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## A study into the Stability and Adhesive properties of the *Protectant™* polymer barrier components.

### Purpose of this study

This study was undertaken as part of the stability and efficacy data to support the product registration with the Australian Pesticides & Veterinary Medicines Authority.

### Methods and Materials

This study involved two stages: first is the stability and aging of the Protectant components and the second is the Adhesive performance for both the aged and the untreated materials.

Stage one: the range of components Protectant polymer fabric, AD-TR-SOL (glue) and AD-ULETH (glue) were placed to temperature controlled ovens set at 50<sup>0</sup> C for 14 days.

Before being placed in the ovens the Bifenthrin levels of all components were tests from other batch sample and recorded as per the standard tests carried out on each batch. After the 14 days the components where allowed to cool and the Bifenthrin levels where tested and recorded. This test recorded that that the Bifenthrin levels and the physical properties of the ProtectAnt components remained within the set standards for each material. *Addendum A*

A second batch of the components both treated and untreated from the same batch numbers where sent to Peel Street testing, where the Adhesive performance testing was carried out. The four types of glue products were to be tested in batches of three on wood (MGP10), PVC (PVC piping), Brick and cement all up 48 receptacle test where carried out using both the treated aged and as received AD-TR-SOL and the AD-ULETH.

Studies into the stability and aging of the Protectant™ polymer barrier components including AD-TR-SOL, AD-TR-SC and AD-ULETH-TR where carried out, the finding of the heat ageing of the range of products demonstrated that there was very little degradation in the level of Bifenthrin and that all components maintained a Bifenthrin level as set out in the product specification.

Using the stability and aging range of components and a range of untreated products from the same production batch an evaluation of the mechanical properties of the termite proof adhesives was carried out. As there is no known standard for this type of study the study was conducted using adhesive loading test for metallic materials under AS 1391. The study tested the maximum sheer load on the AD-TR-SOL and the AD-ULETH-TR when fixing the Protectant™ polymer barrier to 4 surfaces: Wood, PVC, cement and Brick. The tests there set up using heat aged and as received adhesives, The study concluded that the adhesive properties in shear loading had very little difference in their performance between the aged and as received materials and that the AD-ULETH-TR out performed the AD-TR-SOL by only 1 kg or 0.72%. These finding have no effect on the durability of the range of Protectant™ polymer barrier components. *Addendum B*

*Addendum A*

A Study into the Protectant stability 2009

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Certificate No.: 000108  
Issue Date: 01/06/09

**CLIENT DETAILS:** **Tony Di Betta**  
**The White Ant Co Pty Ltd**  
**PO Box 230**  
**Banora Point NSW 2486**

**CLIENT REF:** Order No. – TD 110409  
**DATE RECEIVED:** 24/04/09  
**TEST DATE:** 15/05/09

**CONDITIONS OF SAMPLE:** Receipt Temperature: Room Temperature  
Storage Temperature: Ambient

Stability testing of samples: Protectant, AD TR SC/SOL Red and AD-ULEATH TR NTH,  
received from Tony Di Betta The White Ant Co Pty Ltd.  
All samples were prepared and analysed in 2 replicates and 2 injections of each replicates.

**RESULTS OF ANALYSIS:**

**Product Name:** **Protectant Termite Barrier**

Batch No.: Client supplied product, 926437

Trial Completion Date: 22/05/09

Trial condition: Samples of formulation were stored in specified containers in ovens  
calibrated according to Accensi Quality System.

Assessment methods: Chemical: Gas Chromatography  
Physical: Visual

1. Chemical stability: ACP-LM- 113

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Bifenthrin: 4.24g/Kg- 5.75g/Kg	
Ref.	2	5.20 g/Kg	Polythene film
2	54	5.00 g/Kg	Open glass beaker

**2 Physical stability: Appearance**

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Fibrous, red mat	
Ref.	2	Fibrous red mat	Polythene film
2	54	Fibrous red mat	Open glass beaker

**Product Name: AD-TR-SC/SOL RED**

Batch No.: Client supplied product, Laboratory sample

Trial Completion Date: 22/05/09

Trial condition: Samples of formulation were stored in specified containers in ovens calibrated according to Accensi Quality System.

Assessment methods: Chemical: HPLC Chromatography  
Physical: Visual**1. Chemical stability: ACP-LM- 037**

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Bifenthrin: 4.6g/L -6.2 g/L	
Ref.	2	5.90 g/L	Steel can
2	54	5.90 g/L	Steel can

**2. Physical stability: Appearance**

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Viscous red paint. Solvent odour	
Ref.	2	Viscous red paint. Solvent odour	Steel can
2	54	Viscous red paint. Solvent odour	Steel can

**Product Name: AD-ULETH-TR NTH Grey**

Batch No.: Client supplied product in commercial packaging 09C5178

Trial Completion Date: 22/05/09

Trial condition: Samples of formulation were stored in specified containers in ovens calibrated according to Accensi Quality System.

