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# Australian Standard®
# 2178—1986

# PROTECTION OF BUILDINGS FROM SUBTERRANEAN TERMITES—DETECTION AND TREATMENT OF INFESTATION IN EXISTING BUILDINGS

STANDARDS ASSOCIATION OF AUSTRALIA
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This Australian standard was prepared by Committee CH/5, Pesticides. It was approved on behalf of the Council of the Standards Association of Australia on 27 October 1986 and published on 5 December 1986.

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The following interests are represented on Committee CH/5:

Agricultural and Veterinary Chemicals Association of Australia Ltd
Australian Chemical Industry Council
Australian Institute of Agricultural Science
Australian Institute of Petroleum Ltd
Australian Veterinary Association
CSIRO, Division of Applied Organic Chemistry
Council of Australian Pest Control Associations
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Department of Science
Health Department, Vic.
National Farmers Federation

Representatives of the following interests also participated in the drafting of this standard:

Australian Consumers Association
Chemical manufacturing interests
Council of Australian Pest Control Associations
CSIRO, Division of Chemical and Wood Technology
CSIRO, Division of Entomology
Department of Agriculture, N.S.W.
Department of Forestry, Qld
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*This standard was issued in draft form for comment as DR 85128.*

**COVER:** Worker and soldier castes of *Coptoterms sp.* This genus is responsible for most economic damage to timber structures in Australia.

AUSTRALIAN STANDARD

# PROTECTION OF BUILDINGS FROM SUBTERRANEAN TERMITES— DETECTION AND TREATMENT OF INFESTATION IN EXISTING BUILDINGS

## AS 2178—1986

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# PREFACE

This edition of this standard was prepared by the Association's Committee on Pesticides in order to incorporate improvements shown to be desirable during practical application of the standard and to allow for the addition of another chemical now registered for control of subterranean termites.

The standard sets out guidelines for the detection and treatment of subterranean termite infestation in existing buildings and includes methods for the prevention of reinfestation. It assumes that the person carrying out the inspection has sufficient knowledge to distinguish between attack by subterranean termites and attack by other termite species, wood-boring beetles and decay. Treatment for buildings under construction is covered in AS 2057. When attack by subterranean termites has been recognized, successful treatment requires experience and skill. Licensed pest control operators are able to offer treatments for controlling an existing infestation and preventing recurrence of attack. Such organizations should be prepared to certify their work.

Attention is directed to the precautions that should be taken when handling poisonous chemicals. People who lack proper training and experience or who do not have the necessary equipment are warned against using them.

It must be recognized that the requirements of Statutory Authorities take precedence over standards (which may not have been brought into legislation), and that they may specify the use of additional measures or impose limitations on the applications of chemical techniques. The relevant State regulations should be consulted before work is commenced.

Photographic illustrations used in this standard were provided by—

CSIRO, Division of Chemical & Wood Technology

CSIRO, Division of Entomology

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# FOREWORD

**A NOTES ON TERMITES.** More than 300 species of termites have been recorded from Australia. Only about 30 achieve economic importance as pests of timber in service. With the exception of the drywood termites, all species of economic importance in Australia are soil-dwelling and have more or less similar habits. Several of them have a wide geographic distribution.

Subterranean termites are responsible for most of the termite damage of economic importance to timber in Australia. It is important to realize that termites may seek out any material containing cellulose—their principal food—and this could include some of the contents of buildings, such as furniture, printed materials (newspapers, records, blueprints, books), fabrics, clothing, footwear, packing cases, tools, etc. In addition, termites can damage many other non-cellulosic materials, components or structures.

Typically, their colonies form nests underground in the soil, near ground level in a stump or other suitable piece of timber or in the trunk of a living tree. Sometimes the nest takes the form of a conical or dome-shaped mound. A colony may persist for many years and, as it matures, could contain a population running into millions. All attacks by subterranean termites originate from the nest. Timber lying on or buried in the ground may be reached by underground foraging galleries but attack may occur well above ground level either inside the wood or by way of mud-walled shelter-tubes 'plastered' on the outside. Timber resting on substructures which termites cannot penetrate may be reached by means of these shelter-tubes or else by the erection of an independent, free-standing structure. In rare cases, a nest without soil contact may be established inside a building. This can occur where a source of permanent moisture is available to the termites within the building, e.g. leaking plumbing.

'Drywood termites' are of economic importance only in restricted coastal, tropical, sub-tropical and adjacent tableland areas of Australia and, unlike subterranean termites, do not have contact with the soil. They form their nest inside the wood upon which they feed and hence attack may take place in any piece of susceptible timber, regardless of its position in a building. The evidence of attack by these species is the presence of dry granular faecal pellets which may be stored in disused galleries or ejected through small openings in the surface of the wood. Drywood termites do not construct galleries or tunnels connecting the infested timber with the soil.

**B GEOGRAPHIC DISTRIBUTION OF TERMITES.** The practices recommended in this standard are intended for use in any part of Australia where subterranean termites are a risk. Tasmania is the only State in the Commonwealth where this risk is negligible. The risk must be regarded as high in most parts of mainland Australia, with parts of Victoria and some other limited areas being relatively free from termites. In all areas, experience should be regarded as the best guide to the degree of the local risk.

