

Australian/New Zealand Standard™

**Methods for fire tests on building
materials, components and structures**

**Part 3: Simultaneous determination
of ignitability, flame propagation, heat
release and smoke release**

AS/NZS 1530.3:1999

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The following interests are represented on Committee BD/18:

Australasian Fire Authorities Council
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Institute of Building
Australian Wool Testing Authority
Building Research Association of New Zealand
Bureau of Steel Manufacturers of Australia
Cement and Concrete Association of Australia
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Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD/18, Fire Safety.

The objective of this revision is to specify procedures for laboratories to adopt when mounting specimen materials in the test apparatus. The basic method of test has not been changed.

The mounting procedures are specific for a range of materials being tested. The adoption of these procedures is designed to improve the consistency of the test results.

The test provides data for assessing the potential hazard of wall linings during the early growth of fire in a compartment. It also provides a discriminating assessment of the fire behaviour of different materials when subjected to the test method described.

Fire is a complex phenomenon and the fire hazard of a building material is a function of the characteristics of the material, how it is installed and used, and the environment in which it is present. No single test method can give a full assessment of fire hazard under all conditions of fire that may apply. There must be a constant awareness of the variables applicable when using this test method to assess the fire hazard of any particular material or component under other fire exposure or when used in applications other than walls.

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.

The use of Notes in this Standard are of an advisory nature only to give explanation or guidance to the user on recommended design considerations or technical procedures, or to provide an informative cross-reference to other documents or publications. Notes to clauses on this Standard do not form a mandatory part for compliance with this Standard.

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FOREWORD

The results of this fire test 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.

These results provide information on ignitability, flame propagation, heat release and smoke release which are related to the performance of wall linings in simulated fires in the corner of a compartment. A consumer or regulatory authority should consider the relevance of this information to the fire hazard represented by the intended application of the material or component. The performance in the test applies to the thickness of the specimen in a flat panel shape. The results may not be valid for other shapes or assemblies unless verified by further tests.

The results may also provide a comparison of the fire behaviour of different materials and components. The application of the information obtained from this test to the fire hazard requires consideration of the form and fixing of the specimen as tested and the intended building use of the material or component.

The standard regime of increasing impressed radiant heat applied to the specimens in this test method was originally defined following studies of experimental room fires. The increasing intensity of radiant heat simulates that which could be experienced during the early development of a building fire. Early work was carried out by J.E. Ferris at the Commonwealth Experimental Building Station (now CSIRO) in Sydney in 1955.

Ignition is initiated by a pilot flame that is held near, but which does not touch the specimen. A material that does not ignite during the standard test may ignite if contacted with a pilot flame during the test.

The reaction of thin unsupported flexible materials to flame impingement can be assessed by testing in accordance with [AS 1530.2](#). Materials of thickness less than 2 mm, which are sufficiently flexible to be bent by hand around a mandrel of 2 mm diameter or less, are subjected to the test described herein, should also be subjected to the test in [AS 1530.2](#).

Since the heat source for the test method is a radiator, a reduction in the reflective properties of certain materials by the deposition of dust and soot, by surface damage and by the formation of surface corrosion products, may produce a significant change in the results from those obtained when the materials were tested in a new and a clean condition.

Some materials are subjected to cleaning treatments throughout their useful life. Some treatments could adversely affect the fire hazard indices by, for example, removal or redeposition of fire-retarding agents. It is advisable that testing also be performed after a number of treatments, in accordance with commercial cleaning practice.

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Australian/New Zealand Standard**Methods for fire tests on building materials, components and structures****Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out a test method for the assessment of building materials and components according to—

- (a) their tendency to ignite;
- (b) their tendency to propagate flame;
- (c) the heat they release once ignition has occurred; and
- (d) their tendency to release smoke.

NOTE: A guide to the interpretation of the results of this test, together with a full list of references, is given in Appendix A.

1.2 OBJECTIVES The objective this Standard is to establish a test method for assessing the potential fire hazard of wall linings during the early growth of fire in a compartment. The test method also provides a discriminating or ranking assessment of potential fire hazard between a range of materials used in buildings.

1.3 APPLICATION This Standard will be referenced in the Building Code of Australia (BCA) by way of BCA Amendment No. 6 to be published on 1 January 2000, thereby superseding the previous edition, AS 1530.3—1989, which will be withdrawn 12 months from the date of publication of this edition.

1.4 PRINCIPLE The specimen is held in a vertical configuration in a plane parallel to a radiant heater and the specimen moved towards the heater, in steps, over a period of 20 min or until ignition, induced by a pilot flame, occurs.

1.5 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
[1530.2](#) Part 2: Test for flammability of materials

AS/NZS

- 2111 Textile floor coverings—Tests and measurements
[2111.18](#) Part 18: Burning behaviour—Tablet test at ambient temperature

ISO

- 291 Plastics—Standard atmospheres for conditioning and testing



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