



DPC: 25/30510379 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 04 July 2025

Origin: International

Latest date for receipt of comments: 16 July 2025

Project No. 2025/00548

Responsible committee: GEL/89 Fire hazard testing

Interested committees:

Title: Draft BS EN 60695-5-2 Ed.2.0 BS EN 60695-5-2 Fire hazard testing. Part 5-2: Corrosion damage effects of fire effluent - Summary and relevance of test methods.

Please notify admin.start@bsigroup.com if you are aware of any keywords that might assist in clarifying or identifying the standard or of the content of this standard:

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 16 July 2025

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

E-mail: admin.start@bsigroup.com

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



89/1614/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER: IEC 60695-5-2 ED2	
DATE OF CIRCULATION: 2025-06-20	CLOSING DATE FOR COMMENTS: 2025-08-15
SUPERSEDES DOCUMENTS: 89/1579/RR	

IEC TC 89 : FIRE HAZARD TESTING	
SECRETARIAT: Germany	SECRETARY: Mr Thorsten Ilg
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 10,TC 14,TC 20,SC 22F,SC 23A,TC 46,TC 61,SC 86A,TC 99,TC 104,TC 112,SC 121A,ACOS	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED: Safety	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:
Fire hazard testing - Part 5-2: Corrosion damage effects of fire effluent - Summary and relevance of test methods

NOTE FROM TC/SC OFFICERS:

Copyright © 2025 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

CONTENTS

1		
2	CONTENTS	1
3	FOREWORD	3
4	INTRODUCTION	5
5	1 Scope	6
6	2 Normative references	6
7	3 Terms and definitions	6
8	4 Classification of test methods	8
9	4.1 General	8
10	4.2 Test specimen	8
11	4.2.1 Product testing	8
12	4.2.2 Material or composite sample testing	8
13	4.3 The physical fire model	8
14	4.4 The nature of the corrosivity measurement	8
15	4.4.1 Product as target	8
16	4.4.2 Simulated product as target	8
17	4.4.3 Indirect assessment	10
18	5 Published test methods	10
19	5.1 General	10
20	5.2 Tests for the determination of halogen acid in combustion gases	10
21	5.2.1 Standards	10
22	5.2.2 Purpose and principle	10
23	5.2.3 Test specimen	10
24	5.2.4 Test method	10
25	5.2.5 Repeatability and reproducibility	10
26	5.2.6 Relevance of test data to corrosion hazard assessment	10
27	5.3 Tests for the determination of the acidity and conductivity of combustion	
28	gases dissolved in an aqueous solution	11
29	5.3.1 Standards	11
30	5.3.2 Purpose and principle	11
31	5.3.3 Test specimen	11
32	5.3.4 Test method	11
33	5.3.5 Repeatability and reproducibility	11
34	5.3.6 Relevance of test data to corrosion hazard assessment	11
35	5.4 Tests for the determination of corrosive gases by evaluation of copper	
36	corrosion in ASTM D 2671 – Sections 89 to 95 [9]	12
37	5.4.1 Purpose and principle	12
38	5.4.2 Test specimen	12
39	5.4.3 Test methods	12
40	5.4.4 Special observations	12
41	5.4.5 Repeatability and reproducibility	12
42	5.4.6 Relevance of test data to corrosion hazard assessment	12
43	5.5 Cone corrosimeter method	12
44	5.5.1 Standards	12
45	5.5.2 Purpose and principle	13
46	5.5.3 Test specimen	13
47	5.5.4 Corrosion target	13

48	5.5.5	Test method	13
49	5.5.6	Special observation	14
50	5.5.7	Repeatability and reproducibility	14
51	5.5.8	Relevance of test data to corrosion hazard assessment.....	14
52	6	Overview of methods and relevance of data	14
53	Annex A (informative)	Acidity and conductivity of aqueous solutions – Test methods	17
54	Annex B (informative)	Determination of repeatability and reproducibility –	
55		Comparative tests of solutions of combustion gases	18
56	Bibliography.....		22
57			
58	Figure 1 – Schematic drawing of a typical corrosion target of defined metal thickness		14
59			
60	Table 1 – Characteristics of fire stages (from Table 1 in ISO 19706:2011)		9
61	Table 2 – Overview of corrosivity test methods		16
62	Table A.1 – Test methods for the measurement of acidity and conductivity of aqueous		
63	solutions obtained after bubbling combustion effluent through water		17
64	Table B.1 – Determination of repeatability and reproducibility – Comparative pH tests		
65	on solutions of combustion gases		19
66	Table B.2 – Determination of repeatability and reproducibility – Comparative resistivity		
67	tests on solutions of combustion gases		20
68	Table B.3 – Results obtained on brominated polycarbonate		21
69			
70			

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIRE HAZARD TESTING –

**Part 5-2: Corrosion damage effects of fire effluent –
Summary and relevance of test methods**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 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 60695-5-2 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:

FDIS	Report on voting
89/XXXX/FDIS	89/YYYY/RVD

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

This document was drafted in accordance with ISO/IEC Directives, Part 2.

- 121 This international standard is to be read in conjunction with IEC 60695-5-1.
- 122 A list of all parts in the IEC 60695 series, published under the general title *Fire hazard testing*,
123 can be found on the IEC website.
- 124 IEC 60695-5 consists of the following parts:
- 125 Part 5-1: Corrosion damage effects of fire effluent - General guidance
- 126 Part 5-2: Corrosion damage effects of fire effluent – Summary and relevance of test methods
- 127 The committee has decided that the contents of this document will remain unchanged until the
128 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
129 specific document. At this date, the document will be
- 130 • reconfirmed,
 - 131 • withdrawn,
 - 132 • replaced by a revised edition, or
 - 133 • amended.
- 134 The National Committees are requested to note that for this document the stability date is 2025.
- 135 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND
136 WILL BE DELETED AT THE PUBLICATION STAGE.
- 137

INTRODUCTION

In the design of an 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 0¹, IEC 60695-1-11 0, and IEC 60695-1-12 0 provide guidance on how this is to be accomplished.

Fires involving electrotechnical products can also 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 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.

All fire effluent is corrosive to some degree and the level of potential to corrode depends on the nature of the fire, the combination of combustible materials involved in the fire, the nature of the substrate under attack, and the temperature and relative humidity of the environment in which the corrosion is taking place. There is no evidence that fire effluent from electrotechnical products offers greater risk of corrosion damage than the fire effluent from other products such as furnishings, building materials, etc.

The performance of electrical and electronic components can be adversely affected by corrosion damage when subjected to fire effluent. A wide variety of combinations of small quantities of effluent gases, smoke particles, moisture and temperature may provide conditions for electrical component or system failures from breakage, overheating or shorting.

Evaluation of potential **corrosion damage** is particularly important for high value and safety-related electrotechnical products and installations.

Technical committees responsible for the products will choose the test(s) and specify the level of severity.

The study of corrosion damage requires an interdisciplinary approach involving chemistry, electricity, physics, mechanical engineering, metallurgy and electrochemistry. In the preparation of this part of IEC 60695, all of the above have been considered.

IEC 60695-5-1 defines the scope of the guidance and indicates the field of application.

IEC 60695-5-2 provides a summary of test methods including relevance and usefulness.

¹ Numbers in square brackets refer to the bibliography.