

AS 1530.1:2024



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Australia



Methods for fire tests on building materials, components and structures

Part 1: Combustibility test for materials (ISO 1182:2020, NEQ)



AS 1530.1:2024

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- Australian Building Codes Board
- Australian Industry Group
- Australian Institute of Building
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Part 1: Combustibility test for materials (ISO 1182:2020, NEQ)

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee FP-018, Fire Safety, to supersede AS 1530.1:1994.

This document is based on but not equivalent to ISO 1182:2020, *Reaction to fire tests for products — Non-combustibility test*.

This objective of this document is to specify a method for the determination of the combustibility of a building material involving testing the duration of sustained flaming and the furnace and specimen surface thermocouple temperature rises.

The major changes in this edition are as follows:

- (a) Alignment of insulation material used around the furnace tube with ISO 1182 and current practice.
- (b) Removal of Figure 8 and related text in [Clause A.5](#) to avoid confusion with furnace wall measurement.
- (c) Revision of conflicting dimensions in [Figure 3](#)
- (d) Clarification of specimen conditioning and test environment conditions.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Section 1 Scope and general

1.1 Scope

This document specifies a method for determining the combustibility of building materials that involves testing the duration of sustained flaming and the temperature rises of furnace and specimen surface thermocouples.

NOTE For general commentary about the method specified in this document, see [Appendix A](#).

This document applies to building materials other than coated, faced or laminated materials which, although not completely inert, produce only a limited amount of heat and flame when exposed to temperatures of approximately 750 °C.

This document does not apply to products which are coated, faced or laminated. For such products, tests may be carried out separately on the individual materials from which the product is formed.

1.2 Normative references

There are no normative references in this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

1.3 Terms and definitions

For the purposes of this document, the definitions given in AS 2484.1 and the following apply.

1.3.1

may

indicates the existence of an option

1.3.2

mean furnace thermocouple temperature rise

arithmetic mean of the difference between the maximum temperature and the final temperature recorded by the furnace thermocouple during the test of the five test specimens

1.3.3

mean specimen thermocouple temperature rise

arithmetic mean of the difference between the maximum temperature and the final temperature recorded by the specimen thermocouple during the test of the five test specimens

1.3.4

shall

indicates a mandatory requirement

1.3.5

should

indicates a recommendation

1.3.6

sustained flaming

observed flaming that lasts 5 s or longer

Note 1 to entry: Instances of flame that are less than 5 s in duration are ignored.

1.3.6.1**duration of sustained flaming**

total duration of all sustained flaming for the specimen

1.3.6.2**mean duration of sustained flaming**

arithmetic mean of the recorded *durations of sustained flaming* ([1.3.6.1](#)) of the five test specimens

1.4 Application to fire hazard assessment

The test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test, and are not intended to be the sole criteria for assessing the potential fire hazard of the material in use.

Section 2 Test procedure

2.1 Principle

A small cylindrical specimen is inserted into a cylindrical furnace. Any observed flaming is recorded. Measurements of the temperature rise within and adjacent to the specimen are recorded. These observations and measurements are used to assess the combustibility of the specimens tested.

2.2 Sampling

The selected sample shall be representative of the material or product. Sampling shall conform to the requirements of the relevant Australian Standard.

2.3 Test specimens

2.3.1 Quantity

Five specimens of the material shall be tested.

2.3.2 Construction

The specimens shall be cylindrical and each have a —

- (a) diameter of 45^{+0}_{-2} mm ;
- (b) height of 50 mm $\pm$ 3 mm; and
- (c) volume of 80 cm³ $\pm$ 5 cm³.

2.3.3 Preparation

If the thickness of the material is less than the required height, specimens of the height specified in [Clause 2.3.2](#) shall be made by using a sufficient number of layers of the material and by adjustment of the material thickness if required. The layers shall occupy a horizontal position in the specimen holder and be held together firmly, without significant compression, by means of two fine steel wires of maximum diameter 0.5 mm to prevent air gaps between layers, prior to testing. The layers shall be arranged so that the measuring (hot) junction of the specimen centre thermocouple does not lie at an interface between layers of material.

NOTE Nickel-chromium thermocouple wires have also been shown to be suitable.

2.3.4 Hole for centre thermocouple

A 2 mm diameter hole shall be made axially from the top of the specimen to locate the measuring junction at the geometric centre of the specimen.

2.3.5 Conditioning

Prior to testing, the specimen shall be conditioned in a ventilated oven maintained at 60 °C $\pm$ 5 °C for 20 h to 24 h and cooled to ambient temperature in a desiccator.

The mass of each specimen shall be measured to an accuracy of $\pm$ 0.1 g prior to testing in the furnace.

NOTE Conditioning requirements assume that the test specimens are already at a normal equilibrium moisture content prior to conditioning in the oven. This may be demonstrated by pre-conditioning the samples to constant mass at 23 °C $\pm$ 2 °C and 50 % $\pm$ 5 % relative humidity so that two successive weighings do not differ by more than 0.1 % of the mass of the specimen or 0.1 g, whichever is the greater.

2.4 Test apparatus

2.4.1 General

Unless tolerances are specified, all dimensions for the following test apparatus are nominal values.

NOTE These nominal dimensions are recommended values and should be followed as closely as possible for reproducibility between tests at different laboratories.

A typical arrangement for the test apparatus is shown in [Figure 1](#).

[illegible]

Figure 1 — General arrangement of combustibility apparatus