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TECHNICAL ASSESSMENT 355

July 2007

PLASMITE™ TERMITE BLANKET

PURPOSE

A sheet to act as a barrier for protecting buildings and structures against concealed subterranean termite entry.

APPLICANT

Creepy Crawly Pest Control Pty Ltd (ABN 93 072 918 435), 16 Freighter Avenue, Toowoomba, Queensland 4350 (Manufacturer/Distributor)

TECHNICAL OPINION

In the opinion of CSIRO Appraisals, the Plasmite™ Termite Blanket is suitable when used with concrete slab on ground for protection of buildings and structures against concealed subterranean termite entry as required by Standards Australia, AS 3660.1-2000, 'Termite management - New building work' provided that:

1. The Plasmite™ Termite Blanket is installed in accordance with the instructions in 'Plasmite™ Termite Blanket' Installation Manual' Version 4 (5 June 2007).
Note: These instructions are available from Creepy Crawly Pest Control, 4/10 Brook Street, Toowoomba, Queensland 4350 (Facsimile 07 4639 2140).

2. The Plasmite™ Termite Blanket is installed by trained and licensed installers to Creepy Crawly Pest Control Pty Ltd.

3. The Plasmite™ Termite Blanket is manufactured to the specifications supplied by Creepy Crawly Pest Control Pty Ltd.

4. The Plasmite™ Termite Blanket is used in accordance with Australian Pesticides & Veterinary Medicines Authority (APVMA) permit number 8925 at all times.

5. The barrier is installed to extend into the external leaf of brickwork at or below the damp proof course.

6. The barrier is installed to finish a minimum of 75mm above ground level or 20 mm above concrete or paving into the external leaf of brickwork, concrete masonry or similar material around the full perimeter of the structure.

7. When used in conjunction with other barriers, the other barrier complies with the requirements of AS 3660.1-2000.

8. A durable notice (in accordance with BCA requirements (Clause B1.3 (i)(ii) Volume 1 and Part 3.1.3.2 (b), Volume 2) is attached to the building which states that the 'Plasmite™ Termite Blanket' is installed.

9. The concrete slab on ground is constructed in accordance with Standards Australia, AS 2870-1996, 'Residential slabs and footings – Construction' (Amdt 1 January 1997, Amdt 2 June 1999, Amdt 3 November 2002, Amdt 4 May 2003).

10. The Plasmite™ Termite Blanket is not to be used as a vapour barrier. Note: the scope of this appraisal does not include the use of the Plasmite™ Termite Blanket as a vapour barrier.

11. Inspections shall be carried out on an annual basis or more often if required by local conditions or regulations to ensure that no bridging or breaching of the barrier has taken place.
Notes:
(i) The Building Code of Australia draws attention to the need for regular inspections.
(ii) The installation of a termite barrier does not negate the need for regular competent inspections. Any additions, alterations or earth works, including gardening adjacent to the building, may render the barrier ineffective. Such activity should be referred to a specialist for appropriate advice.
(iii) Any additional treatment should be done in accordance with the relevant State or Territory regulations.

12. A building site inspection shall be carried out prior to installation and the following precautions taken in accordance with Clause 3.2 of AS 3660.1:

- Eliminate nests of wood feeding species of subterranean termite found within the property boundaries, up to a distance of 50m from the proposed building work;
- Excavate and remove all tree stumps, roots and logs from the building footprint;
- All timber off-cuts, debris, removable framework and other waste material should be removed from the area in which the barrier is to be installed.

BUILDING CODE of AUSTRALIA

In the opinion of CSIRO Appraisals, the system described in this Technical Assessment and installed under the conditions listed herein will satisfy the Performance Requirements BP1.1 and BP1.2 (Volume 1 – Class 2-9 buildings) and P2.1 (Volume 2 – Class 1 and Class 10 buildings Housing Provisions) of the Building Code of Australia 2007.

To meet the requirements of Clause P2.1.1 (relevant to Qld only) (Volume 2 – Class 1 and Class 10 buildings) of the Building Code of Australia (2007), the applicant has provided a declaration of system design life, which is set out in the Durability section of this Technical Assessment. This declaration is only relevant for the system as described in this Technical Assessment and installed under the conditions listed in this Technical Assessment.

