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TECHNICAL REPORT

Fire hazard testing-
Part 11-40: Test flames - Confirmatory tests - Guidance

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IEC TR 60695-11-40 has been prepared by IEC technical committee 89: Fire hazard testing. It is a Technical Report.

This first edition cancels and replaces the second edition of IEC TS 60695-11-40 published in 2021. This edition constitutes a technical revision.

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

a) change of classification of this document (from Technical Specification to Technical Report), based on the nature of this publication, which provides solely general information and the theoretical basis for confirmatory tests using copper blocks;

b) minor editorial changes.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
89/1640/DTR	89/1656/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This Technical Report is to be used in conjunction with IEC 60695-11-2:2017 [1], IEC 60695-11-3 [2], IEC 60695-11-4 [3] and IEC 60695-11-5 [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.

It has the status of a basic safety publication in accordance with IEC Guide 104 [5] and ISO/IEC Guide 51 [6].

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

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

Standard flames are specified for various small-scale fire tests. Apparatus design and test parameters are specified in an effort to ensure consistent and defined flames. Burner designs, material specifications and fuel and air specifications are typical necessary parameters. Experience has shown that the quality of the flames and the resulting test measurements are influenced significantly by subtle variations in the equipment and test technique. Simple checks on flame qualities, such as flame colour and dimensions, or the melting characteristics of silver wire, are also sometimes specified .

The need for a relatively simple check on the power of a flame has been recognized, leading to the introduction of confirmatory tests based on copper block calorimetry. This document is intended to provide information about small-scale standard flames and the various copper block confirmatory tests.

1 Scope

This part of IEC 60695, which is a Technical Report, presents a general characterization of small-scale test flames and associated confirmatory tests based on copper block calorimetry. Information is presented for the selection of critical parameters in confirmatory test designs.

NOTE A theory of thermal dynamics presents, in Annex A, additional performance parameters for confirmatory tests, enabling a precise implicit mathematical characterization of confirmatory test heating curves.

This basic safety publication is intended for use by technical committees in the preparation of safety publications in accordance with the principles laid down in IEC Guide 104 [5] and ISO/IEC Guide 51 [6].

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The information, test methods or test conditions of this basic safety publication will not apply unless specifically referred to or included in the relevant publications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60695-4:2021, *Fire hazard testing - Part 4: Terminology concerning fire tests for electrotechnical products*

ISO 13943:2017, *Fire safety — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60695-4:2021 and ISO 13943:2017, as well as the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

– IEC Electropedia: available at http://www.electropedia.org/
– ISO Online browsing platform: available at http://www.iso.org/obp

3.1
confirmatory test
calorimetric procedure intended as a diagnostic indicator to reveal anomalous behaviour or conditions in a test flame, burner or associated hardware

[SOURCE: IEC 60695-4:2021 [7], 3.2.4]

3.2
draught-free environment
space in which the results of experiments are not significantly affected by the local air speed

Note 1 to entry: A qualitative example is a space in which a wax candle flame remains essentially undisturbed. Quantitative examples are small-scale fire tests in which a maximum air speed of 0,1 ms^{-1} or 0,2 ms^{-1} is sometimes specified.

[SOURCE: ISO 13943:2017 [8], 3.83]