AS/NZS 60695.11.20:2001
(Incorporating Amendment 1)

Australian/New Zealand Standard™

Fire hazard testing –

Part 11.20: Test flames – 500 W flame test methods

(IEC 60695-11-20:1999, IDT)

This Joint Australian/New Zealand Standard was prepared by Joint Technical EL-002- Safety of Household and Similar Electrical Appliances and Small Power Transformers. It was approved on behalf of the Council of Standards Australia on 21 May 2001 and on behalf of the Council of Standards New Zealand on 12 May 2001. It was published on 11 June 2001.

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Fire hazard testing –

Part 11.20: Test flames – 500 W flame test methods

(IEC 60695-11-20:1999, IDT)

Originated in Australia and New Zealand as part of ASNZS 4695.707:1996

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PREFACE

This standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002- Safety of Household and Similar Electrical Appliances and Small Power Transformers, to supersede the LF test methods contained in AS/NZS 4695.707, two years from publication.

A1 This Standard incorporates Amendment No. 1 (May 2004). The changes introduced by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide a small-scale laboratory screening procedure that allows manufacturers and designers to pre-select materials based on the relative burning behaviour of specimens made from non-metallic materials using a flame ignition source of 500 W nominal power.

This Standard forms the first edition of AS/NZS 60695.11.20, *Fire hazard testing* - Part 11.20: *Test flames – 500 W flame test methods*.

A1 This Standard is identical to and is reproduced from IEC 60695-11-20:1999, *Fire hazard testing* - Part 11-20: *Test flames - 500 W flame test methods*, including its Corrigendum 1 (2000-02) and amendment 1 (2003-06).

Annex A is for information only.

Clause 2 has been reformatted to indicate the Australia/New Zealand standard that is equivalent to the IEC standard or ISO standard to which normative reference is made.

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As this Standard is reproduced from an International Standard, the following applies:

a) Its number does not appear on each page of text and its identity is shown on the cover and title page only.

b) In the source text "IEC 60695" should read "AS/NZS 60695".

c) A full point substitutes for a comma when referring to a decimal marker.

CONTENTS

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INTRODUCTION

When considering the use of the tests in this International Standard, it is important to distinguish the term “end-product test”, meaning a fire hazard assessment test on a completed product, piece part, component or subassembly, from the term “pre-selection test”, meaning a combustion characteristic test made on a material (piece part, component or subassembly).

Pre-selection tests on materials normally use test pieces that have standardised shapes, such as a rectangular bar or sheet, and are frequently prepared using standardised moulding procedures.

It is emphasized that data using the pre-selection tests given in this standard need careful consideration to ensure their relevance to the intended application and to avoid misuse and erroneous interpretation. The actual fire performance of a part or product is affected by its surroundings, design variables such as shape and size, fabrication techniques, heat transfer effects, the type of potential ignition source and the length of exposure to it. It is important to bear in mind that these properties may also be affected by foreseeable use, abuse and environmental exposure.

The advantages of a pre-selection procedure are listed below.

a) A material, which reacts more favourably than another when tested as a standard test specimen, will usually also react more favourably when used as a finished part in the product, provided that possible synergistic effects are avoided.

b) Data concerning relevant combustion characteristics can aid the selection of materials, components and subassemblies during the design stage.

c) The precision of pre-selection tests is usually higher, and their sensitivity may be superior when compared with end-product tests.

d) Pre-selection tests may be used in a decision-making process directed to minimize fire hazards. Where applicable for the purpose of fire hazard assessment, they may lead to a reduction in the number of end-product tests, with a consequent reduction in the total testing effort.

e) When fire hazard requirements need to be upgraded quickly, it may be possible to do this by upgrading the requirements of a pre-selection test before modifying the end-product test.

f) The grading and classification obtained from the pre-selection test results may be used to specify a basic minimum performance of materials used in product specifications.

It should be noted that, when pre-selection testing is used to replace some of the end-product testing, it is necessary to fix an increased margin of safety in an attempt to ensure satisfactory performance of the end-product. End-product testing may avoid restrictions in innovative design and in economic material selection imposed by a pre-selection procedure. Consequently, following a pre-selection procedure, it may be necessary to implement a value analysis on the end-product, in order not to overspecify the product beyond what is strictly needed.

For electrotechnical products, IEC 60695-1-1 indicates that the risk of fire is present in any electrical circuit which is energized. With regard to this risk, the objective of component circuit and equipment design, and of the choice of materials is to reduce the likelihood of fire, even in the event of foreseeable abnormal use, malfunction or failure. The practical aim is to prevent ignition due to the electrically energized part but, if ignition and fire occur, to control the fire, preferably within the bounds of the enclosure of the electrotechnical product.

