

FINAL REPORT

Report ID : 123416

Report Information

Submitting Organisation : 00121181 : Imocave Pty Ltd
Account : 142139 : Imocave Pty Ltd
AWQC Reference : 142139-2012-CSR-1 : Prod Test: Liquid Rubber
Project Reference : PT-2121
Product Designation : Liquid Rubber
Composition of Product : Bitumen Emulsion (SAMI Bitumen), Neoprene (RLA Polymers) and Natrosol (REDOX Pty Ltd). See attachment for additional information.
Product Manufacturer : Imocave Pty Ltd, Oak Street, Nerang, QUEENSLAND.
Use of Product : In-Line/Waterproof Sealing Compound.
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 : 02-Aug-2013
Project Comment : The results presented herein demonstrate compliance of Liquid Rubber to AS/NZS 4020:2005 when exposed at area to volume ratios up to 6600 mm²/L at 20°C ± 2°C. Liquid Rubber marketed as LRECA, Techno Rubber, RTT Sealant, Flex Rubber and Roof Tank Trough.

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



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Summary of Results

APPENDIX	RESULTS
C – Taste of Water Extract	Passed at an exposure of 6600 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 6600 mm ² per Litre with a 0.44 scaling factor applied.
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.

Test Methods

Test(s) in Appendix	AWQC Test Method	Reference Method
C	T0320-01	AS/NZS 4020:2005
D	TO029-01 & TO018-01	APHA 2130b
E	TO014-03	APHA 4500 O C
F	TM-001	AS/NZS 4020:2005
G	TM-002	AS/NZS 4020:2005
H	TIC-006	EPA 200.8

Summary Comment : Product range to include 5 Litre, 20 litre and 200 Litre volumes.

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CLAUSE 6.2 Taste of Water Extract

Sample Description	The sample was applied onto a glass slide with dimensions 75 mm x 100 mm providing a surface area of approximately 6600 mm ² per Litre. Extracts were prepared using 1140 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 6600 mm ² per Litre.
Number of Samples	2.
Test Comment	Not applicable.



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CLAUSE 6.3 Appearance of Water Extract

Sample Description The sample was applied on two glass slides with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 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 15000 mm² per Litre.

Number of Samples 1.

Test Comment Not applicable.



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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The sample was applied on two glass slides with dimensions 75 mm x 100 mm providing a surface area of approximately 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 A scaling factor of 0.44 was applied.

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	1.60 mg/L

Evaluation The product passed the requirements of clause 6.4 when tested at an exposure of 6600 mm² per Litre with a scaling factor of 0.44 applied.

Number of Samples 1.

Test Comment The Mean Dissolved Oxygen Difference in the extracts exceeded the maximum allowable concentration. A scaling factor of 0.44 was applied.



Stephanie Semczuk
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CLAUSE 6.5 Cytotoxic Activity of Water Extract

Sample Description The sample was applied on two glass slides with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 mm² 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 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 was applied on two glass slides with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 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

	<u>Bacteria Strain</u>		<u>Number of Revertants per Plate</u>			
	S9	Blank	Sample Extract	Positive Controls		
<i>Salmonella typhimurium</i> TA98	-	33, 35, 31	18, 36, 31	2336, 1793, 2178		<u>NPD</u> (20µg)
Mean ± Standard deviation		33.0 ± 2.0	28.3 ± 9.3	2102.3 ± 279.3		
	+	35, 38, 27	31, 24, 27	2188, 2000, 2358		<u>2-AF</u> (20µg)
Mean ± Standard deviation		33.3 ± 5.7	27.3 ± 3.5	2182.0 ± 179.1		
<i>Salmonella typhimurium</i> TA100	-	547, 521, 482	550, 437, 434	1613, 1606, 1561		<u>Azide</u> (1.0µg)
Mean ± Standard deviation		516.7 ± 32.7	473.7 ± 66.1	1593.3 ± 28.2		
	+	207, 249, 224	202, 126, 182	1863, 1821, 1982		<u>2-AF</u> (20µg)
Mean ± Standard deviation		226.7 ± 21.1	170.0 ± 39.4	1888.7 ± 83.5		
<i>Salmonella typhimurium</i> TA102	-	666, 713, 651	719, 554, 570	2528, 2315, 2444		<u>Mitomycin C</u> (10µg)
Mean ± Standard deviation		676.7 ± 32.3	614.3 ± 91.0	2429.0 ± 107.3		
	+	479, 481, 509	338, 420, 296			
Mean ± Standard deviation		489.7 ± 16.8	351.3 ± 63.1			

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.



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CLAUSE 6.7 Extraction of Metals

Sample Description The sample was applied on two glass slides with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 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, 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	<0.0003	<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	0.0003	<0.0001	0.0002	2.0
Lead	0.0001	<0.0001	0.0003	0.0003	0.01
Mercury	0.00003	<0.00003	<0.00003	<0.00003	0.001
Molybdenum	0.0001	<0.0001	<0.0001	<0.0001	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	0.00003	<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.



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