

PO Box 1751  
Adelaide SA 5001

250 Victoria Square/  
Tarnantanyangga  
Adelaide SA 5000

Tel : 1300 653 366  
Fax : 1300 883 171

Internet : [www.awqc.com.au](http://www.awqc.com.au)  
Email : [awqc@sawater.com.au](mailto:awqc@sawater.com.au)



Cape Coaters Pty Ltd  
Attn: John Leach  
23 Valley View Road  
Pinetown, 3610

SOUTH\_AFRICA

28/01/2016

Dear John,

Please find the attached report to AS/NZS 4020:2005 for CFI 1000T PVC Coated Polyester Fabric 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  
Supervisor Product Testing



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### Report Information

**Submitting Organisation :** 00121350 : Cape Coaters Pty Ltd  
**Account :** 142376 : Cape Coaters Pty Ltd  
**AWQC Reference :** 142376-2015-CSR-1 : Prod Test: Dam Liner Product  
**Project Reference :** PT-2708  
**Product Designation :** CFI 1000T PVC Coated Polyester Fabric  
**Composition of Product :** PVC Coated Polyester Fabric.  
**Product Manufacturer :** Cape Coaters (Pty) Ltd., Cape Town, REPUBLIC of SOUTH AFRICA.  
**Use of Product :** In-Line/Covers and Liners.  
**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 :** 28-Jan-2016  
**Project Comment :** The results presented herein demonstrate compliance of CFI 1000 T PVC Coated Polyester Fabric to AS/NZS 4020 when exposed at area to volume ratios up to 5100 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



Michael Glasson  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### Summary of Results

APPENDIX	RESULTS
C – Taste of Water Extract	Passed at an exposure of 5100 mm <sup>2</sup> per Litre.
D – Appearance of Water Extract	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 5100 mm <sup>2</sup> per Litre with a 0.34 scaling factor applied.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 15000 mm <sup>2</sup> per Litre.
H – Extraction of Metals	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 4020:2005
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 : Not applicable.

## FINAL REPORT

Report ID : 176977

### CLAUSE 6.2 Taste of Water Extract

**Sample Description** The sample consisted of a panel with dimensions 34 mm x 75 mm providing a surface area of approximately 5100 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 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 5100 mm<sup>2</sup> per Litre.

**Number of Samples** 2.

**Test Comment** Not applicable.



Peter Christopoulos  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### CLAUSE 6.3 Appearance of Water Extract

**Sample Description** The sample consisted of a panel with dimensions 75 mm x 100 mm providing a 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 of Water Extract (Appendix D)

**Scaling Factor** Not applied.

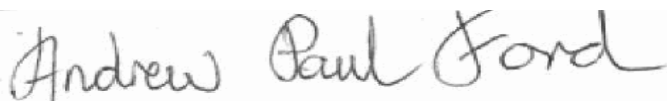
#### Results

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

**Number of Samples** 1.

**Test Comment** Not applicable.



Andrew Ford  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### CLAUSE 6.4 Growth of Aquatic Micro-organisms

**Sample Description** The sample consisted of a panel with dimensions 75 mm x 100 mm providing a 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** A scaling factor of 0.34 was applied.

#### Results

Mean Dissolved Oxygen	Control	7.2 mg/L
Mean Dissolved Oxygen Difference	Positive Reference	5.2 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 5100 mm<sup>2</sup> per Litre with a 0.34 scaling factor applied.

**Number of Samples** 1.

**Test Comment** The Mean Dissolved Oxygen Difference in the extracts exceeded the maximum allowable concentration. A scaling factor of 0.34 was applied.



Thuy Diep  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### CLAUSE 6.5 Cytotoxic Activity of Water Extract

<b>Sample Description</b>	The sample consisted of a panel with dimensions 75 mm x 100 mm providing a surface area of approximately 15000 mm <sup>2</sup> per Litre. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.
<b>Extraction Temperature</b>	20°C ± 2°C.
<b>Test Method</b>	Cytotoxic Activity of Water Extract (Appendix F)
<b>Scaling Factor</b>	Not applied.
<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.



Brendon King  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025

## FINAL REPORT

Report ID : 176977

### CLAUSE 6.6 Mutagenic Activity of Water Extract

**Sample Description** The sample consisted of a panel with dimensions 75 mm x 100 mm providing a 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 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	-	28, 33, 37	30, 35, 37	2780, 3019, 2716	<u>NPD</u> (20µg)
Mean ± Standard deviation		32.7 ± 4.5	34.0 ± 3.6	2838.3 ± 159.7	
	+	34, 27, 28	25, 29, 32	2070, 1980, 1714	<u>2-AF</u> (20µg)
Mean ± Standard deviation		29.7 ± 3.8	28.7 ± 3.5	1921.3 ± 185.1	
<i>Salmonella typhimurium</i> TA100	-	395, 406, 380	355, 365, 402	1282, 1328, 1222	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		393.7 ± 13.1	374.0 ± 24.8	1277.3 ± 53.2	
	+	310, 303, 314	228, 322, 290	1848, 1541, 1696	<u>2-AF</u> (20µg)
Mean ± Standard deviation		309.0 ± 5.6	280.0 ± 47.8	1695.0 ± 153.5	
<i>Salmonella typhimurium</i> TA102	-	731, 575, 618	757, 782, 758	2465, 2605, 2492	<u>Mitomycin C</u> (10µg)
Mean ± Standard deviation		641.3 ± 80.6	765.7 ± 14.2	2520.7 ± 74.3	
	+	699, 784, 651	608, 461, 624	2366, 1944, 2257	
Mean ± Standard deviation		711.3 ± 67.4	564.3 ± 89.8	2189.0 ± 219.1	

**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.



Heather Menzies  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025



## FINAL REPORT

Report ID : 176977

### CLAUSE 6.7 Extraction of Metals

**Sample Description** The sample consisted of a panel with dimensions 75 mm x 100 mm providing a 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** 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
<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	<0.0005	0.0021	0.0018	0.7
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	0.002
Chromium	0.0001	0.0003	<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	0.00003	<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.



Dzung Bui  
APPROVED SIGNATORY



Corporate Accreditation No.1115  
Chemical and Biological Testing  
Accredited for compliance with ISO/IEC 17025