

## FINAL REPORT

### Report Information

**Report ID :** 85025

**Submitting Organisation :** 00109358 : Parchem Construction Supplies Pty Ltd

**Account :** 130335 : Parchem Construction Supplies Pty Ltd

**AWQC Reference :** 130335-2010-CSR-4 : Prod Test: Renderoc LA55

**Project Reference :** PT-1475

**Product Designation :** Renderoc LA55

**Composition of Product :** Renderoc LA55, Nitobond EP and Primer (see attachments for additional information).

**Product Manufacturer :** Parchem Construction Supplies, Wyong, NSW.

**Use of Product :** In-Line/Fluid High Strength Cementitious Concrete Reinstatement Mortar.

**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 :** 19-May-2011

**Project Comment :** The results presented herein demonstrate compliance of Renderoc LA55 to AS/NZS 4020:2005 when exposed at area to volume ratios up to 15000 mm<sup>2</sup>/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



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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 :** 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

<b>Sample Description</b>	The sample consisted of a single cement cylinder with an approximate surface area of 15000 mm <sup>2</sup> /L. Extracts were prepared using 1100 mL volumes of pre-conditioning water (AI 12.6).
<b>Extraction Temperature</b>	20°C ± 2°C
<b>Test Method</b>	Taste of Water Extract (Appendix C)
<b>Test Information</b>	
<b>Scaling Factor</b>	Not applicable.
<b>Results</b>	Not detected.
<b>Evaluation</b>	The product passed the requirements of clause 6.2 when tested at an exposure of 15000 mm <sup>2</sup> per Litre.
<b>Number of Samples</b>	2.
<b>Test Comment</b>	Not applicable.



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### CLAUSE 6.3 Appearance of Water Extract

**Sample Description** The sample consisted of a single cement cylinder with an approximate surface area of 15000 mm<sup>2</sup>/L. Extracts were prepared using 1100 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	0.1	0.5	NTU

**Evaluation** The product passed the requirements of clause 6.3 when tested at an exposure of 15000 mm<sup>2</sup> 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 consisted of a single cement cylinder with an approximate surface area of 15000 mm<sup>2</sup>/L. Extracts were prepared using 1100 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 mm<sup>2</sup> per Litre.

**Number of Samples** 1.

**Test Comment** Not applicable.



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### CLAUSE 6.5 Cytotoxic Activity of Water Extract

<b>Sample Description</b>	The sample consisted of a single cement cylinder with an approximate surface area of 15000 mm <sup>2</sup> /L. Extracts were prepared using 1100 mL volumes of pre-conditioning water (AI 12.6).
<b>Extraction Temperature</b>	20°C ± 2°C
<b>Test Method</b>	Cytotoxic Activity of Water Extract (Appendix F)
<b>Scaling Factor</b>	Not applicable.
<b>Results</b>	Non-cytotoxic.
<b>Evaluation</b>	The product passed the requirements of clause 6.5 when tested at an exposure of 15000 mm <sup>2</sup> per Litre.
<b>Number of Samples</b>	1.
<b>Test Comment</b>	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.



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### CLAUSE 6.6 Mutagenic Activity of Water Extract

**Sample Description** The sample consisted of a single cement cylinder with an approximate surface area of 15000 mm<sup>2</sup>/L. Extracts were prepared using 1100 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

<u>Bacteria Strain</u>	<u>Number of Revertants per Plate</u>				
	S9	Blank	Sample Extract	Positive Controls	
<i>Salmonella typhimurium</i> TA98	-	37, 35, 41	62, 252, 394	1647, 1475, 1323	<u>NPD</u> (20µg)
Mean ± Standard deviation		37.7 ± 3.1	236.0 ± 166.6	1481.7 ± 162.1	
	+	452, 218, 210	180, 331, 159	1896, 1848, 2004	<u>2-AF</u> (20µg)
Mean ± Standard deviation		293.3 ± 137.5	223.3 ± 93.8	1916.0 ± 79.9	
<i>Salmonella typhimurium</i> TA100	-	223, 159, 155	162, 179, 211	1336, 1229, 1234	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		179.0 ± 38.2	184.0 ± 24.9	1266.3 ± 60.4	
	+	154, 190, 143	246, 208, 189	1909, 2020, 1527	<u>2-AF</u> (20µg)
Mean ± Standard deviation		162.3 ± 24.6	214.3 ± 29.0	1818.7 ± 258.6	
<i>Salmonella typhimurium</i> TA102	-	378, 458, 419	436, 508, 509	2218, 2391, 1919	<u>Mitomycin C</u> (2µg)
Mean ± Standard deviation		418.3 ± 40.0	484.3 ± 41.9	2176.0 ± 238.8	
	+	363, 408, 470	348, 318, 501		
Mean ± Standard deviation		413.7 ± 53.7	389.0 ± 98.1		

**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 mm<sup>2</sup> per Litre.

**Number of Samples** 1.

**Test Comment** Not applicable.



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### CLAUSE 6.7 Extraction of Metals

**Sample Description** The sample consisted of a single cement cylinder with an approximate surface area of 15000 mm<sup>2</sup>/L. Extracts were prepared using 1100 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
<b>Final Extract</b>					
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	0.0306	0.0308	0.7
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	0.002
Chromium	0.0001	0.0003	0.0003	0.0003	0.05
Copper	0.0001	0.3851	0.3786	0.3705	2.0
Lead	0.0001	0.0021	0.0023	0.0022	0.01
Mercury	0.00003	<0.00003	<0.00003	0.00005	0.001
Molybdenum	0.0001	0.0002	0.0002	0.0002	0.05
Nickel	0.0001	0.0028	0.0026	0.0026	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 mm<sup>2</sup> per Litre.

**Number of Samples** 1.

**Test Comment** Not applicable.



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