Notes:
(i) The inclusion of this clause with reference to the BCA is aimed at assisting those involved in the design, specifying and building approval/permit process relate the Appraisal to the relevant Performance Requirements of the BCA.

(ii) Any changes made to the BCA will be reviewed during the term of validity of this Technical Assessment and, where necessary, any amendment required will be published on the CSIRO Appraisals web pages on http://www.cmit.csiro.au/Appraisals.

RELATED INFORMATION

VALIDITY OF THE ASSESSMENT

Condition:
This Technical Assessment applies only to the use of the Plasmite™ Termite Blanket as described herein.

Withdrawal:
This Technical Assessment will be withdrawn or amended if CSIRO Appraisals considers that a change in design or manufacturing quality renders the basis of the appraisal invalid, or if reported field experience convinces CSIRO Appraisals of unsatisfactory quality or performance.

Term of Validity:
This Technical Assessment is valid until 31 August 2009. A valid APVMA approval (registration or permit) must be in place for the duration of this period. Technical Assessments may be amended during the term of validity. Users of this Technical Assessment should verify that it remains valid and is the current version by checking on the CSIRO Appraisals website: http://www.cmmt.csiro.au/services/appraisals/.

RELEVANT DOCUMENTS

Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007)

Standards Australia, AS 3660-2000, 'Termite management Part 1. New building work'

Standards Australia, AS 2870-1996, 'Residential slabs and footings – Construction' (Amdt 1 January 1997, Amdt 2 June 1999, Amdt 3 November 2002, Amdt 4 May 2003)

APVMA permit no. 8925

APPROVED ASSESSMENT EXTRACT

Plasmite™ Termite Blanket as distributed by Creepy Crawly Pest Control (ABN 93 072 918 435), Toowoomba, Queensland when used with concrete slab-on-ground is a suitable barrier to deter attack by subterranean termites as required by AS 3660-2000, 'Termite management. Part 1. New building work' when the conditions of CSIRO Appraisals Technical Assessment 355 are fulfilled.

APPRAISAL

DESCRIPTION

The following description is based on information provided by the applicant.

General:
Plasmite™ Termite Blanket is a sheet to act as a barrier for protection against subterranean termites.

A synthetic fibrous web/geotextile is mechanically impregnated with a synthetic pyrethoid insecticide, deltamethrin and laminated on the top side with a moisture membrane consisting of a layer of conventional polyethylene and laminated at the back with a layer of polyethylene.

Deltamethrin is a natural Pyrethium and has a low toxicity rate making it ideal for sensitive environments.

The Plasmite™ Termite Blanket is not UV stabilised as it is installed under slabs and in between construction materials. As such, it should be protected from direct sunlight on building sites. If left exposed for long periods during construction, a qualified Plasmite Termite Blanket system installer must inspect the Plasmite Termite Blanket prior to it being covered with further construction materials to ensure that the integrity of blanket is intact.

Specification:
The synthetic fibrous web/geotextile is mechanically impregnated with a synthetic pyrethoid insecticide, deltamethrin. The top side which is laminated to the geotextile consists of a standard moisture membrane layer of conventional polyethylene (LDPE) 0.2 mm thick and yellow or clear in colour.

A second sheet of LDPE, 0.05 mm thick and black in colour is laminated at the back.

The Plasmite™ Termite Blanket is available in 50 lineal metre long and 1 metre wide rolls which can be cut to size depending on the installation method.

Installation:
When installed in accordance with Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007) under concrete slab-on-ground, the Plasmite Termite Blanket should be used in combination with an approved water vapour barrier.

Underslab - The Plasmite™ Termite Blanket is installed to the building site in combination with an approved conventional water vapour barrier and commences after plumbing and service penetrations have been installed.

The Plasmite™ Termite Blanket is placed with the yellow side facing up and is installed with overlaps of 200 mm using good quality duct tape.

For further information refer to Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007) and drawing # 04-1146.12, titled 'Full under slab details' Section details 3, 4, 5 and 6; and drawing # 04-1146.13, titled 'Full under slab details' Section details 1 and 2.

