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Unicoatings
Attn: Dianne Van Geuns
PO Box 593
Virginia DC
QLD 4014
AUSTRALIA

21/12/2009

Dear Dianne,

Please find the attached report to AS/NZS 4020:2005 for Unicoat 2K Protective Lacquer 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

This report supersedes the following issued reports:
61610.

Report Information

Report ID : 61755
Submitting Organisation : 00120710 : Unicoatings
Account : 141358 : Unicoatings
AWQC Reference : 141358-2009-CSR-1 : Prod Test: Coating
Project Reference : PT-1006
Product Designation : Unicoat 2K Protective Lacquer
Composition of Product : 2-Propanol 203-905 and 2-Butoxyethanol.
Product Manufacturer : Product supplied by UC Europe BV, Netherlands.
Use of Product : In-Line/Protective 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 : 04-Dec-2009
Project Comment : The results presented herein demonstrate compliance of Unicoat 2K Protective Lacquer to AS/NZS 4020:2005 when exposed at area to volume ratios up to 45,000 mm²/L.

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 42000 mm ² per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 15000 mm ² per Litre.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 42000 mm ² per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 42000 mm ² per Litre.
H – Extraction of Metals	Passed at an exposure of 42000 mm ² per Litre.

Summary Comment : The coatings were applied and cured by the submitting organisation.

FINAL REPORT

This report supersedes the following issued reports:
61610.

CLAUSE 6.2 Taste of Water Extract

Sample Description The scheme provided a total surface area of approximately 1000 mm² 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 mm² per litre

Number of Samples 6.

Test Comment Panellists detected chemical tastes in the first dilution of the the final (seventh) chlorinated extracts when tested at 42,000 mm²/L and 15,000 mm²/L. The test was repeated at 1000 mm²/L and no tastes were detected.



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CLAUSE 6.3 Appearance of Water Extract

Sample Description The scheme provided a total surface area of approximately 42000 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 42000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.



Stephanie Semczuk
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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The sample consisted of a two panel with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 mm² per Litre respectively. 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	6.0 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 mm² per litre.

Number of Samples 1.

Test Comment Not applicable.



Phil Thomas
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CLAUSE 6.5 Cytotoxic Activity of Water Extract

Sample Description The scheme provided a total surface area of approximately 42000 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 42000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.



Stella Fanok
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CLAUSE 6.6 Mutagenic Activity of Water Extract

Sample Description The scheme provided a total surface area of approximately 42000 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	-	44, 40, 48	38, 49, 49	3327, 3345, 3342	<u>NPD</u> (20µg)
Mean ± Standard deviation		44.0 ± 4.0	45.3 ± 6.4	3338.0 ± 9.6	
	+	43, 39, 49	48, 43, 39	3251, 3023, 3771	<u>2-AF</u> (20µg)
Mean ± Standard deviation		43.7 ± 5.0	43.3 ± 4.5	3348.3 ± 383.4	
<i>Salmonella typhimurium</i> TA100	-	137, 147, 157	168, 144, 148	731, 750, 682	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		147.0 ± 10.0	153.3 ± 12.9	721.0 ± 35.1	
	+	207, 199, 179	192, 221, 231	1991, 2148, 2099	<u>2-AF</u> (20µg)
Mean ± Standard deviation		195.0 ± 14.4	214.7 ± 20.3	2079.3 ± 80.3	
<i>Salmonella typhimurium</i> TA102	-	417, 432, 447	447, 444, 434	862, 977, 1464	<u>Mitomycin C</u> (2µg)
Mean ± Standard deviation		432.0 ± 15.0	441.7 ± 6.8	1101.0 ± 319.6	
	+	575, 587, 513	613, 543, 529		
Mean ± Standard deviation		558.3 ± 39.7	561.7 ± 45.0		

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 42000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.



Michael Glasson
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CLAUSE 6.7 Extraction of Metals

Sample Description The scheme provided a total surface area of approximately 42000 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	0.0005	<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	<0.00003	<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	0.0002	<0.00003	<0.00003	<0.00003	0.1

Evaluation The product passed the requirements of clause 6.7 when tested at an exposure of 42000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.



Dzung Bui
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