.8 DETERMINATION OF FIRE-RESISTANCE 30

SECTION 7 DOORSETS, SHUTTER ASSEMBLIES AND DAMPER ASSEMBLIES
7.1 APPLICATION OF SECTION 32
7.2 TEST SPECIMEN 32
7.3 INSTRUMENTATION 32
7.4 TEST PROCEDURE 33
7.5 OBSERVATIONS 33
7.6 CRITERIA OF FAILURE 34
7.7 DETERMINATION OF FIRE-RESISTANCE 35
7.8 TEST REPORT 35

SECTION 8 GLAZING
8.1 APPLICATION OF SECTION 36
8.2 TEST SPECIMEN 36
8.3 INSTRUMENTATION 36
8.4 TEST PROCEDURE 36
8.5 OBSERVATIONS 36
8.6 CRITERIA OF FAILURE—INTEGRITY 36
8.7 DETERMINATION OF FIRE-RESISTANCE 36
8.8 TEST REPORT 36

SECTION 9 AIR DUCTS
9.1 APPLICATION OF SECTION 37
9.2 TEST SPECIMEN 37
9.3 POSITIONING OF THERMOCOUPLES 37
9.4 PROCEDURE 38
9.5 OBSERVATIONS 38
9.6 CRITERIA OF FAILURE 39
9.7 TEST REPORT 39

Page

SECTION 10 ELEMENTS PENETRATED BY SERVICES
10.1 APPLICATION OF SECTION 40
10.2 TEST SPECIMEN 40
10.3 POSITIONING OF THERMOCOUPLES 41
10.4 TEST PROCEDURE 41
10.5 OBSERVATIONS 41
10.6 CRITERIA OF FAILURE 42
10.7 TEST REPORT 42

APPENDIX A RADIANT HEAT FLUX MEASUREMENTS 43

STANDARDS AUSTRALIA

Australian Standard

Methods for fire tests on building materials, components and structures

Part 4: Fire-resistance tests of elements of building construction

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard applies to heating conditions, test procedures, and criteria for the determination of fire-resistance of an element of building construction. In most cases, a single test, carried out in accordance with this Standard, establishes the fire-resistance for the element of construction concerned.

In addition to providing information on which the fire-resistance of an element of construction can be assessed, the test report includes information which may be of use to the designer. (Records of temperature at critical times may be used by a designer to assess the fire-resistance of a variant of the tested prototype flexural member where the procedure for such an assessment is defined in the appropriate design code.)

In certain cases, the test methods described herein provide information for the determination of—

(a) resistance to the incipient spread of fire through ceiling systems;

(b) safe distances for the spacing of combustible materials from elements that provide a separating function;

(c) radiant heat flux emitted from doorsets, shutter assemblies, damper assemblies and glazing; and

(d) the free cross-sectional area of air ducts to provide functional operation while providing fire-resistance.

1.2 PRINCIPLE A representative specimen of an element of construction is conditioned and then exposed to heat under controlled conditions in a furnace which is operated to satisfy a specified time/temperature curve. In order to minimize the effect of variation in ambient temperature on the outcome of the test, the heating curve is expressed in terms of temperature increments above ambient rather than actual temperature. Where it is not possible to model the element or system of construction satisfactorily with one specimen, it may be necessary to test more than one specimen. Observations are made on the performance of the specimen while it is subjected to thermal and, where applicable, physical loading. The elapsed times at which various failures occur are recorded.

1.3 APPLICATION

1.3.1 Fire hazard assessment The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions.

Each test shall be performed in accordance with the general requirements of Section 2 and with the following Sections, as appropriate:

(a) Section 3—Walls and partitions.

(b) Section 4—Floors, roofs, floor/ceiling systems and roof/ceiling systems.