Slab penetrations –

Option One. Once all plumbing pipes and PVC/copper have been installed the appropriate method of application of Plasmite Termite Blanket must be carried out prior to pouring the concrete slab.

Make sure any support materials up the side of the pipe are removed before installing the Plasmite™ Termite Blanket.

Take two pieces of Plasmite™ Termite Blanket 300 mm x 300 mm square and place over the top of the pipe diameter and cut out an 'X' then squeeze over the pipe down to the plastic.

Wrap a piece of Plasmite™ Termite Blanket 100 mm wide around the pipe and zip tie to the seal around the top of the Plasmite™ Termite Blanket with duct tape to moisture seal the pipe.

Note: Multiple penetrations can be done in the manner with all pipes coming through 300 mm x 300 mm squares of Plasmite™ Termite Blanket.

Option Two. Take a length of 100 mm wide and appropriate length and wrap around the entire circumference of the pipe and apply quality duct tape to the top of the Plasmite™ Termite Blanket (water seal). Zip ties can also be used to position on the pipe.

Slab cut-outs - Cut outs in slabs need protection to control joints between new and old/existing concrete. A full sheet of Plasmite™ Termite Blanket is to be applied to the entire area and extension at a minimum of 50 mm up the cut out edge between new and old slab joints.

Bricked up/boxed up slab Perimeters - Apply Plasmite™ Termite Blanket to extend from the inside face of the internal wall to the exterior face of the external masonry mortar joint. Apply prior to laying of next course.

Perimeter blockwork - Apply Plasmite™ Termite Blanket to cover the entire top of blockwork to extend to the exterior of mortar joint. Apply prior to laying of next course.

Doorway details - Prior to laying tiles, trim back Plasmite™ Termite Blanket 10-15 mm to allow for adhesion of tiles to brickwork and then mesh (optional protection and tile adhesion).

Perimeter height details - Plasmite™ Termite Blanket must be 75 mm above finished soil ground level (unless placed externally) and 20 mm above finished concrete/paver ground level (unless placed externally).

External retainer walls - Install 20 mm above ground level. For further information refer to Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007) and drawing # 04-1142.05, titled 'External retainer wall'.

Internal retainer walls - For further information refer to Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007) and drawing # 04-1142.04, titled 'Internal retainer wall'.

Suspended slab - For further information refer to Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007) and drawing # 04-1142.08 (No. 1 in set), titled 'Slab edge detail'.

Knock-out block - Apply Plasmite™ Termite Blanket to cover entire top of block work to extend to exterior of mortar joint. Apply prior to laying next course. For further information refer to Plasmite™ Termite Blanket Installation Manual' Version 4 (5 June 2007) and drawing # 04-1146.01, titled 'Knock-out block'.

Overlaps – All overlaps of Plasmite™ Termite Blanket are to be a minimum of 75 mm and can also be sealed with PlasmiteTM Epoxy or Plasmite Sealant. Also full under-slab overlaps to be 200 mm with a good quality duct tape.

For further applications including, Connolly key joints, pole plate protection, ant capping, etc, refer to the Plasmite™ Termite Blanket Installation Manual Version 4 (5 June 2007).

DESIGN INFORMATION

General:

Based on the information provided by the applicant, the Plasmite™ Termite Blanket is suitable when used with concrete slab on ground for protection of buildings and structures against subterranean termite entry as required by Standards Australia, AS 3660.1-2000, 'Termite management - New building work'.

Thickness:

The overall thickness of the Plasmite™ Termite Blanket comprises a 0.2 mm thick moisture membrane layer of conventional polyethylene (LDPE), a synthetic fibrous web/geotextile and a layer of polyethylene (LDPE) 0.05 mm thick. The synthetic fibrous web/geotextile is impregnated with a synthetic pyrethoid insecticide, deltamethrin.

Durability:
CSIRO Appraisals has not assessed the durability of the Plasmite Termite Blanket.

