

FINAL REPORT

Report Information

Report ID : 84798

Submitting Organisation : 00109358 : Parchem Construction Supplies Pty Ltd

Account : 130335 : Parchem Construction Supplies Pty Ltd

AWQC Reference : 130335-2010-CSR-5 : Prod Test: Vandex Concrete Grey

Project Reference : PT-1476

Product Designation : Vandex Concrete Grey

Composition of Product : See attachments for additional information.

Product Manufacturer : Vandex International Ltd, SWITZERLAND.

Use of Product : In-Line/Cement Based Waterproofing System for Positive and Negative Water Pressure.

Sample Selection: As provided by the submitting organisation.

Testing Requested : **AS/NZS 4020:2005 TESTING OF PRODUCTS FOR USE IN CONTACT WITH DRINKING WATER**

Product Type : Composite

Samples : Samples were prepared and controlled as described in Appendix A of AS/NZS 4020:2005

Extracts : Extracts were prepared as described in Appendix C, D, E, F, G, H.

Project Completion Date : 11-May-2011

Project Comment : The results presented herein demonstrate compliance of Vandex Concrete Grey to AS/NZS 4020:2005 when exposed at area to volume ratios up to 7500 mm²/L at 20°C ± 2°C.

PLEASE NOTE THAT THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL

THE RESULTS STATED IN THIS REPORT RELATE TO THE SAMPLE OF THE PRODUCT SUBMITTED FOR TESTING. ANY CHANGES IN THE MATERIAL FORMULATION, PROCESS OF MANUFACTURE, THE METHOD OF APPLICATION, OR THE SURFACE AREA-TO-VOLUME RATIO IN THE END USE, COULD AFFECT THE SUITABILITY OF THE PRODUCT FOR USE IN CONTACT WITH DRINKING WATER



Michael Glasson
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Summary of Results

APPENDIX	RESULTS
C – Taste of Water Extract	Passed at an exposure of 7500 mm ² per Litre.
D – Appearance of Water Extract	Passed at an exposure of 15000 mm ² per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 15000 mm ² per Litre.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 15000 mm ² per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 15000 mm ² per Litre.
H – Extraction of Metals	Passed at an exposure of 15000 mm ² per Litre.

Summary Comment : Moist curing and eight sequential soakings were performed to obtain a pH <9.0. In accordance with section A8 (Cementitious Products).

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CLAUSE 6.2 Taste of Water Extract

Sample Description	The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 7500 mm ² /L. Extracts were prepared using 1500 mL volumes of pre-conditioning water (AI 12.6).
Extraction Temperature	20°C ± 2°C
Test Method	Taste of Water Extract (Appendix C)
Test Information	
Scaling Factor	Not applicable.
Results	Not detected.
Evaluation	The product passed the requirements of clause 6.2 when tested at an exposure of 7500 mm ² per Litre.
Number of Samples	4.
Test Comment	Panelist's detected stale/wet paper tastes in the first dilution of the final (seventh) chlorinated extracts when tested at 15,000 mm ² per Litre. Test was repeated at 7500 mm ² per Litre and no tastes were detected.



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CLAUSE 6.3 Appearance of Water Extract

Sample Description The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 15000 mm²/L. Extracts were prepared using 750 mL volumes of pre-conditioning water (AI 12.6).

Extraction Temperature 20°C ± 2°C

Test Method Appearance of Water Extract (Appendix D)

Scaling Factor Not applicable.

Results

	<u>Test (- Blank)</u>	<u>Maximum Allowed</u>	<u>Units</u>
Colour	<1	5	HU
Turbidity	0.2	0.5	NTU

Evaluation The product passed the requirements of clause 6.3 when tested at an exposure of 15000 mm² per Litre.

Number of Samples 1.

Test Comment Not applicable.



Joanne Clark
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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 15000 mm²/L. Extracts were prepared using 750 mL volumes of test water.

Test Method Growth of Aquatic Micro-organisms (Appendix E)

Inoculum The volume of the inoculum was 100 mL

Scaling Factor Not applicable.

Results

Mean Dissolved Oxygen	Control	7.2 mg/L
Mean Dissolved Oxygen Difference	Positive Reference	5.1 mg/L
	Negative Reference	<0.1 mg/L
	Test	<0.10 mg/L

Evaluation The product passed the requirements of clause 6.4 when tested at an exposure of 15000 mm² per Litre.

Number of Samples 1.

Test Comment Not applicable.



Stephanie Semczuk
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CLAUSE 6.5 Cytotoxic Activity of Water Extract

Sample Description	The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 15000 mm ² /L. Extracts were prepared using 750 mL volumes of pre-conditioning water (AI 12.6).
Extraction Temperature	20°C ± 2°C
Test Method	Cytotoxic Activity of Water Extract (Appendix F)
Scaling Factor	Not applicable.
Results	Non-cytotoxic.
Evaluation	The product passed the requirements of clause 6.5 when tested at an exposure of 15000 mm ² per Litre.
Number of Samples	1.
Test Comment	The test extracts and blank extracts were used to prepare nutrient growth medium and subsequently used to grow a cell line (ATCC Number CCL 81) in the analysis. In addition zinc sulphate (0.4 mmol) was used for the positive control in the analysis.