The best method for testing electrotechnical products with regard to fire hazards is to duplicate exactly the conditions occurring in practice. In most instances this is not possible. Accordingly, for practical reasons, the testing of electrotechnical products with regard to fire

hazard is best conducted by simulating as closely as possible the actual effects occurring in practice.

IEC 60695-1-3 provides that pre-selection may be made on the basis of specified tests and by the use of specifications of the necessary resistance to fire and related combustion characteristics. It also outlines guidance that is intended to relate the specific function of the electrotechnical product, its subassemblies and its parts to the tested properties of materials, and to demonstrate the significance and the limitations of such a pre-selection procedure.

ISO/TR 10840 summarises specific problems associated with the fire testing of plastics, which should be taken into account when assessing and interpreting test results.

AUSTRALIAN/NEW ZEALAND STANDARD

FIRE HAZARD TESTING –

Part 11-20: Test flames – 500 W flame test methods

1 Scope

This part of IEC 60695 specifies a small-scale laboratory screening procedure for comparing the relative burning behaviour of specimens made from plastics and other non-metallic materials, as well as their resistance to burn-through when exposed to a flame ignition source of 500 W nominal power. This method is applicable to both solid materials and cellular plastic materials having an apparent density of 250 kg/m^3 or greater when determined in accordance with ISO 845. It does not apply to thin materials that shrink away from the applied flame without igniting, for which ISO 9773 should be used.

The test method described is intended to characterize material performance, for example for quality-control purposes, and is not intended to assess the behaviour to fire of building materials or furnishings. It may be used for the pre-selection of a material, provided that positive results are obtained at a thickness which equals the smallest thickness used in the application. The results obtained provide some information about the behaviour of plastic materials in service, but can never by themselves assure safe performance in service.

NOTE – Test results are influenced by material components, e.g. pigments, fillers, and fire retardants, and properties such as the direction of anisotropy and the molecular mass.

This test method provides a classification system (see 8.4) which may be used for quality assurance or the pre-selection of component materials of products.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60695. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60695 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC or ISO standard	Year	Title	AU/NZ standard	Year
IEC 60695-2-2	1991	*Test methods – Section 2: Needle-flame test*	AS/NZS 4695.2.2	1996
IEC 60695-11-3	2000	*Fire hazard testing – Part 11-3: Test flames – 500 W flames: Apparatus and confirmational test methods*		
IEC 60695-11-10	1999	*Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*	AS/NZS 60695.11.10	2001

IEC or ISO standard	Year	Title	AU/NZ standard	Year
ISO 291	1997	*Plastics – Standard atmospheres for conditioning and testing*		
ISO 293	1986	*Plastics – Compression moulding test specimens of thermoplastic materials*		
ISO 294 (all parts)		*Plastics – Injection moulding of test specimens of thermoplastic materials*		
ISO 295	1991	*Plastics – Compression moulding of test specimens of thermosetting materials*		
ISO 845	1988	*Cellular plastics and rubbers – Determination of apparent (bulk) density*		
ISO 9773	1998	*Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*		

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3 Definitions

For the purpose of this part of IEC 60695, the following definitions apply.

3.1
afterflame
persistence of flaming of a material, under specified test conditions, after the ignition source has been removed

3.2
afterflame time t_1
length of time during which an afterflame persists

3.3
afterglow
persistence of glowing of a material, under specified test conditions, after cessation of flaming or, if no flaming occurs, after the ignition source has been removed

3.4
afterglow time t_2
length of time during which an afterglow persists

3.5
burn-through
hole produced by the test flame in the plate specimen

4 Principle

This method requires the use of two specimen configurations to characterize material performance. Rectangular bar-shaped specimens (see 8.2) are used to assess ignitability and burning time, while square plate specimens (see 8.3) are used to assess the resistance of the material to burn-through.

5 Significance of test

5.1 Tests made on a material under the conditions specified can be of considerable value when comparing the relative burning behaviour of different materials, controlling manufacturing processes, or assessing any change in burning characteristics. The results obtained from this method are dependent on the shape, orientation and environment surrounding the specimen, and on the conditions of ignition.

NOTE – The results obtained with this method and with the horizontal burning (HB) and vertical burning (V) tests specified in IEC 60695-11-10 are not equivalent because the test flame is approximately 10 times more severe.

5.2 Results obtained in accordance with this standard shall not be used alone to describe or appraise the fire hazard presented by a particular material or shape under actual fire conditions. Assessment for fire hazard requires consideration of such factors as fuel contribution, intensity of burning (rate of heat release), products of combustion and environmental factors, including the intensity of source, orientation of exposed material and ventilation conditions.

5.3 Burning behaviour, as measured by this test method, is affected by such factors as density, any anisotropy of the material and the thickness of the test specimen.

5.4 Certain materials may shrink from or be distorted by the applied flame without igniting. In this event, additional test specimens will be required to obtain valid tests.