The applicant, Creep Crawly Pty Ltd, has made the following declaration (highlighted in italics):

We Creepy Crawly Pest Control Pty Ltd, declare under our sole responsibility that:

- *The Plasmite Termite Blanket has been designed to achieve a service life of 50 years during which period the Plasmite Termite Blanket, including its constituent components, is expected to maintain efficacy and function as a termite barrier in accordance with AS3660.1-2000;*
- *The Plasmite Termite Blanket has been designed in accordance with quality management system that incorporates a set of rules for the design, manufacture, installation and maintenance of all elements of the system;*
- *The components used in the manufacture of the Plasmite Termite Blanket have been selected for their intended purpose and are expected to operate in accordance with their specification for the duration of the design life of the Plasmite Termite Blanket.*

BASIS OF APPRAISAL

CSIRO Appraisals has assessed the following aspects in undertaking this appraisal:

(a) installation procedures

(b) efficacy of the system

(c) compliance with AS 3660-2000, 'Termite management. Part 1. New building work'.

Please note: CSIRO has relied solely on APVMA permit 8925 for evidence of the efficacy of the Plasmite Termite Blanket.

The following documents and inspections were used in carrying out the appraisal:

Manufacturer's and Installation Information:

1. **Creepy Crawly Pest Control, 4/10 Brook Street, Toowoomba, Queensland 4350. Installation Instructions 'Plasmite™ Termite Blanket' Installation Manual Version 4 (5 June 2007):**
   These contain the installation procedures for the use of the material.

2. **Creepy Crawly Pest Control, 4/10 Brook Street, Toowoomba, Queensland 4350. Drawings showing various installation options:**

   Drawing # 04-1142.03, titled 'C5/05/key joints'

   Drawing # 04-1142.04, titled 'Internal retainer wall'

   Drawing # 04-1142.05, titled 'External retainer wall'

   Drawing # 04-1142.06 (No. in set 1), titled 'Tilt panel/internal – external adjoining slab details'

   Drawing # 04-1142.06 (No. in set 6), titled 'Commercial 2' (exterior cladding details)

   Drawing # 04-1142.07, titled 'Tilt panel/adjoining details'

   Drawing # 04-1142.08 (No. 8 in set), titled 'Slab edge detail'

   Drawing # 04-1142.08 (No. 1 in set), titled 'Suspended slab/brick/block home base'

   Drawing # 04-1146.01, titled 'Knock-out block'

   Drawing # 04-1146.09, titled '2 slab levels'

   Drawing # 04-1146.11, titled 'Perimeter slab'

   Drawing # 04-1146.12, titled 'Full under slab details' Section details 3, 4, 5 and 6

   Drawing # 04-1146.13, titled 'Full under slab details' Section details 1 and 2.

   Drawing # 04-1146.14, titled 'Hebel'

   Drawing # 04-1146.17, titled 'Renovation'

3. **Creepy Crawly Pest Control, 4/10 Brook Street, Toowoomba, Queensland 4350. Safety Information Sheet 'Plasmite™ Termite Blanket' (15 March 2006):**
   This contains the safety information for the use and handling of the product.

4. **Creepy Crawly Pest Control, 4/10 Brook Street, Toowoomba, Queensland 4350. Manufacture and QA Checks 'Plasmite™ Termite Blanket' (15 March 2006):**
   This document contains the procedure and forms to ensure the correct process has been used in the manufacture and installation of the product.

5. **Creep Crawly Pest Control, 16 Freighter Avenue, Toowooma, Queensland, 4350 '50 Year Design Life of Plasmite Termite Blanket'**
   This document contains a decalraion from Creepy Crawly that the Plasmite Termite Blanket has been designed to achieve a service life of 50 years.

6. **3M Technical Data Sheet Performance Plus Duct Tape 8979 September 2005.**

7. **3M 76 High Tack Multi-purpose Adhesive MSDS February 2001.**

8. **Panduit Corporation PRT1S-C0 Pan-Ty Releasable Cable Tie datasheet.**

9. **Whites Wires Pty Ltd (ABN 25 001 845 478) Pest & Gutter Mesh information sheet.**

10. **Vivacity Engineering Pty Ltd3 Sefton Road Thornleigh NSW 2120 Megapoxy 69 High Strength Impact Resistant Epoxy Adhesive**
    - Technical Bulletin
    - Megapoxy Part A MSDS
    - Megapoxy Part B MSDS

Reports:

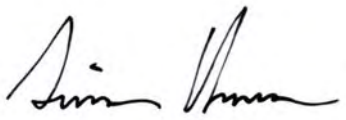
1. **Australian Pesticides and Veterinary Medicines Authority, Permit 8925:**
   Permit 8925 is valid from March 2007 until 31 December 2007 or until suspended or cancelled, and enables Creepy Crawly Pty Ltd to supply the Plasmite Termite Blanket for use in accordance with the labels that are attached to the product containers and any other relevant instructions as described in permit 8925. Please note: CSIRO has relied solely on APVMA permit 8925 for evidence of the efficacy of the Plasmite Termite Blanket.

