

# TECHNICAL SPECIFICATION

# SPECIFICATION TECHNIQUE



BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

**Fire hazard testing –**

**Part 11-11: Test flames – Determination of the characteristic heat flux for ignition from a non-contacting flame source**

**Essais relatifs aux risques du feu –**

**Partie 11-11: Flammes d'essai – Détermination du flux de chaleur caractéristique pour l'allumage à partir d'une flamme source sans contact**



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## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions .....	8
4 Principle of the test.....	9
5 Apparatus.....	9
5.1 Test arrangement.....	9
5.2 Burner and test flame.....	10
5.3 Heat flux meter .....	10
5.4 Data acquisition system.....	11
5.5 Dummy test specimen board .....	11
5.6 Masking board .....	11
5.7 Timing device.....	12
5.8 Conditioning.....	12
5.9 Test specimen support .....	12
5.10 Burner support .....	12
5.11 Observation mirror .....	12
6 Test specimen .....	12
6.1 Specimen preparation .....	12
6.2 Test specimen dimensions .....	12
6.3 Testing ranges in formulations.....	13
6.3.1 General.....	13
6.3.2 Density, melt flows and filler/reinforcement.....	13
6.3.3 Colour.....	13
6.4 Conditioning of test specimens.....	13
7 Testing conditions .....	13
8 Test procedure .....	13
8.1 Determination of incident heat flux calibration curve.....	13
8.2 Determination of ignition times .....	14
8.3 Repetition of the test at different heat flux values.....	14
9 Evaluation of test results.....	15
9.1 Average ignition time $\bar{t}_{ig}$ .....	15
9.2 Report format for CHFI.....	15
9.3 Precision data.....	15
10 Test report.....	15
Annex A (informative) An example of the calibration curve of incident heat flux versus the distance between the top of the burner tube and the lower surface of the test specimen.....	16
A.1 Calibration curves .....	16
Annex B (informative) Examples of ignition times with various materials of 3 mm thickness.....	18
B.1 Materials tested .....	18
Annex C (informative) Precision data.....	21
C.1 General.....	21

C.2	Heat flux versus distance at different Gas flow rates .....	21
C.3	Repeatability .....	22
C.4	Calculations and plots .....	23
	Bibliography .....	25
	Figure 1 – Arrangement and position of test specimen and burner .....	10
	Figure 2 – Dummy test specimen board .....	11
	Figure 3 – Structure of the masking board .....	12
	Figure A.1 – Calibration curve (example) .....	16
	Figure B.1 – Example of ignition times of PMMA .....	18
	Figure B.2 – Ignition times for ABS (example) .....	19
	Figure B.3 – Ignition times for HIPS (example) .....	19
	Figure C.1 – Incident heat flux calibration curve (Gas flow rate = 105 cm <sup>3</sup> /min) .....	21
	Figure C.2 – Incident heat flux calibration curve (Gas flow rate = 160 cm <sup>3</sup> /min) .....	22
	Figure C.3 – 1/t <sub>ig</sub> for Material A .....	23
	Figure C.4 – 1/t <sub>ig</sub> for Material B .....	23
	Figure C.5 – 1/t <sub>ig</sub> for Material C .....	24
	Figure C.6 – 1/t <sub>ig</sub> for Material D .....	24
	Table A.1 – Calibration data (examples of actual measured data as shown in Figure A.1) .....	17
	Table A.2 – Calibration data (examples of interpolated values) .....	17
	Table B.1 – Illustrative example of tabulated results .....	20
	Table C.1 – Precision data of ignition time .....	22

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### FIRE HAZARD TESTING –

#### Part 11-11: Test flames – Determination of the characteristic heat flux for ignition from a non-contacting flame source

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 60695-11-11, which is a technical specification, has been prepared by IEC technical committee 89: Fire hazard testing.

It has the status of a basic safety publication in accordance with IEC Guide 104 and ISO/IEC Guide 51.

This second edition of IEC TS 60695-11-11 cancels and replaces the first edition published in 2008. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Fix of editorials throughout the text;
- b) Introduction updated;
- c) Normative references updated;
- d) Results of recent round-robin testing incorporated; and
- e) Informative Annex C "Precision data" added.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
89/1227/DTS	89/1248/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This technical specification is to be used in conjunction with IEC 60695-11-4.

A list of all the parts in the IEC 60695 series, under the general title *Fire hazard testing*, can be found on the IEC website.

Part 11 consists of the following parts:

- Part 11-2: Test flames – 1 kW nominal pre-mixed flame – Apparatus, confirmatory test arrangement and guidance
- Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods
- Part 11-4: Test flames – 50 W flame – Apparatus and confirmational test method
- Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance
- Part 11-10: Test flames – 50 W horizontal and vertical flame test methods
- Part 11-11: Test flames – Determination of the characteristic heat flux for ignition from a non-contacting flame source
- Part 11-20: Test flames – 500 W flame test methods
- Part 11-21: Test flames – 500 W vertical flame test method for tubular polymeric materials
- Part 11-30: Test flames – History and development from 1979 to 1999
- Part 11-40: Test flames – Confirmatory tests – Guidance

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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Withdrawn

## INTRODUCTION

In the design of any electrotechnical product, the risk of fire and the potential hazards associated with fire need to be considered. In this respect the objective of component, circuit and equipment design as well as the choice of materials is to reduce the risk of fire to a tolerable level even in the event of reasonably foreseeable (mis)use, malfunction or failure. IEC 60695-1-10, together with its companion, IEC 60695-1-11, provide guidance on how this is to be accomplished.

Fires involving electrotechnical products can be initiated from external non-electrical sources. Considerations of this nature are dealt with in an overall fire hazard assessment.

The aim of the IEC 60695 series of standards is to save lives and property by reducing the number of fires or reducing the consequences of the fire. This can be accomplished by

- trying to prevent ignition caused by an electrically energised component part and, in the event of ignition, to confine any resulting fire within the bounds of the enclosure of the electrotechnical product.
- trying to minimise flame spread beyond the product's enclosure and to minimise the harmful effects of fire effluents including heat, smoke, and toxic or corrosive combustion products.

This technical specification is to be used to measure and describe the properties of materials used for electrotechnical products and sub-assemblies in response to heat from a non-contacting flame source under controlled laboratory conditions and is to not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test can be used as elements of a fire hazard assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. A test specimen cut from end-product or sub-assembly can be tested by this test method.

This technical specification may involve hazardous materials, operations, and equipment. It does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

Test methods to determine flammability by contact of flame have been developed and standardized already, such as IEC 60695-11-10 [1]<sup>1</sup> and IEC 60695-11-20 [2]<sup>1</sup> and ISO 4589-2 [3]<sup>1</sup>.

This is the first test method to determine the characteristic heat flux for ignition (CHF<sub>I</sub>) of materials used for electrotechnical products and sub-assemblies from a non-contacting flame source. CHF<sub>I</sub> characterizes ignition behaviour in terms of incident heat flux. This test method simulates the fire behaviour of materials used for electrotechnical products where a flame source exists close to, but does not contact with these items. An example is a candle flame near an electrotechnical product.

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<sup>1</sup> Numbers in square brackets refer to the bibliography.