Irish Standard
I.S. EN 60695-2-10:2013

Fire hazard testing -- Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure (IEC 60695-2-10:2013 (EQV))

I.S. EN 60695-2-10:2013

Incorporating amendments/corrigenda issued since publication:

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SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:	*This document is based on:*	*Published:*
EN 60695-2-10:2001	EN 60695-2-10:2013 EN 60695-2-10:2001	28 June, 2013 4 January, 2001

This document was published
under the authority of the NSAI and comes into effect on:

15 July, 2013

ICS number:
13.220.40
29.020

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60695-2-10

June 2013

ICS 13.220.40; 29.020

Supersedes EN 60695-2-10:2001

English version

Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure

(IEC 60695-2-10:2013)

Essais relatifs aux risques du feu - Partie 2-10: Essais au fil incandescent/chauffant - Appareillage et méthode commune d'essai (CEI 60695-2-10:2013)

Prüfungen zur Beurteilung der Brandgefahr - Teil 2-10: Prüfverfahren mit dem Glühdraht - Glühdrahtprüfeinrichtung und allgemeines Prüfverfahren (IEC 60695-2-10:2013)

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 60695-2-10:2013 E

Foreword

The text of document 89/1154/FDIS, future edition 2 of IEC 60695-2-10, prepared by IEC/TC 89 "Fire hazard testing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60695-2-10:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-02-14
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-05-14

This document supersedes EN 60695-2-10:2001.

EN 60695-2-10:2013 includes the following significant technical changes with respect to EN 60695-2-10:2001:

– A table of contents has been added.

– The introduction has been updated to align with other TC 89 documents.

– The scope has been clarified to align with other documents in the EN 60695-2 Glow-wire series.

– Terms and definitions relevant to this document have been added.

– Clause 4 has been deleted and the remaining clauses renumbered.

– The description of the power supply has been updated with additional details (see 4.1).

– The temperature measuring system (see 4.3) and the description of the specified layer has been updated (see 4.4).

– New guidance has been introduced to assist in the verification of the temperature measuring system (see 5.2 and Annex C).

– The common test produced has been clarified (see Clause 7).

– The tolerances have been changed for the dimensions of the glow-wire (see Figure 1).

– New guidance on flaming observations has been added (see Annex B).

This standard is to be used in conjunction with EN 60695-2-11, EN 60695-2-12 and EN 60695-2-13.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 60695-2-10:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60695-1-10	NOTE	Harmonised as EN 60695-1-10.
IEC 60695-1-11	NOTE	Harmonised as EN 60695-1-11.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60584-1	-	Thermocouples - Part 1: Reference tables	EN 60584-1	-
IEC 60584-2	-	Thermocouples - Part 2: Tolerances	EN 60584-2	-
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	-
IEC 60695-2-12	-	Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability index (GWFI) test method for materials	EN 60695-2-12	-
IEC 60695-2-13	-	Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignition temperature (GWIT) test method for materials	EN 60695-2-13	-
IEC Guide 104	2010	The preparation of safety publications and the use of basic safety publications and group safety publications	-	-
ISO/IEC Guide 51	1999	Safety aspects - Guidelines for their inclusion in standards	-	-
ISO 4046-4	2002	Paper, board, pulps and related terms - Vocabulary - Part 4: Paper and board grades and converted products	-	-
ISO 13943	2008	Fire safety - Vocabulary	EN ISO 13943	2010

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIRE HAZARD TESTING –

Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60695-2-10 has been prepared by IEC technical committee 89: Fire hazard testing.

This second edition of IEC 60695-2-10 cancels and replaces the first edition of IEC 60695-2-10 published in 2000. This edition constitutes a technical revision.

It has the status of a basic safety publication in accordance with IEC Guide 104:2010 and ISO/IEC Guide 51:1999.

This standard is to be used in conjunction with IEC 60695-2-11, IEC 60695-2-12, and IEC 60695-2-13.

The main changes with respect to the previous edition are listed below. The rationale can be found in 89/960A/CC, 89/944A/CC, and 89/1030/CC.

– A table of contents has been added.
– The introduction has been updated to align with other TC89 documents.
– The scope has been clarified to align with other documents in the IEC 60695-2 Glow-wire series.
– Terms and definitions relevant to this document have been added.
– Clause 4 has been deleted and the remaining clauses renumbered.
– The description of the power supply has been updated with additional details (see 4.1).
– The temperature measuring system (see 4.3) and the description of the specified layer has been updated (see 4.4).
– New guidance has been introduced to assist in the verification of the temperature measuring system (see 5.2 and Annex C).
– The common test produced has been clarified (see Clause 7).
– The tolerances have been changed for the dimensions of the glow-wire (see Figure 1).
– New guidance on flaming observations has been added (see Annex B).

The text of this standard is based on the following documents:

FDIS	Report on voting
89/1154/FDIS	89/1163/RVD

Full information on the voting for the approval of this standard 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.

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

The committee has decided that the contents of this publication will remain unchanged until the stability 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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 product design, as well as the choice of materials, is to reduce to acceptable levels the potential risks of fire during normal operating conditions, reasonable foreseeable abnormal use, malfunction, and/or failure. IEC 60695-1-10 was developed, together with its companion, IEC 60695-1-11, to provide guidance on how this is to be accomplished.

The primary aims of IEC 60695-1-10 and IEC 60695-1-11 are to provide guidance on how:

a) to prevent ignition caused by an electrically energized component part, and

b) to confine any resulting fire within the bounds of the enclosure of the electrotechnical product in the event of ignition.

Secondary aims of these documents include the minimization of any flame spread beyond the product's enclosure and the minimization of harmful effects of fire effluents such as heat, smoke, toxicity and/or corrosivity.

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

In electrotechnical equipment, overheated metal parts can act as ignition sources. In glow-wire tests, a glowing wire is used to simulate such an ignition source.

This part of IEC 60695 gives recommendations with regard to the glow-wire test apparatus and describes a common test procedure for tests applicable to end products and materials to be used with IEC 60695-2-11 which describes a glow-wire flammability test for end products (GWEPT), IEC 60695-2-12 which describes a glow-wire flammability index test for materials (GWFI), and IEC 60695-2-13 which describes a glow-wire ignition temperature test method for materials (GWIT).

FIRE HAZARD TESTING –

Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure

1 Scope

This part of IEC 60695 specifies the glow-wire apparatus and common test procedure to simulate the effects of thermal stresses which may be produced by heat sources such as glowing elements or overloaded resistors, for short periods, in order to assess the fire hazard by a simulation technique.

The test procedure described in this standard is a common test procedure intended for the small-scale tests in which a standardized electrically heated wire is used as a source of ignition.

It is a common part of the test procedures applied to end products and to solid electrical insulating materials or other solid combustible materials.

A detailed description of each particular test procedure is given in the respective standards IEC 60695-2-11, IEC 60695-2-12 and IEC 60695-2-13.

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

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 requirements, 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, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60584-1, *Thermocouples – Part 1: Reference tables*

IEC 60584-2, *Thermocouples – Part 2: Tolerances*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-12, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials*

IEC 60695-2-13, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*