5.5 The burning behaviour of some plastic materials may change with time. It is accordingly advisable to make tests before and after ageing using an appropriate procedure. The preferred oven conditioning shall be seven days at 70 °C ± 2 °C. However, other ageing times and temperatures may be used by agreement between the interested parties, and shall be noted in this test report.

6 Apparatus

The apparatus shall be composed of the elements listed below.

6.1 Laboratory fumehood/chamber

The fumehood/chamber shall have an inside volume of at least 0,75 m³. The chamber shall permit observation of tests in progress and shall be draught-free, whilst allowing normal thermal circulation of air past the test specimen during burning. The inside surfaces of the chamber shall be of a dark colour. When a light meter, facing towards the rear of the chamber, is positioned in place of the test specimen, the recorded light level shall be less than 20 lx. For safety and convenience, it is desirable that this enclosure (which can be completely closed) be fitted with an extraction device, such as an exhaust fan, to remove products of combustion which may be toxic. The extraction device shall be turned off during the test and turned on immediately after the test to remove the fire effluents. A positive closing damper may be needed.

NOTE – Placing a mirror in the chamber, to provide a rear view of the test specimen, has been found useful.

6.2 Laboratory burner

The laboratory burner shall conform to IEC 60695-11-3, flames A, B, C or D.

NOTE – ISO 10093 describes the burner as ignition source P/PF2 and P/PF4 (500 W).

6.3 Ring stand

This ring stand shall have clamps or the equivalent, adjustable for the positioning of the test specimens.

6.4 Timing device

The timing device shall have a resolution of at least 0,5 s.

6.5 Measuring scale

The measuring scale shall be graduated in millimetres.

6.6 Conditioning chamber

It shall be possible to maintain the conditioning chamber at 23 °C ± 2 °C, with a relative humidity of 50 % ± 5 %.

6.7 Micrometer

The micrometer shall have a resolution of at least 0,01 mm.

6.8 Desiccator chamber

The desiccator chamber shall contain anhydrous calcium chloride or other drying agent, which can be maintained at 23 °C ± 2 °C, and a relative humidity not exceeding 20 %.

6.9 Air-circulating oven

The air circulation oven shall provide a conditioning temperature of 70 °C ± 2 °C, unless otherwise stated in the relevant specification, whilst providing not less than five air changes per hour.

6.10 Cotton pad

The pad shall be made of approximately 100 % absorbent cotton (see figure 1).

NOTE – This is frequently referred to as surgical-grade cotton or cotton wool.

6.11 Burner mounting block or fixture

The burner mounting block or fixture serves to position the burner at an angle of 20° ± 2° from the vertical axis (see figure 3).

7 Specimens

7.1 End product testing

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Test specimens shall be cut from a representative sample of the moulded material taken from an end product. Where this is not possible, the test specimen shall be produced using the same fabrication process as would be normally used to mould a part of a product; and where this is not possible, the appropriate ISO method shall be used, e.g. casting and injection moulding in accordance with ISO 294, compression moulding in accordance with ISO 293 or ISO 295, or transfer moulding to the necessary shape.

If it is not possible to prepare test specimens by any of the methods outlined above, a type test shall be performed using the needle flame test in accordance with IEC 60695-2-2.

A1 After any cutting operation, care shall be taken to remove all dust and any particles from the surface; cut edges shall be fine sanded to a smooth finish.

7.2 Material testing

The results of tests carried out on test specimens of different colour, thickness, density, molecular mass, anisotropic direction and type, or with different additives or fillers/reinforcements can vary.

Test specimens with extremes of density, melt flows and filler/reinforcement content may be provided and considered representative of the range if the test results yield the same flame test classification. If the test results do not yield the same flame test classification for all test specimens representing the range, evaluation shall be limited to the materials with the extremes of density, melt flows and filler/reinforcement contents tested. In addition, test specimens with intermediate density, melt flows, and filler/reinforcement content shall be tested to determine the representative range for each flame classification.

7.3 Bar test specimens

Bar test specimens shall measure 125 mm ± 5 mm long by 13,0 mm ± 0,5 mm wide, and shall be provided in the minimum thickness normally supplied. The thickness shall not exceed 13,0 mm. Edges shall be smooth, and the radius on the corners shall not exceed 1,3 mm. Other thicknesses may be used by agreement between the interested parties and, if so, shall be noted in the test report (see Figure 4a).

Uncoloured test specimens and test specimens with the highest level of organic and inorganic pigment loading by weight are considered representative of the colour range, if the test results yield the same flame test classification. When certain pigments are known to affect flammability characteristics, the test specimens containing those pigments shall also be tested. Test specimens which shall be tested are those that:

a) contain no colouring,

b) contain the highest level of organic pigments,

c) contain the highest level of inorganic pigments,

d) contain pigments which are known to adversely affect flammability characteristics.

