

# TECHNICAL SPECIFICATION

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





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**Fire hazard testing –  
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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 13.220.99; 19.020; 29.020

ISBN 978-2-8322-9842-8

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 Classification of test methods .....	9
4.1 General.....	9
4.2 Test specimen .....	9
4.2.1 Product testing .....	9
4.2.2 Material or composite sample testing.....	9
4.3 The physical fire model.....	9
4.4 The nature of the corrosivity measurement .....	9
4.4.1 Product as target.....	9
4.4.2 Simulated product as target.....	9
4.4.3 Indirect assessment.....	11
5 Published test methods .....	11
5.1 General.....	11
5.2 Tests for the determination of halogen acid in combustion gases .....	11
5.2.1 Standards.....	11
5.2.2 Purpose and principle .....	11
5.2.3 Test specimen .....	11
5.2.4 Test method .....	11
5.2.5 Repeatability and reproducibility .....	11
5.2.6 Relevance of test data to corrosion hazard assessment.....	12
5.3 Tests for the determination of the acidity and conductivity of combustion gases dissolved in an aqueous solution .....	12
5.3.1 Standards.....	12
5.3.2 Purpose and principle .....	12
5.3.3 Test specimen .....	12
5.3.4 Test method .....	12
5.3.5 Repeatability and reproducibility .....	12
5.3.6 Relevance of test data to corrosion hazard assessment.....	13
5.4 Tests for the determination of corrosive gases by evaluation of copper corrosion in ASTM D 2671 – Sections 89 to 95 [9] .....	13
5.4.1 Purpose and principle.....	13
5.4.2 Test specimen .....	13
5.4.3 Test methods.....	13
5.4.4 Special observations .....	13
5.4.5 Repeatability and reproducibility .....	13
5.4.6 Relevance of test data to corrosion hazard assessment.....	13
5.5 Cone corrosimeter method.....	14
5.5.1 Standards.....	14
5.5.2 Purpose and principle.....	14
5.5.3 Test specimen .....	14
5.5.4 Corrosion target.....	14
5.5.5 Test method .....	14

5.5.6	Special observation .....	15
5.5.7	Repeatability and reproducibility .....	15
5.5.8	Relevance of test data to corrosion hazard assessment.....	15
6	Overview of methods and relevance of data .....	15
	Annex A (informative) Acidity and conductivity of aqueous solutions – Test methods .....	18
	Annex B (informative) Determination of repeatability and reproducibility – Comparative tests of solutions of combustion gases .....	19
	Bibliography.....	23
	Figure 1 – Schematic drawing of a typical corrosion target of defined metal thickness .....	15
	Table 1 – Characteristics of fire stages (from Table 1 in ISO 19706:2011) .....	10
	Table 2 – Overview of corrosivity test methods .....	17
	Table A.1 – Test methods for the measurement of acidity and conductivity of aqueous solutions obtained after bubbling combustion effluent through water .....	18
	Table B.1 – Determination of repeatability and reproducibility – Comparative pH tests on solutions of combustion gases .....	20
	Table B.2 – Determination of repeatability and reproducibility – Comparative resistivity tests on solutions of combustion gases .....	21
	Table B.3 – Results obtained on brominated polycarbonate .....	22

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## FOREWORD

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IEC 60695-5-2, which is a technical specification, has been prepared by IEC technical committee 89: Fire hazard testing.

This third edition cancels and replaces the second edition published in 2002.

The main changes with respect to the previous edition are listed below:

- References to IEC TS 60695-5-3 (withdrawn in 2014) have been removed.
- ISO/TR 9122-1 has been revised by ISO 19706.
- References to ISO 11907-2 and ISO 11907-3 have been removed.
- Terms and definitions have been updated.
- Text in 5.4 has been updated.
- Text in 5.5.8 (5.7.8 in Ed. 2) has been updated.
- Text in Clause 6 (7 in Ed. 2) has been updated.

– Bibliographic references have been updated.

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:

Draft	Report on voting
89/1473/DTS	89/1506/RVDTS

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 Specification 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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

In this technical specification, the following print types are used:

**Arial bold: terms referred to in Clause 3**

This technical specification is to be read in conjunction with IEC 60695-5-1.

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 document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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

## 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 [1]<sup>1</sup>, IEC 60695-1-11 [2], and IEC 60695-1-12 [3] 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.

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