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PREPARATION, APPLICATION AND FORMAT OF FIRE TESTS

STANDARDS ASSOCIATION OF AUSTRALIA
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The following interests are represented on Committee B/3:

Board of Fire Commissioners, N.S.W.

CSIRO, Division of Building Research

CSIRO, Division of Protein Chemistry

Department of Health, N.S.W.

Department of Housing and Construction

Department of Housing and Construction, N.S.W.

Department of Industrial Relations, N.S.W.

Insurance Council of Australia

Melbourne and Metropolitan Fire Brigade

Sydney County Council

Telecom Australia

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PREPARATION, APPLICATION AND FORMAT OF FIRE TESTS

AS 2744—1985

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PREFACE

This standard was prepared by the Association's Committee on Co-ordination of Fire Tests. It supersedes SAA MP32-1977, SAA Guide for the Presentation, Preparation and Application of Fire Tests.

This standard takes into account—

- the joint SAA committee conference on fire tests held in July of 1979;
- subsequent meetings of Committee B/3; and
- experience with the application of SAA MP32 by committees in the drafting of Australian standards.

The revised format now applies specifically to individual Australian standards for fire test methods and provides in addition for adaption in principle in the case of product standards which include fire test methods either in appendices or in the body of particular standards.

The terms 'direct data' and 'supportive data' have been deleted, as has reference to 'caveat'. The concepts conveyed remain, however, insofar as explanatory references are required to be included in test methods to ensure proper understanding of the 'application of the results of the fire test method to assessment of fire hazard'.

In making this standard more adaptable to wider application in standards than SAA MP32, provision has been made for some departure from 'standard' format where it may be found expedient under the circumstances, but in so doing, those concerned are directed to make every effort to follow this standard in principle and to give Committee B/3 in its co-ordinating role, opportunity to comment on any such proposals.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
PREPARATION, APPLICATION AND FORMAT OF FIRE TESTS

FOREWORD

The presentation and application of fire test methods has been a matter of some concern over recent years in regard to such matters as—

- their role in setting levels of safety;
- the application of test results to the assessment of fire hazard;
- terminology which is subjective in interpretation and consequently can be misleading, e.g. 'self-extinguishing' and 'non-burning'.

Specific criticism needs to be directed at those who misunderstand the nature of tests they are preparing and who devise methods of measurement and expression of results which can mislead. All of these factors may result in the incorrect application of a test method and incorrect use of the results of the method. For example, a simple flame test may give correct information on the reaction of a material to that source of heat under the conditions prevailing in the test, but to use the results to directly assess the fire hazard of a product made from that material would generally not be a valid procedure. Appendix A provides an example of the factors that might need to be considered in determining the fire hazard properties of a particular product (cellular polystyrene tiles).

Each test method, if it is to be regarded as a useful tool in fire hazard assessment and control, needs to be related directly or indirectly to the real situation on which information is required.

This problem of correctly assessing the nature of a fire test and the validity and application of the results is such that it can be said to have been a significant factor in many fires throughout the world, some of which have had tragic consequences. Both the International Organization for Standardization and the International Electrotechnical Commission have recognized the problem and have set up co-ordination procedures for establishing directives for technical committees involved in the preparation of fire test methods. National standards bodies have also formed committees for similar purposes and in SAA the Committee B/3, Co-ordination of Fire Tests, is directly responsible to the Executive Board of SAA Council for the overall supervision, co-ordination and policy with respect to the standardization of fire test methods and related matters.

SPECIFICATION

1 SCOPE. This standard sets out requirements for the preparation, application and format of fire tests and related matters, for the purpose of—

(a) general preparation procedures;

(b) selection and application of fire tests;

(c) adoption of acceptable terminology with respect to fire tests;

(d) expression of test results; and

(e) format of fire test methods.

In particular, it is directed to the presentation of fire test methods as separate Australian standards, or as appendices to product standards, and includes relevant drafting details. This form of presentation is aimed at facilitating the indexing and cross-referencing of test methods, both in Australian standards and in Regulations and to clarify the applicability of fire test methods to the assessment of fire hazard.

It recognizes however, that variations in form and application of standards are such that some discretion in presentation may be justifiable in certain circumstances and appropriate provisions are made in this regard.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1176	Methods of Test for Combustion Characteristics of Textile Materials
AS 1530	Methods for Fire Tests on Building Materials and Structures Part 1—Combustibility Test for Materials Part 3—Test for Early Fire Hazard Properties of Materials Part 4—Fire-resistance Test of Structures
AS 2122	Combustion Propagation Characteristics of Plastics Part 1—Determination of Flame Propagation Following Surface Ignition of Vertically Oriented Specimens of Cellular Plastics Part 2—Determination of Minimum Oxygen Concentration for Flame Propagation Following Top Surface Ignition of Vertically Oriented Specimens
AS 2484	Glossary of Terms Relating to Fire Tests
AS 3164	Electric Blankets
ISO 1716	Building Materials—Determination of Calorific Potential.

3 GENERAL PROCEDURES FOR PREPARING FIRE TESTS. When preparing fire test methods, it is suggested that technical committees should follow the procedure shown below, consulting Committee B/3 and other technical committees as appropriate:

(a) Establish the need for the test and its type and identify the main objectives (see Clauses 4, 6 and 8).

(b) Collect as much background information as possible on the fire aspects to which the test can be related (see Appendix A).

(c) Examine the known existing procedures developed for similar purposes and their possible suitability and shortcomings.

(d) If an existing procedure appears suitable, modify its presentation if necessary to comply with this standard.

(e) If a new procedure is to be developed, quantify the essential design criteria.

Fire tests shall be designed with the same care and attention as any other test and shall fulfil their design functions to a satisfactory degree. The mechanical features, the specification of the procedure, the degree of repeatability, reproducibility and discrimination should be to the satisfaction not only of the technical committee engaged in designing the test procedure but also of the user and the testing bodies. In the past many tests have suffered from incomplete specification of the apparatus and the procedure and this has led to variability of an unacceptable order between laboratories. All apparatus-dependent features should be specified and particular attention paid to specifying the heat source and its control. Also, as in all scientific tests, observer-dependent variables should be eliminated as far as possible.

(f) Inform and consult Committee B/3 on the proposed procedure.

(g) Consider any modifications to the proposed procedure which result from such consultations.

(h) Prepare the draft standard including the relevant information on its field of application, limitations and reservations and uses to which the information may be put.

4 ROLE OF FIRE TESTS. The term 'fire test' applies to the testing of a material, product, or finished assembly, for assessing response to flame or heat conditions relevant to a fire.

Fire tests find use in product design and through manufacturing to the control by various authorities of the fire safety of that product in use, viz:

(a) Industry requires tests during research and development in order to discriminate amongst various materials. Once a material or product reaches the production stage, the application of such tests for quality control purposes may also be necessary.

(b) The purchasers of materials and products need tests for their information and guidance, for use in specifications, and for quality control purposes.

(c) Regulatory authorities use fire tests in their efforts to promote public safety and consumer protection, in relation to buildings, and products including both materials and manufactured items.

It is implicit in the above that fire test methods may be applied in various ways. Their major role is in fire hazard assessment but they may also be used in quality control and material specification where a direct relationship to fire hazard is not always necessary.

5 APPLICATION OF FIRE TESTS TO FIRE HAZARD ASSESSMENT.

5.1 Background. Fire hazard assessment is defined as follows:

The assessment of the potential for a material, product or finished assembly to give rise to a fire and harm to life or damage to property once the material, product or finished assembly is involved in fire.