AS 1530.5—1989

Australian Standard®

Methods for fire tests on building materials, components and structures

Part 5: Test for piloted ignitability

This Australian Standard was prepared by Committee BD/18, Fire Tests—Building Materials Components Structures. It was approved on behalf of the Council of Standards Australia on 9 May 1989 and published on 13 October 1989.

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 Co–ordinating Council

Board of Fire Commissioners, New South Wales

Bureau of Steel Manufacturers of Australia

Cement and Concrete Association

Commonwealth Fire Board

Confederation of Australian Industry

CSIRO—Division of Building Construction and Engineering

Forestry Commission, N.S.W.

Metropolitan Fire Brigades Board, Melbourne

Plastics Institute of Australia

Royal Australian Institute of Architects

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PREFACE

This Standard was prepared by Standards Australia's Committee on Fire Tests on Building Materials, Components and Structures to complement the fire tests detailed in Parts 1 to 4 of this series of Standards.

This Standard is technically identical with ISO 5657, *Fire tests—Reaction to fire—Ignitability of building products.*

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FOREWORD

Fire is a complex phenomenon: its behaviour and its effects depend upon a number of interrelated factors. The behaviour of materials and products depends upon the characteristics of the fire, the method of use of the materials and the environment in which they are exposed.

A test such as is specified in this Standard deals only with a simple representation of a particular aspect of the potential fire typified by a radiant heat source and a flame; it cannot alone provide any direct guidance on behaviour or safety in fire. A test of this type may, however, be used for comparative purposes or to ensure the existence of a certain quality of performance (in this case ignitability) considered to have a bearing on fire performance generally. It would be wrong to attach any other meaning to performance in this test.

The term 'ignitability' is defined in ISO 3261 as the ease with which the material can be ignited under specified test conditions. It is one of the first fire properties to be manifest and should almost always be taken into account in any assessment of fire hazard. It may not, however, be the main characteristic of the material which affects the subsequent development of fire in a building.

STANDARDS AUSTRALIA

Australian Standard
Methods for fire tests on building materials components and structures

Part 5: Test for piloted ignitability

1 SCOPE. This Standard assesses the ignition characteristics of the exposed surfaces of specimens, composites or assemblies, not exceeding 70 mm in thickness, when placed horizontally and subjected to specified levels of thermal irradiance.

NOTE: Additional information is provided in appendices, as follows:

(a) *Appendix A*–background information on the test and guidance notes for operators.

(b) *Appendix B*–a typical test report.

(c) *Appendix C*–application and limitations of the test.

(d) *Appendix D*–notes on an interlaboratory trial on variations in time to sustained surface ignition.

2 REFERENCED DOCUMENTS. The documents below are referred to in this Standard:

AS
2484 Fire–Glossary of terms relating to fire tests
2484.2 Part 2: Fire–Glossary of terms–Fire protection and firefighting equipment
ISO
3261 Fire tests–Vocabulary
5657 Fire tests–Reaction to fire-Ignitability of building products.

3 PRINCIPLE. Specimens of the product are mounted horizontally and exposed to thermal radiation on their upper surfaces at selected levels of constant irradiance within the range 10 kW/m^2 to 15 kW/m^2.

A pilot flame is applied at regular intervals to a position 10 mm above the centre of each specimen to ignite any volatile gases given off. The time at which sustained surface ignition occurs is reported.

NOTE: The test is identical to that specified in ISO 5657.

4 APPLICATION TO FIRE HAZARD ASSESSMENT. These test results on their own do not indicate the fire hazard of the product under actual fire conditions and consequently should not be applied to the assessment of fire hazard without taking into account additional supportive information.

NOTE: This test deals only with a simple representation of a particular aspect of the potential fire typified by a radiant heat source and a flame; alone it cannot provide any direct guidance on behaviour or safety in fire. It may, however, be used for comparative purposes or to ensure the attainment of a certain quality of performance (in this case for ignitability) considered to have a bearing on fire performance generally. It would be wrong to attach any other meaning to performance in this test.

The test method examines the ability of a surface, when exposed to radiant heat, to produce volatile gases which would sustain ignition in the presence of a small ignition source. It does not study the ability of the surface to ignite when subjected to direct flame impingement in the absence of additional impressed radiation, which will depend upon the application time of the igniting flame and the total energy release in the ignition flame.

5 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 2484.2 and those below apply.

5.1 Product – the material, composite or assembly about which information is required.

5.2 Material – a single substance or uniformly dispersed mixture, e.g. metal, stone, timber, concrete, mineral fibre.

5.3 Composite – a combination of materials which are generally recognized in building construction as discrete entities, e.g. coated or laminated materials.

5.4 Assembly – a fabrication of materials or composites which may include an air gap, e.g. sandwich panels.

5.5 Exposed surface – that surface of the product subjected to the heating conditions of the test.

5.6 Specimen – the representative piece of the product which is to be tested, together with any substrate or treatment and which may include an air gap.

5.7 Irradiance (at a point of a surface) – the quotient of the radiant flux incident on an infinitesimal element of surface containing the point, by area of that element.

NOTE: The term irradiance is used throughout this Standard as best indicating the essentially radiative mode of heat transfer although it is accepted that convection transfer may also make a very small contribution (not more than a few percent) to the heating at the centre of a specimen and to the heating of the radiometer during the calibration procedure. (See also Paragraph A1, Appendix A.)

5.8 Sustained ignition of the surface – the inception, on the surface of the specimen, of any flame which is still present at the next application of the pilot flame.

5.9 Transitory ignition of the surface – the inception, on the surface of the specimen, of any flame which is not sustained until the next application of the pilot flame.

5.10 Ignition of the plume – the inception of any flame, sustained or transitory, in the plume above the specimen.

6 SUITABILITY OF A PRODUCT FOR TESTING.

6.1 Surface characteristics. A specimen having one of the following surface properties is suitable for testing:

(a) An essentially flat exposed surface i.e. a surface whose irregularity from a plane does not exceed ±1 mm.