2. **Australian Pesticides and Veterinary Medicines Authority, Registration 56176: Plasmite Manufacturing Concentrate 1 July 2006.**
   This registration covers the chemical (*deltamethrin*) which is used for impregnating into the geotextile blanket in the Plasmite Termite Blanket.

3. **University of Melbourne: Laboratory evaluation of Plasmite Termite Blanket as a physical barrier against *Coptotermes acinaformis* and *Mastotermes darwiniensis*: Dr Berhan Ahmed**
   Neither species of subterranean termite penetrated the *deltamethrin* Plasmite Termite Blanket in eight weeks exposure, whereas untreated blankets were "nibbled/chewed, mudded, and also damaged slightly by the subterranean termites".

Inspections:

CSIRO Appraisals representatives have inspected installations of the system and found them to be satisfactory. As with the installation of all termite barriers, a degree of care and skill, and attention to detail are necessary to ensure correct installation.



S. Hanson
CSIRO Appraisals

CSIRO Appraisals is a project of CSIRO Manufacturing and Infrastructure Technology providing a range of assessment products including:

- Technical Assessments –appraisals of innovative products, systems or materials that may or may not be covered by Australian Standards or building regulations.
- Interim Reports – appraisals of products that have not yet reached the fully developed or manufacturing phase. They aid with product development and may be used as a step towards a subsequent Technical Assessment.
- Certification Assessments – appraisals of products, systems or materials solely against the requirements of the BCA and used for gaining approval from Federal or State authorities.

From 1978, under the auspices of the Australian Building Systems Appraisal Council (ABSAC), CSIRO ran an appraisal service in conjunction with the Australian Institute of Building Surveyors, the Housing Industry Association, the Insurance Council of Australia and the Master Builders Association. In 1999, CSIRO Appraisals was formed to continue the business of ABSAC under the sole patronage of CSIRO. This new scheme retains the committee structure of technical and interstate advisers that operated as ABSAC. All past ABSAC publications and appraisals are being continued and supported by CSIRO Appraisals.

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Technical Assessments are intended to help all those concerned with the approval, specification and use of new products or systems. They are assessments of the product, system or material but are not approvals or endorsements. They may be submitted to approval authorities as part of the justification process required to obtain approval.

Each Technical Assessment has been prepared by CSIRO Appraisals and then reviewed, revised and finally endorsed by the Technical Advisory Committee (TAC), detailed below. CSIRO makes the appraisals on a national basis by obtaining input from regional committees in each State and Territory to take account of variations in local building regulations, practice and local climatic features.

CSIRO Appraisals bases its assessment on the product and information it receives and cannot accept responsibility for deviations in the manufactured quality and performance of the material, product or system. However, Technical Assessments will be withdrawn where adequate quality or performance has not been maintained.

This Technical Assessment is valid until 31 December 2009. Technical Assessments may be amended during the term of validity. Users of Technical Assessments should verify that Technical Assessments remain valid and are the current version by checking on the CSIRO Appraisals website: http://www.cmit.csiro.au/services/appraisals/.

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H. RELATED DOCUMENTS

J. OTHER/OPTIONAL INFORMATION

14. ABSTRACT *(CSIRO Appraisals Approved Assessment Extract)*

'Plasmite™ Termite Blanket' as distributed by Creepy Crawly Pest Control (ABN 93 072 918 435), Toowoomba, Queensland when used with concrete slab-on-ground is a suitable barrier to deter attack by subterranean termites as required by AS 3660-2000, 'Termite management. Part 1. New building work' when the conditions of CSIRO Appraisals Technical Assessment 355 are fulfilled.