7.4 Plate test specimens

Plate test specimens shall measure 150 mm ± 5 mm long by 150 mm ± 5 mm wide and provided in the minimum thickness normally supplied. The thickness shall not exceed 13,0 mm. Other thicknesses may be used by agreement between the interested parties and, if so, shall be noted in the test report (see Figure 4b).

Uncoloured test specimens, or one normally supplied colour of test specimen, shall be tested, and considered representative of the colour range.

If a 5VA classification is required, plate test specimens must be tested. For the determination of the 5VB classification, there is no need to test the plate test specimens.

A minimum of 20 bar test specimens and 12 plate test specimens, if needed, shall be prepared.

8 Test method

8.1 Conditioning

Unless otherwise required by the relevant specification, the requirements listed below shall apply.

8.1.1 Sets of five bar test specimens and three plates shall be conditioned for a minimum of 48 h at 23 °C ± 2 °C and 50 % ± 5 % relative humidity. Once removed from the conditioning chamber (see 6.6), the test specimens shall be tested within 1 h (see ISO 291).

8.1.2 Sets of five bar test specimens and three plates shall be aged in the air-circulating oven (see 6.9) for 168 h ± 2 h at 70 °C ± 2 °C and then cooled in the desiccator chamber (see 6.8) for at least 4 h. Once removed from the desiccator chamber, the test specimens shall be tested within 30 min (see ISO 291).

8.1.3 All test specimens shall be tested in a laboratory atmosphere of 15 °C to 35 °C and 45 % to 75 % relative humidity.

8.2 Procedure – Bar test specimens

8.2.1 Using the ring stand (see 6.3), clamp the bar test specimen using the upper 6 mm of its length with the longitudinal axis vertical so that the lower end of the bar test specimen is 300 mm ± 10 mm above a horizontal layer of cotton (see 6.10), which is approximately 50 mm × 50 mm × 6 mm uncompressed thickness and has a maximum mass of 0,08 g (see figure 1).

8.2.2 With the central axis of the burner tube vertical, place the burner remote from the bar test specimen and set the burner (see 6.2) to produce a standardized 500 W nominal test flame, conforming to IEC 60695-11-3, flames A, B, C or D. Wait for a minimum of 5 min to allow the burner conditions to reach equilibrium. Support the burner on the burner mounting block or fixture (see 6.11), so that the burner tube is positioned at an angle of 20° ± 5° from the vertical (see figure 1). In case of dispute, test flame A shall be used as the reference test flame.

8.2.3 With the narrow edge of the bar test specimen facing the burner, apply the flame of the burner centrally to the lower front corner of the bar test specimen at an angle of 20° ± 5° from the vertical, so that the tip of the blue cone just touches the bar test specimen (see figure 1).

Apply the flame for 5 s ± 0,5 s and then remove it for 5 s ± 0,5 s. Repeat the operation until the bar test specimen has been subjected to five applications of the test flame. If the bar test specimen drips particles, shrinks or elongates during the test, adjust the burner position so that the tip of the inner blue cone is just in contact with the remaining portion of the bar test specimen, ignoring any strings of molten material. Following each flame application, immediately withdraw the burner sufficiently so there is no effect on the bar test specimen.

NOTE 1 – It may be necessary to hand-hold the burner and mounting block to accomplish this.

NOTE 2 – Withdrawing the burner a distance of 150 mm from the bar test specimen following each flame application has been found satisfactory.

8.2.4 After the fifth application of the flame to the bar test specimen, immediately remove the burner sufficiently from the bar test specimen so that there is no effect on the bar test specimen and, simultaneously, using the timing device (see 6.4), begin measurement, to the nearest second, of the afterflame time t_1, and the afterglow time t_2. Note and record t_1, t_2, and t_1 plus t_2. Note and record also whether any flaming particles or drops fall from the bar test specimen and, if so, whether they ignite the cotton (see 6.10).

NOTE 1 – Measuring and recording the afterflame time t_1 and then continuing the measurement of the sum of the afterflame time t_1 and the afterglow time t_2, specifically t_1 plus t_2, (without resetting the timing device) has been found satisfactory in the recording of t_2.

NOTE 2 – Withdrawing the burner a distance of 150 mm from the bar test specimen while measuring t_1 and t_2 has been found satisfactory

8.2.5 Repeat the procedure until all five bar test specimens, conditioned in accordance with 8.1.1, and all five bar test specimens, conditioned in accordance with 8.1.2, have been tested.

8.2.6 If only one test specimen from a set of five bar test specimens for a given conditioning treatment does not conform to all of the criteria for a category, another set of five bar test specimens, subjected to the same conditioning, shall be tested. All test specimens from the second set shall conform to all of the specified criteria for the category.

