

AS/NZS 60695.11.4:2004
(IEC 60695-11-4 Ed. 2.0, IDT)

Australian/New Zealand Standard™

Fire hazard testing –

Part 11.4: Test flames –
50 W flame – Apparatus and
confirmational test method

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee 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 20 August 2004 and by the Council of Standards New Zealand on 03 September 2004. It was published on 15 October 2004.

The following interests are represented on Committee EL-002

Australian Industry Group
Australian Retailers Association
Australian Electrical and Electronic Manufacturers Association
Business New Zealand
Consumer Electronic Suppliers Association, Australia
Consumers' Federation of Australia
Electrical regulatory authorities, Australia
Electrical Compliance Testing Association
Electrical consultants
Electricity Supply Association of Australia
Ministry of Consumer Affairs, New Zealand

Keeping Standards up-to-date

Standards are living documents, which reflect progress in science, technology and systems.

To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia web site at www.standards.org.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue. Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comment to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

AS/NZS 60695.11.4:2004
(IEC 60695-11-4 Ed. 2.0, IDT)

Australian/New Zealand Standard™

Fire hazard testing –

Part 11.4: Test flames –
50 W flame – Apparatus and
confirmational test method

First edition AS/NZS 60695.11.4:2001.

Second edition AS/NZS 60695.11.4:2004.

COPYRIGHT

© Standards Australia International/ Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher

Published jointly by Standards Australia International Ltd,
GPO Box 5420, Sydney, NSW 2001, Australia, and

Standards New Zealand, Private Bag 2439, Wellington 6020,
New Zealand

ISBN 0 7337 6282 4

CONTENTS

PREFACE	4
INTRODUCTION.....	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Method A – Production of a standardized nominal 50 W flame test	7
4.1 Requirements	7
4.2 Apparatus and fuel	7
4.2.1 Burner	7
4.2.2 Flowmeter.....	7
4.2.3 Manometer	7
4.2.4 Control valve	7
4.2.5 Copper block	8
4.2.6 Thermocouple.....	8
4.2.7 Temperature/time indicating/recording devices	8
4.2.8 Fuel gas	8
4.2.9 Laboratory fumehood/chamber	8
4.3 Production of test flame	9
4.4 Confirmation of the test flame	9
4.4.1 Principle	9
4.4.2 Procedure.....	9
4.4.3 Verification	9
5 Method B	9
6 Method C	10
7 Classification and designation.....	10
Annex A (normative) Test arrangements – Method A	13
Annex B (withdrawn).....	17
Annex C (withdrawn).....	18
Annex D (informative) Recommended arrangements for the use of the test flame	19
Annex E (informative) Clearance gauge.....	20
Annex F (informative) Test arrangements for tests on equipment	21
Annex G (informative) Test arrangements for tests on bar test specimens.....	22
Annex H (informative) Access to equipment manufacturers and suppliers.....	23
Bibliography	24

Figure 1 – Copper block.....	11
Figure 2 – Flame height gauge.....	12
Figure A.1 – Burner method A – General assembly.....	13
Figure A.2 – Burner details	14
Figure A.3 – Supply arrangement for burner (example).....	15
Figure A.4 – Confirmatory test arrangement	16
Figure E.1 – Clearance gauge.....	20
Figure F.1 – Examples of test arrangements.....	21
Figure G.1 – Examples of test arrangements	22

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 AS/NZS 60695.11.4:2001 from the date of publication.

The objective of this Standard is to detail the apparatus and confirmational tests for a method 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 small flame ignition source of 50 W nominal power.

This Standard forms the second edition of AS/NZS 60695.11.4, *Fire hazard testing - Part 11.4: Test flames – 50 W flames – Apparatus and confirmational test method*.

This Standard is identical to and is reproduced from IEC/TS 60695-11-4 Ed. 2.0, *Fire hazard testing - Part 11-4: Test flames - 50 W flames – Apparatus and confirmational test method*.

