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## FINAL REPORT

Report ID : 323179

### Report Information

**Submitting Organisation :** 00109358 : Parchem Construction Supplies Pty Ltd  
**Account :** 130335 : Parchem Construction Supplies Pty Ltd  
**AWQC Reference :** 130335-2020-CSR-7 : Prod Test: Fosroc Nitobond EP  
**Project Reference :** PT-4494  
**Product Designation :** Fosroc Nitobond EP  
**Composition of Product :** Two Part Epoxy System.  
**Product Manufacturer :** Parchem Construction Supplies Pty Ltd., Lucca Road, Wyong, NSW, AUSTRALIA.  
**Use of Product :** In-Line/Epoxy Primer and Bonding Agent.  
**Sample Selection:** As provided by the submitting organisation.  
**Testing Requested :** **AS/NZS 4020 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 4020:2018  
**Extracts :** Extracts were prepared as described in Appendix/Clause C, D, E, F, G, H, 6.8.  
**Project Completion Date :** 28-Oct-2021  
**Project Comment :** Sample received in the week beginning the 7-Dec-2020 and testing commenced on the 30-Dec-2020.

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/CLAUSE	RESULTS
C – Taste	Passed at an exposure of 1000 mm <sup>2</sup> per Litre.
D – Appearance	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
F – Cytotoxic Activity	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
G – Mutagenic Activity	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
H – Metals	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
6.8 – Organic Compounds	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.

**Test Methods**

Test(s) in Appendix	AWQC Test Method	Reference Method
C	T0320-01	AS/NZS 4020:2018
D	TO029-01 & TO018-01	APHA 2120c & APHA 2130b
E	TO014-03	APHA 4500 O G
F	TM-001	AS/NZS 4020:2018
G	TM-002	AS/NZS 4020:2018
H	TIC-006	EPA 200.8

**Organic Test Methods**

Test(s) in Clause	Test Method	Reference Method
Clause 6.8	TMZ-M36	USEPA524.2
	EP239	USEPA521
	EP132-LL	USEPA_SW846-8270D
	EP075C	USEPA_SW846-8270D
	EP075ASIM	USEPA_SW846-8270D

**Summary Comment :** Sample applied at a mix ratio of 100g Base to 59g Hardener and cured for 7 days at 20° C prior to testing.



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### CLAUSE 6.2 Taste

**Sample Description** The epoxy bonding agent was applied onto a single sided glass substrate measuring 25mm x 40mm to provide a total surface area of approximately 1000 mm<sup>2</sup> per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

**Extraction Temperature** 20°C ± 2°C.

**Test Method** Taste (Appendix C)

#### Test Information

**Scaling Factor** Not applied.

**Results** Not detected (sample and controls).

**Evaluation** The product passed the requirements of clause 6.2 when tested at an exposure of 1000 mm<sup>2</sup> per Litre.

**Number of Samples** 2.

**Test Comment** Panellists detected chemical and plastic tastes in the final (7th) extracts when tested at 15,000mm<sup>2</sup>/L and then repeated at 7500mm<sup>2</sup>/L. Test repeated at 1000mm<sup>2</sup>/L where no discernible tastes detected to meet requirements of Clause 6.2.

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**CLAUSE 6.3 Appearance**

**Sample Description** The epoxy bonding agent was applied onto two single sided glass substrates measuring 75 mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

**Extraction Temperature** 20°C ± 2°C.

**Test Method** Appearance (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 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 epoxy bonding agent was applied onto two single sided glass substrates measuring 75 mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> 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	7.5 mg/L
Mean Dissolved Oxygen Difference	Positive Reference	4.3 mg/L
	Negative Reference	<0.1 mg/L
	Test	0.20 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**

**Sample Description** The epoxy bonding agent was applied onto two single sided glass substrates measuring 75 mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> 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 (Appendix F)

**Scaling Factor** Not applied.

**Results** Non-cytotoxic (sample and controls).

**Evaluation** The product passed the requirements of clause 6.5 when tested at an exposure of 15000 mm<sup>2</sup> 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.

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**CLAUSE 6.6 Mutagenic Activity**

**Sample Description** The epoxy bonding agent was applied onto two single sided glass substrates measuring 75 mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> 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 (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	-	24, 28, 30	29, 27, 23	3430, 3649, 3835		<u>NPD</u> (20µg)
Mean ± Standard deviation		27.3 ± 3.1	26.3 ± 3.1	3638.0 ± 202.7		
	+	43, 28, 43	32, 35, 29	4056, 3986, 3801		<u>2-AF</u> (20µg)
Mean ± Standard deviation		38.0 ± 8.7	32.0 ± 3.0	3947.7 ± 131.8		
<i>Salmonella typhimurium</i> TA102	-	289, 352, 286	268, 297, 267	2555, 4645, 4619		<u>Mitomycin C</u> (10µg)
Mean ± Standard deviation		309.0 ± 37.3	277.3 ± 17.0	3939.7 ± 1199.2		
	+	402, 507, 369	479, 402, 496	2550, 2433, 2206		
Mean ± Standard deviation		426.0 ± 72.1	459.0 ± 50.1	2396.3 ± 174.9		

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

**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** The differences in the mean number of revertants between the blank and test extracts do not exceed two standard deviations; accordingly there is no evidence of a mutagenic response.