8.3 Procedure – Plates

8.3.1 Using the clamp on the ring stand (see 6.3), support the plate approximately in the horizontal plane (see figure 2).

8.3.2 Set the burner using the procedure described in 8.2.2.

8.3.3 Apply the flame of the burner to the approximate centre of the bottom surface of the plate at an angle of 20° ± 5° from the vertical, so that the tip of the blue cone just touches the surface of the plate.

8.3.4 Apply the flame for 5 s ± 0,5 s and then remove it for 5 s ± 0,5 s. Repeat this until the plate has been subjected to five applications of the test flame. Following each flame application, immediately withdraw the burner sufficiently so there is no effect on the plate.

NOTE 1 – It may be necessary to hand-hold the burner and mounting block to accomplish this.

NOTE 2 – Withdrawing the burner a distance of 150 mm from the plate following each flame application has been found satisfactory.

8.3.5 After the fifth application of the flame, immediately remove the burner sufficiently from the plate so that there is no effect on the plate. Note and record whether or not the flame penetrates through the plate (burn-through).

NOTE – Withdrawing the burner a distance of 150 mm from the plate has been found satisfactory.

8.3.6 Repeat the procedure until all three plates, conditioned in accordance with 8.1.1, and all three plates, conditioned in accordance with 8.1.2, have been tested.

8.3.7 If only one plate from a set of three plates for a given conditioning treatment does not conform to all of the criteria for a category, another set of three plates, subjected to the same conditioning, shall be tested. All plates from the second set shall conform to all of the specified criteria for the category.

8.4 Classification

The material shall be classified either 5VA or 5VB (5V = vertical burning), in accordance with the criteria indicated in table 1, based on the behaviour of the bar test specimens and plates. Materials classified either 5VA or 5VB shall also conform to the criteria for materials classified either V-0, V-1 or V-2 described in IEC 60695-11-10, in the same bar test specimen thickness, in order to assess the extent of burning to the holding clamp.

Table 1 – 5V burning categories

Criteria	Category **(see note)**	
	5VA	5VB
Individual bar test specimen afterflame plus afterglow time after the fifth flame application ($t_1 + t_2$) for each individual bar test specimen	≤ 60 s	≤ 60 s
Was the cotton indicator (see 6.10) ignited by flaming particles or drops from any bar test specimen?	No	No
Did the bar test specimen burn up completely?	No	No
Did the flame penetrate through (burn-through) any of the individual plates?	No	Yes
NOTE – If the test results are not in accordance with the specified criteria, the material cannot be categorized by this test method.		

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8.5 Test report

The test report shall include the following particulars:

a) a reference to this International Standard;

b) all details necessary to identify the product tested, including the manufacturer's name, number or code, and colour;

c) the thickness, to the nearest 0,1 mm, of the test specimen;

d) the nominal apparent density (cellular materials only);

e) the direction of any anisotropy relative to the dimensions of the test specimen;

f) the conditioning treatment;

g) any treatment before testing, other than cutting, trimming and conditioning;

h) the individual values of afterflame time t_1, afterglow time t_2, and t_1 plus t_2, after the fifth flame application for each bar test specimen;

i) a note as to whether any particles or drops fell from the bar test specimens and whether they ignited the cotton;

j) a note as to whether any of the plates showed burn-through;

k) the assigned classification (see 8.4).