Assessment methods: Chemical: Gas Chromatography  
Physical: Visual

1. Chemical stability: ACP-LM- 108

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Bifenthrin: 6.8 g/L - 9.2 g/L	
Ref.	2	0.88 g/L	Plastic foil
2	54	0.68 g/L	Plastic foil

2. Physical stability: Appearance

Storage Time	Storage temperature	Product specifications.	Container type
Weeks	°C	Grey thixotropic paste	
Ref.	2	Grey thixotropic paste	Plastic foil
2	54	Grey thixotropic paste	Plastic foil

Signed: \_\_\_\_\_ Dated: \_\_\_\_\_

**Mirsad Ahmetagic**  
R&D Manager



Quality  
Endorsed  
Company  
ISO 9001  
Lic: QEC 4495

**NOTE:**

Analytical results above have been generated using validated analytical methods, CIPAC methods or commercially available instruments suitable to the application. A copy of the validated analytical method for determination of active ingredient may be supplied in confidence to the APVMA for inspection within 10 (ten) working days of a request being made.

30 July 2009

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Doc. No. 4989-0715/1

## MATERIAL EVALUATION REPORT

**Client:** THE WHITEANT COMPANY  
**Subject:** EVALUATION OF TERMITE PROOF ADHESIVES  
MECHANICAL PROPERTIES  
**Client Reference:** MR T DIBETTA  
**Client's Order No.:** TD050709/1  
**Correlation/Report No.:** 4989-0715/1

### 1.0 INTRODUCTION.

It was requested that two different types of adhesive be evaluated for their adhesive properties in shear loading. The two glues used were an "AS TR SOL RED" (nominally a red coloured paint on liquid) and "AD-ULETH-TR NTH" (thick, grey extrudeable product). Both products were supplied in the as manufactured and "heat treated" condition (heat treating performed by others).

The four types of glue product were to be tested in batches of three on wood (MGP10 grade pine), PVC (PVC-O piping), brick (nominal house brick) and cement (smooth face of cement paving sample). In each case the adhesive was applied as per the client's instructions and allowed to cure for 7 days before testing. All tests were performed using the clients supplied anti termite fabric PRO 200 #926229

### 2.0 LOAD TESTING

The supplied fabric material was cut into strips approximately 55 mm wide and 300mm long and glued to the appropriate substrate material. The red paint on glue was used in a strip approximately 60mm wide and 100mm long on each of the substrates with sufficient glue in each case to saturate fabric. The grey adhesive was extruded in a 50mm long bead approximately 6-8mm wide and pushed into place by hand. The following test results were obtained;



**Chris Vines**  
Senior Metallurgist  
Victoria, AUSTRALIA



Glue	Condition	Substrate	Failure Load kg	Failure location
Red	As received	Wood #1	69	Glue interface
		Wood #2	70	Glue interface
		Wood #3	64	Glue interface
		Average	68	
Red	Heat treated	Wood #1+	72	Glue interface
		Wood #2+	79	Fabric
		Wood #3+	66	Glue interface
		Average	72	
Red	As received	PVC-O #1	70	Glue interface
		PVC-O #2	80	Fabric
		PVC-O #3	64	Glue interface
		Average	71	
Red	Heat treated	PVC-O #1+	64	Glue interface
		PVC-O #3+	74	Glue interface
		PVC-O #3+	46	Glue interface
		Average	61	
Red	As received	Cement #1	70	Fabric
		Cement #2	77	Fabric
		Cement #3	73	Fabric
		Average	73	
Red	Heat treated	Cement #1+	68	Fabric
		Cement #2+	69	Fabric
		Cement #3+	75	Fabric
		Average	71	
Red	As received	Brick #1	73	Fabric
		Brick #2	79	Fabric
		Brick #3	91	Fabric
		Average	81	
Red	Heat treated	Brick #1	75	Fabric
		Brick #2	72	Fabric
		Brick #3	76	Fabric
		Average	74	

The red adhesive was not considered as effective on wood or PVC in either condition (compared to the cement or brick) as the average failure load was less than that for the fabric. No failures of the adhesive were observed on the brick or cement. There was a reduction in the average load to failure in the heat treated adhesive but this may be due to variations in the fabric.

Glue	Condition	Substrate	Failure Load kg	Failure location
Grey	As received	Wood #1	72	Fabric
		Wood #2	65	Glue interface
		Wood #3	75	Fabric
		Average	71	
Grey	Heat treated	Wood #1+	78	Fabric
		Wood #2+	73	Fabric
		Wood #3+	73	Fabric
		Average	75	
Grey	As received	PVC-O #1	75	Fabric
		PVC-O #2	74	Fabric
		PVC-O #3	76	Fabric
		Average	75	
Grey	Heat treated	PVC-O #1+	68	Fabric
		PVC-O #3+	76	Fabric
		PVC-O #3+	70	Fabric
		Average	71	
Grey	As received	Cement #1	79	Fabric
		Cement #2	76	Fabric
		Cement #3	72	Fabric
		Average	76	
Grey	Heat treated	Cement #1+	71	Fabric
		Cement #2+	71	Fabric
		Cement #3+	82	Fabric
		Average	75	
Grey	As received	Brick #1	87	Fabric
		Brick #2	78	Fabric
		Brick #3	79	Fabric
		Average	81	
Grey	Heat treated	Brick #1	72	Fabric
		Brick #2	73	Fabric
		Brick #3	77	Fabric
		Average	74	

Only one failure in the adhesive was observed on the wood substrate with all the other samples failing in the fabric. Some fluctuations in the averages of each type was observed but were considered to be variations the fabric only.