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**CSIRO MANUFACTURING
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INDUSTRIAL RESEARCH SERVICES

Registered Testing Authority - Building Code of Australia

3 January, 2007

Our Ref. EN13/1422

TEST REPORT No. 3702

Requested by: Alistair Goldsack
on (date): 24 October 2006
Manufacturer: Hitchins
Product Desc: Formwal Traffigard 2000- waterproof membrane

Sampling details:
Where: Highett
Date: Delivered
By Whom: Alistair Goldsack
How (methods): Own

The results reported relate only to the sample(s) tested and the information received.

No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.
CSIRO cannot accept responsibility for deviations in the manufactured quality and performance of the product.
The reproduction of this test report is only authorised in the form of a complete photographic facsimile.
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This test report consists of 8 pages



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SUMMARY OF RESULTS

AS4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

The sample requires an elongation at break strain percentage greater than 7% at 56 days.

Note: (7% equates to 50% of control elongation at break strain percentage).

DUABILITY OF MEMBRANES: Elongation to break	Strain %	
Control	14%	Class I
Water Immersion	22%	PASS
Detergent Immersion	33%	PASS
Bleach Immersion	49%	PASS
Heat Ageing	14%	PASS

Hitchins test sample, Code; Formwal Traffigard 2000- waterproof membrane achieves the performance requirements of

AS 4858: 2004 Durability of Membranes for **Class I** membrane installation.

Appendix B: Assessment of resistance of waterproofing membranes to cyclic movement

Class I type membrane: 2mm gauge length, repeated 50 cycles.

Requirement:	PASS	No Fatigue cracking exhibited.
Result:	PASS	No Fatigue cracking exhibited.

The Water Vapour Transmission (WVT) in accordance to ASTM E96: **3.12g/m²/24h**

Appendix C: Suitability of waterproofing membranes when used over particle board

Appendix C **will not be** required as the Formwal Traffigard 2000- waterproof membrane has a water vapour transmission below 8g/m²/24h.

AS 3558.1 Methods of testing plastics & composite materials sanitary plumbing fixtures:

Method 1: Determination of water absorption characteristics

Water absorption:	Sample 1	4.1%	
	Sample 2	3.8%	
	Sample 3	3.0%	Mean 3.7%

Conclusion: Formwal Traffigard 2000- waterproof membrane satisfies the requirements of AS/NZS 4858 Wet area membranes.



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TEST CARRIED OUT IN ACCORDANCE WITH

Test Date: 14 June 2006

AS4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
 Conditions: >7 days at 23°C 55%RH
 Sample Number: 3702-1-1 (Numbered 1 to 5)
 Samples: Average of 5 samples
 Load rate: 50mm/min

Elongation at Break

CONTROL SET

Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
3702-1-1 to 5	0.9	83.49	4.55	15.46	14

The sample Formwal Traffigard 2000 has a control elongation at break mean of 14%.

Requirement for Class I:

The control specimens have an average percentage strain <59%.

Classification: Class I



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TEST CARRIED OUT IN ACCORDANCE WITH
AS4858:2004 Wet Area Membranes

Test Date: 30 August 2006

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory
 Conditions: 7 days at 23°C 55%RH
 Sample Number: 3702-1-3 (Numbered 1 to 12)
 Samples: Average of 3 samples
 Load rate: 50mm/min
 Solution: 1L of deionized water

Elongation at Break

WATER IMMERSION

Sample and Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 3702-1- 1 to 3	0.9	15.13	17.55	2.80	53
28 Days 3702-1- 4 to 6	0.9	11.99	10.95	2.22	33
56 Days 3702-1- 7 to 9	0.9	14.10	7.36	2.61	22

Requirement: The sample requires an elongation at break strain greater than 7% at 56 days.

Result: **PASS** Achieves requirement for Class I

FORMWAL TRAFFIGARD 2000 achieved 22% at 56 days.



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 24 August 2006

**AS4858:2004 Wet Area Membranes
 Appendix A: Assessment of Durability of waterproof membranes**

RESULTS: Location: Ceramic Tile Laboratory
 Conditions: 7 days at 23°C 55%RH
 Sample Number: 3702-1-4 (Numbered 1 to 12)
 Samples: Average of 3 samples
 Load rate: 50mm/min
 Solution: 1L of 2% solution N8 detergent

**Elongation at Break
 DETERGENT IMMERSION**

Sample and Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Tensile MPa	Maximum Strain %
7 Days 3702-1- 1 to 3	0.9	13.73	10.07	2.54	31
28 Days 3702-1- 4 to6	0.9	7.89	10.16	1.46	31
56 Days 3702-1- 7 to 9	0.9	17.83	10.84	3.30	33

Requirement: The sample requires an elongation at break strain greater than 7% at 56 days.

Result: **PASS** Achieves requirement for Class I

FORMWAL TRAFFIGARD 2000 achieved 33% at 56 days.



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TEST CARRIED OUT IN ACCORDANCE WITH Test Date: 24 August 2006

AS4858:2004 Wet Area Membranes
Appendix A: Assessment of Durability of waterproof membranes

RESULTS:	Location:	Ceramic Tile Laboratory
	Conditions:	7 days at 23°C 55%RH
	Sample Number:	3702-1-4 (Numbered 1 to 12)
	Samples:	Average of 3 samples
	Load rate:	50mm/min
	Solution:	1L of 10.5 g/L sodium hypochlorite & 2.25 g/L of sodium hydroxide

Elongation at Break

BLEACH IMMERSION

Sample and Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 3702-5- 1 to 3	0.9	3.51	31.88	0.65	97
28 Days 3702-5- 4 to 6	0.9	4.41	17.76	0.82	54
56 Days 3702-5- 7 to 9	0.9	4.13	16.09	0.77	49

Requirement: The sample requires an elongation at break strain greater than 7% at 56 days.

Result: PASS Achieves requirement for Class I

FORMWAL TRAFFIGARD 2000 achieved 49% at 56 days.



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TEST CARRIED OUT IN ACCORDANCE WITH
AS4858:2004 Wet Area Membranes
Appendix A: Assessment of Durability of waterproof membranes

Test Date: 14 July 2006

RESULTS: Location: Ceramic Tile Laboratory
Conditioning: 23°C 55%RH
7 days at 50°C
2 days at 23°C 55%RH
Sample Number: 3702-2 (Numbered 1 to 3)
Samples: Average of 3 samples
Load rate: 50mm/min

Elongation at Break

HEAT AGEING

Sample and Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7 Days 3702-2- 1 to 3	0.9	66.27	4.63	12.27	14

Requirement: The sample requires an elongation at break strain greater than 7% at 7 days.

Result: **PASS** Achieves requirement for Class I

FORMWAL TRAFFIGARD 2000 achieved 14% at 7 days heat ageing.



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Date and Place

3 January, 2007. Highett. Vic

Name(s), Title(s) and Signatures(s):

**PETER WESTGATE
TECHNICAL MANAGER**

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