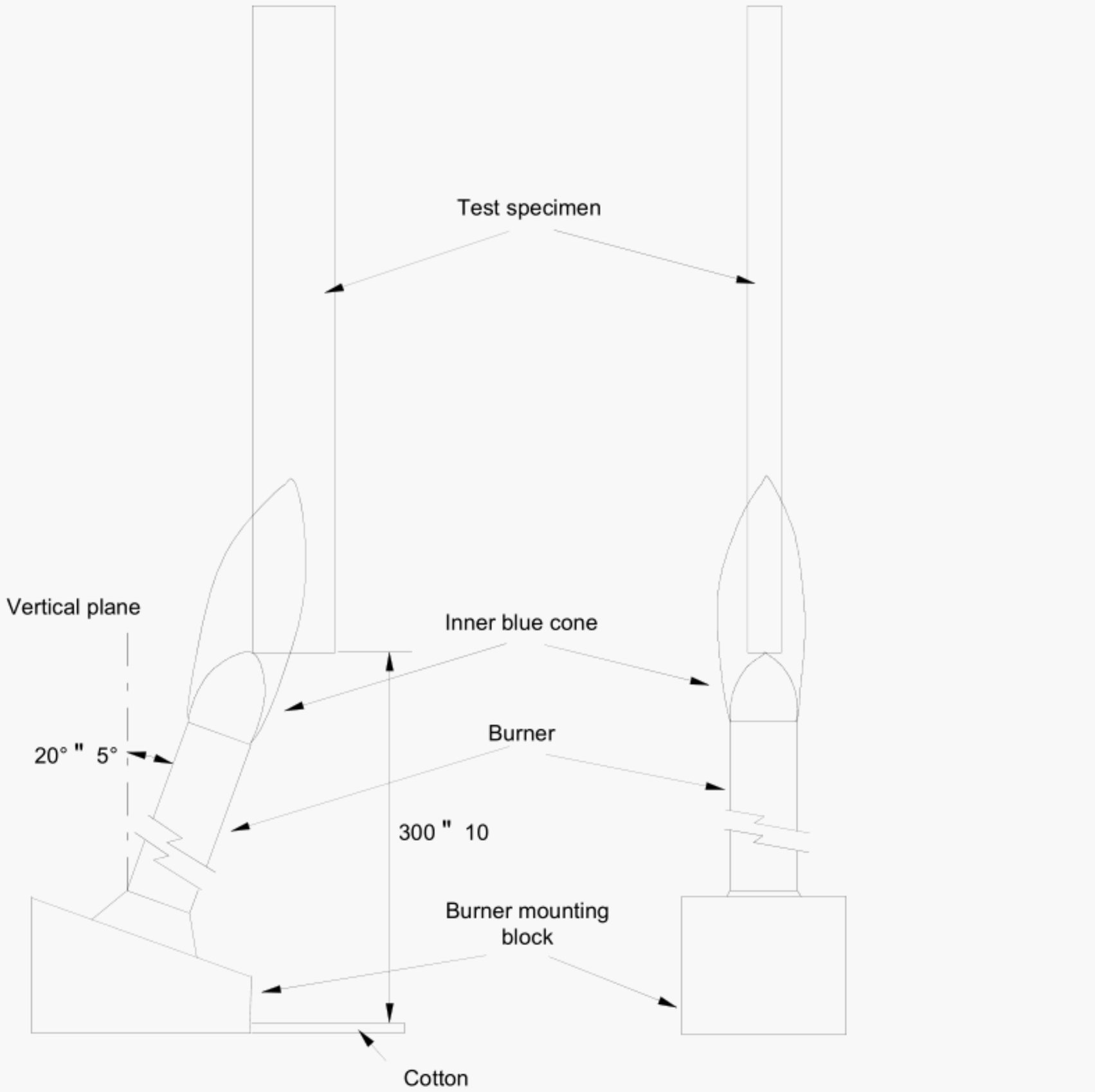


Figure 1 – Vertical burning test for bar specimens

