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Macbean Beier Plastics Pty Ltd
Attn: Victor Aharonivich
PO Box 121
PINETOWN
3600
SOUTH_AFRICA



17/03/2011

Dear Victor,

Please find the attached report to AS/NZS 4020:2005 for Water Tarp MC-305 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 blue ink, appearing to read "M Glasson".

Michael Glasson
Product Testing Team Leader



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FINAL REPORT

Report Information

Report ID : 82381
Submitting Organisation : 00109777 : Macbean Beier Plastics Pty Ltd
Account : 141672 : Macbean Beier Plastics Pty Ltd
AWQC Reference : 141672-2010-CSR-1 : Prod Test: Water Tarp
Project Reference : PT-1426
Product Designation : Water Tarp MC-305
Composition of Product : Polyester Textile covered by PVC Compound.
Product Manufacturer : MacBean Beier Plastics, Pinetown, SOUTH AFRICA.
Use of Product : In-Line/Water Containment.
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 : 17-Mar-2011
Project Comment : The results presented herein demonstrate compliance of Water Tarp MC-305 to AS/NZS 4020 when exposed at area to volume ratios up to 1000 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 1000 mm ² per Litre.
D – Appearance of Water Extract	Passed at an exposure of 5000 mm ² per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 3200 mm ² per Litre with a 0.64 scaling factor applied.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 5000 mm ² per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 5000 mm ² per Litre.
H – Extraction of Metals	Passed at an exposure of 5000 mm ² per Litre.

Summary Comment : Not applicable.

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CLAUSE 6.2 Taste of Water Extract

Sample Description	The sample consisted of a single panel measuring 20 mm x 25 mm giving an approximate surface area of 1000 mm ² per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.
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 1000 mm ² per litre.
Number of Samples	2.
Test Comment	Panellists detected bitter/plastic tastes in the first dilution of the final (seventh) chlorinated extracts when tested at 3200 mm ² per Litre. The test was repeated at 1000 mm ² per Litre and no tastes were detected.



Peter Christopoulos
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CLAUSE 6.3 Appearance of Water Extract

Sample Description The sample consisted of a single panel measuring 25 mm x 100 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

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 5000 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 a single panel measuring 25 mm x 100 mm giving an approximate surface area of 5000 mm ² 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	A scaling factor of 0.64 was applied.		
Results			
	Mean Dissolved Oxygen	Control	7.7 mg/L
	Mean Dissolved Oxygen Difference	Positive Reference	5.7 mg/L
		Negative Reference	0.1 mg/L
		Test	1.60 mg/L
Evaluation	The product passed the requirements of clause 6.4 when tested at an exposure of 3200 mm ² per litre with a scaling factor of 0.64 applied.		
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 a single panel measuring 25 mm x 100 mm giving an approximate surface area of 5000 mm ² per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.
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 5000 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 a single panel measuring 25 mm x 100 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

Extraction Temperature 20°C ± 2°C.

Test Method Mutagenic Activity of Water Extract (Appendix G)

Scaling Factor Not applied.

Results

	Bacteria Strain	Number of Revertants per Plate				
		S9	Blank	Sample Extract	Positive Controls	
<i>Salmonella typhimurium</i> TA98	-		32, 32, 27	34, 42, 40	2368, 2177, 2220	<u>NPD</u> (20µg)
Mean ± Standard deviation			30.3 ± 2.9	38.7 ± 4.2	2255.0 ± 100.2	
	+		42, 41, 32	42, 32, 45	2473, 2101, 2107	<u>2-AF</u> (20µg)
Mean ± Standard deviation			38.3 ± 5.5	39.7 ± 6.8	2227.0 ± 213.1	
<i>Salmonella typhimurium</i> TA100	-		283, 281, 240	285, 357, 231	938, 978, 977	<u>Azide</u> (1.0µg)
Mean ± Standard deviation			268.0 ± 24.3	291.0 ± 63.2	964.3 ± 22.8	
	+		328, 297, 288	301, 278, 273	1255, 1058, 1606	<u>2-AF</u> (20µg)
Mean ± Standard deviation			304.3 ± 21.0	284.0 ± 14.9	1306.3 ± 277.6	
<i>Salmonella typhimurium</i> TA102	-		346, 396, 346	322, 417, 432	1866, 1773, 1726	<u>Mitomycin C</u> (2µg)
Mean ± Standard deviation			362.7 ± 28.9	390.3 ± 59.7	1788.3 ± 71.2	
	+		422, 381, 434	374, 518, 448		
Mean ± Standard deviation			412.3 ± 27.8	446.7 ± 72.0		

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 5000 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 a single panel measuring 25 mm x 100 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

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 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	<0.0005	<0.0005	<0.0005	0.7
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	0.002
Chromium	0.0001	<0.0001	<0.0001	<0.0001	0.05
Copper	0.0001	<0.0001	<0.0001	<0.0001	2.0
Lead	0.0001	<0.0001	<0.0001	<0.0001	0.01
Mercury	0.00003	0.00004	0.00004	0.00007	0.001
Molybdenum	0.0001	<0.0001	<0.0001	0.0002	0.05
Nickel	0.0001	<0.0001	<0.0001	<0.0001	0.02
Selenium	0.0001	<0.0001	<0.0001	<0.0001	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 5000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.


Dzung Bui
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