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**CLAUSE 6.7**

**Metals**

**Sample Description**

The epoxy bonding agent was applied onto two single sided glass substrates measuring 75 mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

**Extraction Temperature**

20°C ± 2°C.

**Test Method**

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 US EPA method 200.8 Determination of Trace elements in Waters and Wastes by Inductively Coupled Plasma - Mass Spectrometry. 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 4020:2018 are determined as follows:

Aluminium, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Iron, Lead, Manganese, 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
<b>Final Extract</b>					
Aluminium	0.001	0.006	0.008	0.006	0.2
Antimony	0.0005	<0.0005	<0.0005	<0.0005	0.003
Arsenic	0.0003	<0.0003	<0.0003	<0.0003	0.01
Barium	0.0005	<0.0005	0.0005	0.0005	0.7
Boron	0.020	<0.020	<0.020	<0.020	1.4
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
Iron	0.0005	<0.0005	<0.0005	<0.0005	0.3
Lead	0.0001	<0.0001	<0.0001	<0.0001	0.01
Manganese	0.0001	<0.0001	<0.0001	<0.0001	0.1
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 mm<sup>2</sup> per Litre.

**Number of Samples**

1.

**Test Comment**

Not applicable.



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**CLAUSE 6.8 Organic Compounds**

**Sample Description** The epoxy bonding agent was applied onto two single sided glass substrates measuring 75mm x 100mm to provide a total surface area of approximately 15000 mm<sup>2</sup> per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

**Extraction Temperature** 20°C ± 2°C.

**Test Method** Organic Compounds (Clause 6.8). Max Allowed values are taken from the Australian Drinking Water Guidelines and Drinking-water Standards for New Zealand. Please note, some reported compounds have no guideline value.

**Scaling Factor** Not applied.

**Results**

**Organic Compound**

<b>Nitrosamines</b>	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2101343	ES2101343	
1-Nitrosopiperidine (NPip)	<0.003	<0.003	
1-Nitrosopyrrolidine (NPyr)	<0.01	<0.01	
Nitrosomorpholine (NMor)	<0.003	<0.003	
N-Nitrosodiethylamine (NDEA)	<0.01	<0.01	
N-Nitrosodimethylamine (NDMA)	<0.003	0.007	0.1 µg/L
N-Nitrosodi-n-propylamine (NDPA)	<0.003	<0.003	
N-Nitrosomethylethylamine (NMEA)	<0.003	<0.003	

**Organic Compound**

<b>Phenols</b>	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2101343	ES2101343	
2 4 5-trichlorophenol	<1.0	<1.0	
2 4 6-trichlorophenol	<1.0	<1.0	20 µg/L
2 4-dichlorophenol	<1.0	<1.0	200 µg/L
2 4-dimethylphenol	<1.0	<1.0	
2 6-dichlorophenol	<1.0	<1.0	
2-chlorophenol	<1.0	<1.0	300 µg/L
2-nitrophenol	<1.0	<1.0	
4-chloro-3-methylphenol	<1.0	<1.0	
m+p cresol	<2.0	<2.0	
o-cresol	<1.0	<1.0	
pentachlorophenol	<2.0	<2.0	9 µg/L
phenol	<1.0	<1.0	



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**Organic Compound**

Phthalate Esters	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2101343	ES2101343	
Bis(2-ethylhexyl) phthalate	<10	<10	10 µg/L
Butyl benzyl phthalate	<2	<2	
Di(2-ethylhexyl) adipate	<2	<2	
Diethyl phthalate	<2	<2	
Dimethyl phthalate	<2	<2	
Di-n-butyl phthalate	<2	<2	
Di-n-octyl phthalate	<2	<2	