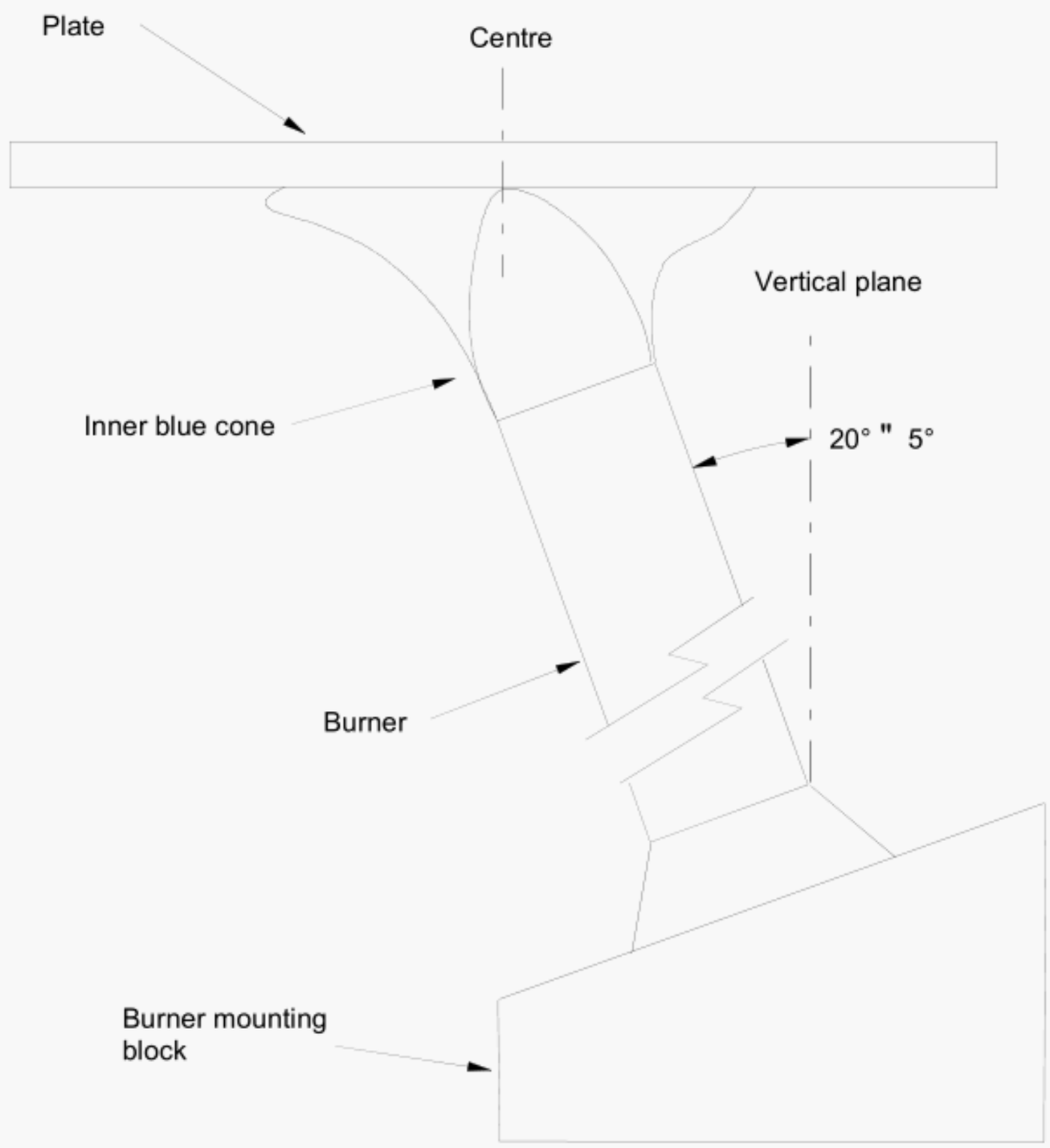
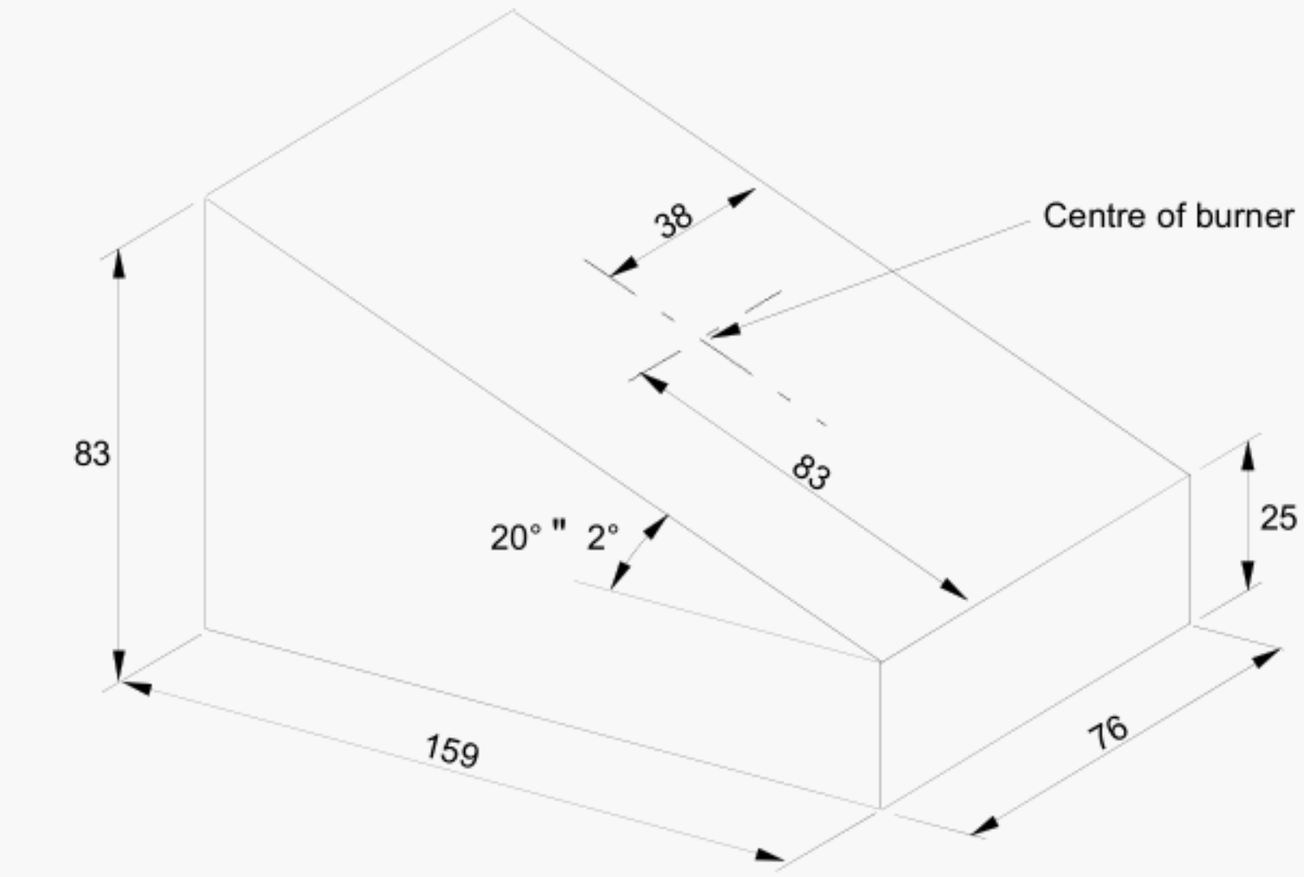


