Australian Standard ®

Methods for fire tests on building materials, components and structures

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

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The following interests are represented on Committee BD/18:

Australian British Chamber of Commerce
Australian Fire Protection Association
Australian Institute of Building
Australian Uniform Building Regulations Coordinating Council
Board of Fire Commissioner, New South Wales
Bureau of Steel Manufacturers of Australia
Cement and Concrete Association of Australia
Commonwealth Fir Board
Confederation of Australian Industry
CSIRO Division of Building, Construction and Engineering
Fire Protection Industry Association of Australia
Forestry Commission of N.S.W.
Metropolitan Fire Brigades Board, Melbourne
Plastics Institute of Australia
Royal Australian Institute of Architects

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

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PREFACE

This edition of this Standard was prepared by the Standards Australia Committee on Fire Tests on building Materials, Components and Structures to supersede AS 1530.3—1982, *Methods for fire tests on building materials, components and structures*, Part 3: *Test for early fire hazard properties of materials*. The title has been changed to more accurately indicate the fire characteristics to be assessed. The basic metho of test has not been changed. In the opionon of the committee, this edition of the Standard will not cause variations from results obtained when materials were subjected to testing in accordance with AS 1530.3—1982. Changed incorporated in this edition clarify the requirements for the equipment used in the smoke montoring system, require the reporting of tests results as well as indices and provide a more complete list of referenced documents.

The Standard regime of increased radiant heat applied to the test specimens in this test method was originally defined following studies made at the Experimental Building Station of th heat energy impressed on the walls of a test room when varios small fires were deliberately kindled. This test provides data for assessing the poential hazard of wall lining during the early groth of fire in a compartment. It also provides a discriminating assessment of fire behaviour of different materials.

Fire is a complex phonomenon 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 therfore be a constant awareness of the above variables in using the results from this test to assess the fire hazard of any particular material or component under other fire exposures or used in applications other than walls.

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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 tendencies to ignite;

(b) their tendencies to propagate flame;

(c) the heat they release once ignition has occurred; and

(d) their tendencies 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 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS

1530 Methods for fire tests on building materials, components and structures

1530.2 Part 2: Test for fla mmability of materials

2111 Methods of test for textile floor coverings

2111.18 Part 18: Method for the determination of fire propagation properties–Fire propagation of the use-surface using a small ignition source

1.3 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.

1.4 APPLICATION TO THE ASSESSMENT OF FIRE HAZARD. 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 that has been related to 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 Co mmonwealth Experimental Building Station in Sydney in 1955.

NOTES:

1. Ignition is initiated by a pilot flame that is held near, but does not touch the specimen. A material which does not ignite during the standard test may ignite if contacted with a pilot flame during the test.
2. The reaction of thin unsupported flexible materials to flame impingement can be assessed in accordance with AS 1530.2. Where materials of thickness less than 2 mm that are sufficiently flexible to be bent by hand around a mandrel of 2 mm diameter or less are subjected to the test described herein, they should also be subjected to the test in AS 1530.2.
3. Since the heat source for the abovementioned test 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 the 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.
4. 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 redisposition of fire-retarding agents. It is advisable that testing also be performed after a number of treatments in accordance with co mmercial cleaning practice.
5. Building regulations in Australia generally require that the core of sandwich-panel-type products be tested separately.