**Organic Compound**

Polycyclic Aromatic Hydrocarbons	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2101343	ES2101343	
Acenaphthene	<0.02	<0.02	
Acenaphthylene	<0.02	<0.02	
Anthracene	<0.02	<0.02	
Benzo(a)anthracene	<0.02	<0.02	
Benzo(a)pyrene	<0.005	<0.005	0.01 µg/L
Benzo(a)pyrene TEQ	<0.005	<0.005	
Benzo(b+j)fluoranthene	<0.02	<0.02	
Benzo(ghi)perylene	<0.02	<0.02	
Benzo(k)fluoranthene	<0.02	<0.02	
Chrysene	<0.02	<0.02	
Dibenzo(a-h)anthracene	<0.02	<0.02	
Fluoranthene	<0.02	<0.02	
Fluorene	<0.02	<0.02	
Indeno(123-cd)pyrene	<0.02	<0.02	
Naphthalene	<0.02	<0.02	
PAH - Total	<0.005	<0.005	
Phenanthrene	<0.02	<0.02	
Pyrene	<0.02	<0.02	



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**Organic Compound**

Organic Compound	Blank µg/L	Test µg/L	Max Allowed
<b>Volatile Organic Compounds GCMS</b>			
1 1 1 2-Tetrachloroethane	<1	<1	
1 1 1-Trichloroethane	<1	<1	
1 1 2 2-Tetrachloroethane	<1	<1	
1 1 2-Trichloroethane	<1	<1	
1 1-Dichloropropene	<1	<1	
1 2 3-Trichlorobenzene	<1	<1	
1 2 3-Trichloropropane	<1	<1	
1 2 4-Trichlorobenzene	<1	<1	
1 2 4-Trimethylbenzene	<1	<1	
1 2-Dibromo-3-chloropropane	<1	<1	1 µg/L
1 2-Dibromoethane	<1	<1	1 µg/L
1 2-Dichlorobenzene	<1	<1	1500 µg/L
1 2-Dichloroethane	<1	<1	3 µg/L
1 2-Dichloropropane	<1	<1	
1 3 5-Trimethylbenzene	<1	<1	
1 3-Dichlorobenzene	<1	<1	
1 3-Dichloropropane	<1	<1	
1 4-Dichlorobenzene	<1	<1	40 µg/L
1,1-Dichloroethane	<1	<1	
1,1-Dichloroethene	<1	<1	30 µg/L
2,2-Dichloropropane	<1	<1	
2-Chlorotoluene	<1	<1	
4-Chlorotoluene	<1	<1	
4-Isopropyltoluene	<1	<1	
Benzene	<1	<1	1 µg/L
Bromobenzene	<1	<1	
Bromochloromethane	<1	<1	
Bromodichloromethane	<1	<1	60 µg/L
Bromoform	<1	<1	100 µg/L
Bromomethane	<4	<4	
Carbon tetrachloride	<1	<1	3 µg/L
Chlorobenzene	<1	<1	300 µg/L
Chloroethane	<4	<4	
Chloroform	<1	<1	400 µg/L
Chloromethane	<4	<4	
cis-1 3-Dichloropropene	<1	<1	
cis-1,2-Dichloroethene	<1	<1	
Dibromochloromethane	<1	<1	150 µg/L
Dibromomethane	<1	<1	
Dichlorodifluoromethane	<1	<1	
Dichloromethane	<4	<4	4 µg/L
Ethylbenzene	<1	<1	300 µg/L
Hexachlorobutadiene	<0.7	<0.7	0.7 µg/L
Isopropylbenzene	<1	<1	
m+p-Xylenes - Total	<2	<2	



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### Organic Compound

Volatile Organic Compounds GCMS	Blank µg/L	Test µg/L	Max Allowed
Naphthalene	<1	<1	
n-Butylbenzene	<1	<1	
n-Propylbenzene	<1	<1	
o-Xylene	<1	<1	
sec-Butylbenzene	<1	<1	
Styrene	<1	<1	30 µg/L
tert-Butylbenzene	<1	<1	
Tetrachloroethene	<1	<1	50 µg/L
Toluene	<1	<1	800 µg/L
Total 1,2-dichloroethene	<2	<2	60 µg/L
Total 1,3-dichloropropene	<2	<2	20 µg/L
Total Trichlorobenzene	<2	<2	30 µg/L
Total Xylene	<3	<3	600 µg/L
trans-1,3-Dichloropropene	<1	<1	
trans-1,2-Dichloroethene	<1	<1	
Trichloroethene	<1	<1	
Trichlorofluoromethane	<1	<1	
Trihalomethanes - Total	<4	<4	250 µg/L
Vinyl chloride	<0.3	<0.3	0.3 µg/L

**Evaluation** The product passed the requirements of clause 6.8 when tested at an exposure of 15000 mm<sup>2</sup> per Litre.

**Number of Samples** 1.

**Test Comment** Subcontracted testing conducted by ALS, Environmental Division, NATA accreditation no. 825 site no. 10911 and ALS Scoresby, NATA accreditation no. 992, site no. 989

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