Figure 2 – Horizontal burning test for plates



No tolerances are shown except for
the angle because it is an example only

IEC 1 772/98

Dimensions in millimetres

Figure 3 – Burner mounting block – Example

S = thickness of specimen

Figure 4a – Bar specimen

S = thickness of specimen

Figure 4b – Plate specimen

Dimensions in millimetres

Figure 4 – Test specimens

Annex A
(informative)

Precision of the test method

Interlaboratory trials

The precision data were determined from an interlaboratory experiment conducted in 1988 involving ten laboratories, six materials and three replicates, each material using the average of three data points. All tests were conducted on 3,0 mm thick specimens. The results were analyzed in accordance with ISO 5725-2, and are summarized in tables A.1 and A.2.

Table A.1 – Precision data on the afterflame time t_1 after the fifth flame application

	Material					
Parameter	PBT(1)	PBT(2)	PA	PPE+PS	PC	UP
Average	1,0	1,2	1,5	10,3	2,1	6,7
Repeatability	0,4	0,6	0,3	4,1	0,7	1,9
Reproducibility	0,6	1,1	0,9	6,0	1,0	5,4
Values of t_1 in seconds.						
NOTE – Symbols for plastics materials are defined in ISO 1043-1.						

Table A.2 – Precision data on the afterflame time t_1 and/or afterglow time t_2 after the fifth flame application

	Material					
Parameter	PBT(1)	PBT(2)	PA	PPE+PS	PC	UP
Average	9,1	9,4	1,5	10,3	2,2	8,3
Repeatability	1,9	1,0	0,3	4,1	0,6	1,8
Reproducibility	5,9	6,1	0,9	5,9	1,0	5,1
Values of t_1 and/or t_2 in seconds.						
NOTE – Symbols for plastics materials are defined in ISO 1043-1.						

NOTE – Tables A.1 and A.2 are only intended to present a meaningful way of considering the approximate precision of this test method for a range of materials. These data should not be rigorously applied as criteria for the acceptance or rejection of a material, as the data are specific to the interlaboratory test and may not be representative of other lots, conditions, thicknesses, materials or laboratories.

Bibliography

	IEC or ISO standard	Year	Title	AU/NZ standard	Year
A1	IEC 60695-1-1	1999	*Fire hazard testing – Part 1: Guidance for assessing fire hazard of electrotechnical products – Section 1: General guidance*	AS/NZS 60695.1.1	2001
	IEC 60695-1-3	1986	*Fire hazard testing – Part 1: Guidance for the preparation of requirements and test specifications for assessing fire hazard of electrotechnical products – Guidance for use of preselection procedures*		
A1	IEC 60695-4	1993	*Fire hazard testing – Part 4: Terminology concerning fire tests*	AS/NZS 60695.4	2002
	IEC 60707	1999	*, Flammability of solid non-metallic materials when exposed to flame sources – List of test methods*		
	ISO 1043-1	1997	*Plastics – Symbols and abbreviated terms – Part 1: Basic polymers and their special characteristics*		
	ISO 5725-2	1994	*Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*		
	ISO 10093	1998	*Plastics – Fire tests – Standard ignition sources*		
	ISO/TR 10840	1993	*Plastics – Burning behaviour – Guidance for development and use of fire tests*		

NOTES

Standards Australia

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

Standards New Zealand

The first national Standards organization was created in New Zealand in 1932. The Standards Council of New Zealand is the national authority responsible for the production of Standards.
Standards New Zealand is the trading arm of the Standards Council established under the Standards Act 1988.

Australian/New Zealand Standards

Under a Memorandum of Understanding between Standards Australia and Standards New Zealand, Australian/New Zealand Standards are prepared by committees of experts from industry, governments, consumers and other sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian/New Zealand Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia and Standards New Zealand are responsible for ensuring that the Australian and New Zealand viewpoints are considered in the formulation of international Standards and that the latest international experience is incorporated in national and Joint Standards. This role is vital in assisting local industry to compete in international markets. Both organizations are the national members of ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission).

Visit our Web sites

www.standards.org.au

www.standards.co.nz

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