Australian Standard™

Fire hazard testing

Part 5.1: Corrosion damage effects of fire effluent—General guidance

This Australian Standard was prepared by Committee EL-053, Fire hazard testing—Electrotechnical equipment. It was approved on behalf of the Council of Standards Australia on 23 May 2006.
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Australian Electrical and Electronic Manufacturers Association
Australian Information Industry Association
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
Energy Networks Association

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-053, Fire hazard testing—Electrotechnical equipment.

The objective of this series of standards is to provide the electrotechnology industry and standards writing committees with a series of standards which give guidance on assessing the fire hazard of electrotechnical products.

This Standard is identical with, and has been reproduced from IEC 60695-5-1, Ed 2.0 (2002), *Fire hazard testing - Part 5.1: Corrosion damage effects of fire effluent - General guidance*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'IEC 60695-5-1' should read 'AS 60695.5.1'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

(d) Any French text on figures should be ignored.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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INTRODUCTION

The risk of fire should be considered in any electrical circuit. With regard to this risk, the circuit and equipment design, the selection of components and the choice of materials should contribute towards reducing the likelihood of fire even in the event of foreseeable abnormal use, malfunction or failure. The practical aim should be to prevent ignition caused by electrical malfunction but, if ignition and fire occur, to control the fire preferably within the bounds of the enclosure of the electrotechnical product.

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 damage 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 60695-5, 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.

IEC 60695-5-3 provides details of a small-scale test method for the measurement of leakage current and metal loss caused by fire effluent.

STANDARDS AUSTRALIA

Australian Standard

Fire hazard testing
Part 5.1: Corrosion damage effects of fire effluent—General guidance

1 Scope

This part of IEC 60695 provides guidance on the following:

a) general aspects of corrosion damage test methods;

b) methods of measurement of corrosion damage;

c) consideration of test methods;

d) relevance of corrosion damage data to hazard assessment.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications.

2 Normative references

The following referenced documents are indispensable for the application 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 60695-1-1:1999, *Fire hazard testing – Part 1-1: Guidance for assessing the fire hazard of electrotechnical products – General guidelines*

IEC/TS 60695-5-2:2002, *Fire hazard testing – Part 5-2: Corrosion damage effects of fire effluent – Summary and relevance of test methods*

IEC/TS 60695-5-3, *Fire hazard testing – Part 5-3: Corrosion damage effects of fire effluent – Leakage current and metal loss test method* [1]

IEC 60754-1:1994, *Test on gases evolved during combustion of materials from cables – Part 1: Determination of the amount of halogen acid gas*

IEC 60754-2:1991, *Test on gases evolved during combustion of electric cables – Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity*

IEC 60754-2, Amendment 1 (1997)

ISO/TR 9122-1:1989, *Toxicity testing of fire effluents – Part 1: General*

ISO 11907-2:1995, *Plastics – Smoke generation – Determination of the corrosivity of fire effluents – Part 2: Static method*

ISO 11907-3:1998, *Plastics – Smoke generation – Determination of the corrosivity of fire effluents – Part 3: Dynamic decomposition method using a travelling furnace*

[1] To be published.