

TECHNICAL SPECIFICATION

SPÉCIFICATION 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: Flamme d'essai – Détermination du flux de chaleur caractéristique pour l'allumage à partir d'une flamme source sans contact



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Withdrawn

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIRE HAZARD TESTING –

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

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 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 but there may be in the future.

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

IEC 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.

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

Enquiry draft	Report on voting
89/866/DTS	89/883/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 maintenance result date indicated on the IEC web site 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.

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 to acceptable levels the potential risks of fire even in the event of foreseeable abnormal use, malfunction or failure. IEC 60695-1-10¹, together with its companion IEC 60695-1-11¹, provide guidance on how this is to be accomplished.

The primary aims are:

- 1) to prevent ignition caused by an electrically energized component part, and
- 2) in the event of ignition, to confine any resulting fire within the bounds of the enclosure of the electrotechnical product.

Secondary aims include the minimization of any flame spread beyond the product's enclosure and the minimization of harmful effects of fire effluents including heat, smoke, and toxic or corrosive combustion products.

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

This technical specification should 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 should 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 may be used as elements of a fire risk 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]² and IEC 60695-11-20 [2] and ISO 4589-2 [3].

This is the first test method to determine the characteristic heat flux for ignition (CHF_I) of materials used for electrotechnical products and sub-assemblies from a non-contacting flame source. CHF_I 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.

¹ To be published.

² Figures in square brackets refer to the bibliography.