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Xypex Australia
Attn: Greg Baker
PO Box 255
Lavington
NSW 2641
AUSTRALIA

19/09/2012

Dear Greg,

Please find the attached report to AS/NZS 4020:2005 for Xypex Modified submitted for testing.

Should you have any enquiries about the report or any other matters pertaining to the Standard please contact the laboratory on 61 8 7424 1512

Yours sincerely,

A handwritten signature in black ink, appearing to read "M Glasson".

Michael Glasson
Product Testing Team Leader



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Chemical and Biological Testing
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FINAL REPORT


Report ID : 108597

Report Information

Submitting Organisation : 00109093 : Xypex Australia
Account : 130086 : Xypex Australia
AWQC Reference : 130086-2011-CSR-7 : Prod Test: XYPEX MODIFIED
Project Reference : PT-1838
Product Designation : Xypex Modified
Composition of Product : Portland Cement and Alkaline Earth Compounds (see attached Product Data Sheet and MSDS).
Product Manufacturer : Concrete Waterproofing Manufacturing Pty. Ltd., Union Rd, Lavington, NSW.
Use of Product : In-Line/Concrete Waterproofing Coating.
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 : 14-Sep-2012
Project Comment : The results presented herein demonstrate compliance of Xypex Modified to AS/NZS 4020:2005 when exposed at area to volume ratios up to 15000 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 15000 mm2 per Litre.
D – Appearance of Water Extract	Passed at an exposure of 15000 mm2 per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 15000 mm2 per Litre.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 15000 mm2 per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 15000 mm2 per Litre.
H – Extraction of Metals	Passed at an exposure of 15000 mm2 per Litre.

Summary Comment : Forty two soakings were performed to obtain a pH < 9.0 in accordance with section A8 (Cementitious Products). Sample prepared with 1 part water added to 3 parts Xypex Modified.

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CLAUSE 6.2 Taste of Water Extract

Sample Description	The sample consisted of two glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm ² per Litre. Extracts were prepared using 1000 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 applied.
Results	Not detected.
Evaluation	The product passed the requirements of clause 6.2 when tested at an exposure of 15000 mm ² per Litre.
Number of Samples	2.
Test Comment	Not applicable.



Peter Christopoulos
APPROVED SIGNATORY



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CLAUSE 6.3 Appearance of Water Extract

Sample Description The sample consisted of two glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm² per Litre. Extracts were prepared using 1000 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 applied.

Results

	<u>Test (- Blank)</u>	<u>Maximum Allowed</u>	<u>Units</u>
Colour	1	5	HU
Turbidity	0.1	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
APPROVED SIGNATORY



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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The sample consisted of two glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm² per Litre. Extracts were prepared using 1000 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 applied.

Results			
	Mean Dissolved Oxygen	Control	7.2 mg/L
	Mean Dissolved Oxygen Difference	Positive Reference	5.1 mg/L
		Negative Reference	0.2 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 glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm² per Litre. Extracts were prepared using 1000 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 applied.

Results Non cytotoxic.

Evaluation The product passed the requirements of clause 6.5 when tested at an exposure of 15000 mm² 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 glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm² per Litre. Extracts were prepared using 1000 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 applied.

Results

<u>Bacteria Strain</u>	<u>Number of Revertants per Plate</u>				
	S9	Blank	Sample Extract	Positive Controls	
<i>Salmonella typhimurium</i> TA98	-	37, 32, 34	31, 38, 27	2277, 2131, 2176	<u>NPD</u> (20µg)
Mean ± Standard deviation		34.3 ± 2.5	32.0 ± 5.6	2194.7 ± 74.8	
	+	27, 27, 40	40, 38, 38	3331, 3876, 3740	<u>2-AF</u> (20µg)
Mean ± Standard deviation		31.3 ± 7.5	38.7 ± 1.2	3649.0 ± 283.7	
<i>Salmonella typhimurium</i> TA100	-	323, 312, 325	195, 160, 158	873, 941, 944	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		320.0 ± 7.0	171.0 ± 20.8	919.3 ± 40.2	
	+	204, 109, 214	261, 252, 265	2184, 2164, 2291	<u>2-AF</u> (20µg)
Mean ± Standard deviation		175.7 ± 58.0	259.3 ± 6.7	2213.0 ± 68.3	
<i>Salmonella typhimurium</i> TA102	-	699, 753, 633	738, 766, 819	3169, 2575, 3179	<u>Mitomycin C</u> (10µg)
Mean ± Standard deviation		695.0 ± 60.1	774.3 ± 41.1	2974.3 ± 345.9	
	+	786, 809, 818	867, 942, 1019		
Mean ± Standard deviation		804.3 ± 16.5	942.7 ± 76.0		

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 glass slides (single side coated on each) measuring 75 mm x 100 mm providing an approximate surface area of 15000 mm² per Litre. Extracts were prepared using 1000 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 applied.

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, Selenium and Silver by Inductively Coupled Plasma Mass Spectrometry.

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	0.0004	<0.0003	0.007
Barium	0.0005	0.0367	0.0304	0.0330	0.7
Cadmium	0.0005	0.0003	<0.0001	0.0001	0.002
Chromium	0.0001	0.0003	0.0009	0.0010	0.05
Copper	0.0001	0.2058	0.1452	0.1662	2.0
Lead	0.0001	0.0007	0.0007	0.0008	0.01
Mercury	0.00003	0.00007	0.00009	0.00004	0.001
Molybdenum	0.0001	0.0002	0.0003	0.0002	0.05
Nickel	0.0001	0.0025	0.0020	0.0020	0.02
Selenium	0.0001	0.0004	<0.0001	0.0002	0.01
Silver	0.00003	<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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