This Standard is to be used in conjunction with AS/NZS 60695-1-1 and AS/NZS 60695-11-3.

The main changes with respect to the previous edition are described below:

- The introduction has been revised.
- Test methods B and C have been withdrawn. Test method A has been retained with its original letter designation.
- Normative reference ISO 1337 has been withdrawn without a replacement by ISO/TC 26. The callout Cu-ETP UNS 11000 is the replacement for all references to ISO 1337. It is taken from ASTM B187-00 and describes high conductivity electrolytic copper.
- A new Annex H has been added which provides access to equipment manufacturers and suppliers.
- Alignment with other publications in the AS/NZS 60695-11 series has been made, where appropriate.

Where relevant the normative references and the bibliography are reformatted to indicate the Australia/New Zealand standard that is equivalent to the IEC standard or ISO standard to which reference is made.

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.

INTRODUCTION

The best method for testing electrotechnical products with regard to fire hazard 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.

This technical specification provides a general description of the apparatus required to produce a test flame and a general description of the principle of a calibration procedure to check that the flame produced meets the requirements. Detailed information for the confirmation of a test flame can be found in IEC 60695-11-40.

This technical specification provides:

- a) guidance on the design and use of a flame test method to assess the effect on the test specimen of flames such as may arise from other ignited items in the vicinity, or from a fire in its early stages;
- b) a general description of the apparatus required to produce the test flame;
- c) a general description of the principle of a calibration procedure to check that the flame produced meets the requirements.

The detailed description of the apparatus needed to produce and verify the test flames is given in a series of sheets, of which this is one.

The status of this series of test flames, currently under study, is summarized as follows:

Nominal power of the flame W	Type	Gas	Present status	Apparent overall height mm
50 (A)	Pre-mixed	Methane	Method A of this technical specification	Approximately 20
50 (B)	(Withdrawn)			
50 (C)	(Withdrawn)			
NOTE IEC 60695-11-2 describes the apparatus and confirmatory test method for a 1 000 W nominal test flame and IEC 60695-11-3 describes the apparatus and confirmatory test method for a 500 W nominal test flame.				

The aim of the work, initiated by ACOS, is to make available an appropriate (minimum) series of standardized test flames, covering a range of powers for the use of all committees needing test flames. Wherever possible these test flames have been based on existing types, but with improved specifications.

Method A as described in Clause 4 produces the 50 W nominal test flame using a single gas supply tube, a needle valve to adjust the gas back pressure, a flowmeter to adjust the gas flow rate and adjustable air ports on the burner tube. This method has been developed as a technical enhancement of previous technology.

Flame A as described in Clause 4 is produced by methane and makes use of a more tightly specified version of a burner that has been used in some countries for many years.

FIRE HAZARD TESTING –

Part 11.4: Test flames – 50 W flame – Apparatus and confirmational test method (IEC/TS 60695-11-4 Ed. 2.0, IDT)

1 Scope

This technical specification provides detailed requirements for the production of a 50 W nominal, pre-mixed type test flame. The approximate overall height is 20 mm.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

<u>International Standard</u>	<u>Title</u>	<u>AU/NZ Standard</u>
IEC 60584-1:1995	<i>Thermocouples – Part 1: Reference tables</i>	
IEC 60584-2:1982	<i>Thermocouples – Part 2: Tolerances</i>	
IEC 60695-4:1993	<i>Fire hazard testing – Part 4: Terminology concerning fire tests</i>	AS/NZS 60695.4
IEC Guide 104:1997	<i>The preparation of safety publications and the use of basic safety publications and group safety publications</i>	
ISO/IEC Guide 51:1999	<i>Safety aspects - Guidelines for their inclusion in standards</i>	
ISO/IEC 13943:2000	<i>Fire safety – Vocabulary</i>	
ASTM-B187	<i>Standard Specification for Copper, Bus Bar, Rod, and Shapes and General Purpose Rod, Bar, and Shapes</i>	

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO/IEC 13943 and IEC 60695-4, as well as the following definition, apply.