Brendon King
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CLAUSE 6.6 Mutagenic Activity of Water Extract

Sample Description The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 15000 mm²/L. Extracts were prepared using 750 mL volumes of pre-conditioning water (AI 12.6).

Extraction Temperature 20°C ± 2°C

Test Method Mutagenic Activity of Water Extract (Appendix G)

Scaling Factor Not applicable.

Results

Bacteria Strain	Number of Revertants per Plate				
	S9	Blank	Sample Extract	Positive Controls	
<i>Salmonella typhimurium</i> TA98	-	37, 35, 41	31, 47, 40	1647, 1475, 1323	<u>NPD</u> (20µg)
Mean ± Standard deviation		37.7 ± 3.1	39.3 ± 8.0	1481.7 ± 162.1	
	+	452, 218, 210	236, 230, 328	1896, 1848, 2004	<u>2-AF</u> (20µg)
Mean ± Standard deviation		293.3 ± 137.5	264.7 ± 54.9	1916.0 ± 79.9	
<i>Salmonella typhimurium</i> TA100	-	223, 159, 155	174, 168, 205	1336, 1229, 1234	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		179.0 ± 38.2	182.3 ± 19.9	1266.3 ± 60.4	
	+	154, 190, 143	208, 189, 207	1909, 2020, 1527	<u>2-AF</u> (20µg)
Mean ± Standard deviation		162.3 ± 24.6	201.3 ± 10.7	1818.7 ± 258.6	
<i>Salmonella typhimurium</i> TA102	-	378, 458, 419	432, 476, 421	2218, 2391, 1919	<u>Mitomycin C</u> (2µg)
Mean ± Standard deviation		418.3 ± 40.0	443.0 ± 29.1	2176.0 ± 238.8	
	+	363, 408, 470	383, 420, 370		
Mean ± Standard deviation		413.7 ± 53.7	391.0 ± 25.9		

Comments S9 was used as a metabolic activator. NPD (4-nitro-o-phenylenediamine), Azide, and Mitomycin C are specific positive controls for strains TA98, TA100 and TA102 respectively while 2 - AF (2-aminofluorene) when used in conjunction with S9 is a positive control for both TA98 and TA100

Evaluation The product passed the requirements of clause 6.6 when tested at an exposure of 15000 mm² per Litre.

Number of Samples 1.

Test Comment Not applicable.



Peter Christopoulos
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CLAUSE 6.7 Extraction of Metals

Sample Description The sample consisted of two cementitious discs each with a diameter of 58 mm providing a total surface area of approximately 15000 mm²/L. Extracts were prepared using 750 mL volumes of pre-conditioning water (AI 12.6).

Extraction Temperature 20°C ± 2°C

Test Method Extraction of Metals (Appendix H)

Scaling Factor Not applicable.

Method of Analysis All methods used to determine concentrations of metals are based on those described in the 21st edition of Standard Methods for the Examination of Water and Wastewater published by the APHA, AWWA and WEF (2005). The methods have been adapted for the instrumentation in use at the Australian Water Quality Centre.

Concentration of the metals described in Table 2 of the AS/NZS 4020:2005 are determined as follows:

Antimony, Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel and Selenium by inductively coupled plasma mass spectrometry.
Silver by graphite furnace absorption spectrophotometry (Varian).

Results	Limit of Reporting mg/L	Blank mg/L	Test 1 mg/L	Test 2 mg/L	Max Allowed mg/L
Final Extract					
Antimony	0.0005	<0.0005	<0.0005	<0.0005	0.003
Arsenic	0.0003	<0.0003	<0.0003	<0.0003	0.007
Barium	0.0005	0.0311	0.0382	0.0374	0.7
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	0.002
Chromium	0.0001	0.0003	0.0004	0.0003	0.05
Copper	0.0001	0.3851	0.3515	0.3450	2.0
Lead	0.0001	0.0021	0.0021	0.0019	0.01
Mercury	0.00003	<0.00003	0.00006	0.00005	0.001
Molybdenum	0.0001	0.0002	0.0002	0.0002	0.05
Nickel	0.0001	0.0028	0.0024	0.0024	0.02
Selenium	0.0001	0.0007	0.0007	0.0007	0.01
Silver	0.002	<0.00003	<0.00003	<0.00003	0.1

Evaluation The product passed the requirements of clause 6.7 when tested at an exposure of 15000 mm² per Litre.

Number of Samples 1.

Test Comment Not applicable.



Dzung Bui
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