**C VALUE OF TREATMENT.** The treatments specified are known to be effective and may be used either separately or in combination to achieve the desired result. Infestations can be eradicated by the direct destruction of the nest or indirectly by the use of arsenic trioxide dust. Such treatments cannot be relied upon to prevent reinfestation and this may be acceptable, provided that a high level of vigilance can be maintained for signs of reinfestation.

Both the building and its contents can receive significant protection by means of a chemical soil barrier which prevents termites, attacking from the soil, from reaching the superstructure. Chemical soil barriers will not give protection against attack by drywood termites, which may occur in the same areas as subterranean termites. Neither will they give protection in those cases where the nest has established itself inside the building and has no contact with the soil. Provided that the treatment has been applied in accordance with this standard and provided that the barrier is not subsequently bridged or breached (see Clause 9.3), protection for many years can be expected without the need for further treatment.

This standard provides details on the most appropriate methods of detecting and treating subterranean termites in buildings.

**D TECHNICAL ADVICE.** In special circumstances or difficult cases, technical advice on the most suitable procedures to be followed may be sought from the Departments of Agriculture or Forestry and the CSIRO Divisions of Chemical and Wood Technology (Melbourne) or Entomology (Canberra). Pest control associations are also competent to give this advice and guidance on costing.

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STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard

# for

# PROTECTION OF BUILDINGS FROM SUBTERRANEAN TERMITES— DETECTION AND TREATMENT OF INFESTATION IN EXISTING BUILDINGS

**1 SCOPE.** This standard sets out methods for the detection and treatment of subterranean termite infestation in existing buildings and also sets out methods for the prevention of reinfestation. For application of chemical soil barriers during construction see AS 2057.

NOTES:

1. Some species of termites e.g. *Mastotermes darwiniensis*, can be difficult to treat successfully and may require special attention.
2. Occasionally, complete protection of an existing building from attack by subterranean termites is impossible to achieve because of building practice and/or site conditions.
3. The treatments specified in this standard are not applicable to buildings damaged by wood-boring beetles, decay, or termites other than subterranean species.

**2 APPLICATION.** Treatments specified in this standard are intended for use by licensed pest control operators, who are also required to comply with relevant building and health legislation. The standard will also serve as a guide to building owners or others who are seeking or specifying such services or who wish to carry out the treatments themselves.

**3 REFERENCED DOCUMENTS.** The following documents are referred to in this standard:

AS 1216 Classification, Hazard Identification and Information Systems for Dangerous Goods Part 1—Classification and Class Labels for Dangerous Goods

AS 1694 Code of Practice for Physical Barriers Used in the Protection of Buildings Against Subterranean Termites

AS 1715 Selection, Use and Maintenance of Respiratory Protective Devices

AS 1716 Respiratory Protective Devices

AS 2057 Protection of Buildings from Subterranean Termites—Chemical Treatment of Soil for Buildings under Construction

AS 2161 Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)

AS 2210 Safety Footwear

Agricultural & Veterinary Chemicals Association Code No 4—Disposal of Pesticide Spills

**4 DAMAGED TIMBER.** A termite infestation may not be discovered until considerable damage has been done to structural or other timbers. Replacement or repair of infested timbers alone does not confer immunity from further attack and may hinder the effective treatment of an active infestation. Repair or replacement of infested timber should not be carried out until the appropriate treatment has been selected (see Clause 7).

NOTE: The building owner, if in doubt, should seek competent advice from a builder, building authority, or architect concerning any necessary repairs to the structure.

**5 INSPECTION.**

**5.1 General requirements.** When termites are detected, damaged timber should not be disturbed before a full inspection is completed. The building and surrounding area should be thoroughly inspected as specified in this Clause before any type of treatment is undertaken. For guidance, notes on the detection of termites in buildings are given in Appendix A.

**5.2 Houses and other buildings.**

**5.2.1** *Inspection by building owner.* Inspections can be made by the building owner and it is recommended that this be done at least every twelve months to facilitate early detection of termite activity.

During inspection, any mud-covered shelter tubes built over substructures should be noted and left undisturbed. The substructure, subfloor space and the ground floor and other floor areas including flooring, skirting boards and door architraves should be carefully inspected. Accessible roof timbers should also be inspected for possible termite activity.

It is advisable for the building owner to make a listing similar to that prepared by a pest control inspector as detailed in Clause 5.2.2 below.

If termite activity is found it is recommended that the services of a licensed pest control operator be obtained.

**5.2.2** *Inspections by pest control firms.* For many people inspection for termites may be very difficult. When the decision has been made to get a pest control firm to inspect, the building owner should require *a written statement* giving the following details resulting from the inspection:

(a) A list of all timbers showing termite attack; the *location* of the affected timbers, and whether the termites were active or inactive at the time of inspection.

(b) A list of any timbers requiring replacement or support. Where the inspector is not prepared to make this judgement, he should indicate in his report that a further inspection be carried out by a person qualified to make such judgements.

(c) Any sections of the building, or particular timbers which are inaccessible to either inspection or treatment, should be clearly indicated.

(d) The genus and, where possible, the species of termite involved.

(e) The identification and location of any termite nests found close to the building.

NOTE: When identification is difficult, live termites of the soldier caste (with dark heads) should, if possible, be collected, preserved in alcohol, and submitted to a specialist for identification. Notes on the collection and preservation of termites are given in Appendix B.

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