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FINAL REPORT

Report Information

Report ID : 76762
Submitting Organisation : 00109424 : Novus Sealing Pty Ltd
Account : 130393 : Novus Sealing Pty Ltd
AWQC Reference : 130393-2010-CSR-2 : Prod Test: Gasket Material 2.
Project Reference : PT-1346
Product Designation : Novus 28
Composition of Product : Compressed non-asbestos fibre gasket material based on Aramid fibres & bonded with Acrylonitrile/Butadienne rubber.
Product Manufacturer : Novus Sealing Limited, Cleckheaton, Yorkshire, ENGLAND.
Use of Product : In-Line/Flange Sealing.
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 : 12-Nov-2010
Project Comment : The results presented herein demonstrate compliance of Novus 28 to AS/NZS 4020 when exposed at area to volume ratios up to 1000 mm²/L at 85°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



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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 5000 mm ² per Litre.
E – Growth of Aquatic Micro-organisms	Passed at an exposure of 5000 mm ² per Litre.
F – Cytotoxic Activity of Water Extract	Passed at an exposure of 1000 mm ² per Litre.
G – Mutagenic Activity of Water Extract	Passed at an exposure of 5000 mm ² per Litre.
H – Extraction of Metals	Passed at an exposure of 5000 mm ² per Litre.

Summary Comment : Not applicable.



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CLAUSE 6.2 Taste of Water Extract

Sample Description The sample consisted of a piece of material measuring 20 mm x 25 mm giving an approximate surface area of 1000 mm² per Litre. Extracts were prepared using 1000 mL of 50 mg/L hardness water.

Extraction Temperature 85°C ± 2°C.

Test Method Taste of Water Extract (Appendix C)

Test Information

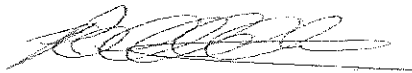
Scaling Factor Not applied.

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 2.

Test Comment Not applicable.



Peter Christopoulos
APPROVED SIGNATORY



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CLAUSE 6.3 Appearance of Water Extract

Sample Description The sample consisted of a piece of material measuring 50 mm x 50 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL of 50 mg/L hardness water.

Extraction Temperature 85°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	0.3	0.5	NTU

Evaluation The product passed the requirements of clause 6.3 when tested at an exposure of 5000 mm² per litre.

Number of Samples 1.

Test Comment Not applicable.

Joanne Clark
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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The sample consisted of a piece of material measuring 50 mm x 50 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL 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	5.6 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 5000 mm² per litre.

Number of Samples 1.

Test Comment Not applicable.

A handwritten signature in black ink, appearing to read "Stephanie Semczuk", is written over a horizontal line.

Stephanie Semczuk
APPROVED SIGNATORY



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CLAUSE 6.5 Cytotoxic Activity of Water Extract

Sample Description The sample consisted of a piece of material measuring 20 mm x 25 mm giving an approximate surface area of 1000 mm² per Litre. Extracts were prepared using 1000 mL of 50 mg/L hardness water.

Extraction Temperature 85°C ± 2°C.

Test Method Cytotoxic Activity of Water Extract (Appendix F)

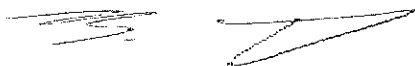
Scaling Factor Cytotoxic response at 5000 mm²/L.

Results Non-cytotoxic.

Evaluation The product passed the requirements of clause 6.5 when tested at an exposure of 1000 mm² per litre

Number of Samples 2.

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 consisted of a piece of material measuring 50 mm x 50 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL of 50 mg/L hardness water.

Extraction Temperature 85°C ± 2°C.

Test Method Mutagenic Activity of Water Extract (Appendix G)

Scaling Factor Not applied.

Results

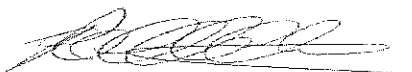
	<u>Bacteria Strain</u>	<u>Number of Revertants per Plate</u>			
		S9	Blank	Sample Extract	Positive Controls
<i>Salmonella typhimurium</i> TA98	-	35, 35, 40	42, 43, 34	2119, 2076, 2075	<u>NPD</u> (20µg)
Mean ± Standard deviation		36.7 ± 2.9	39.7 ± 4.9	2090.0 ± 25.1	
	+	44, 26, 35	42, 29, 38	2707, 2105, 2788	<u>2-AF</u> (20µg)
Mean ± Standard deviation		35.0 ± 9.0	36.3 ± 6.7	2533.3 ± 373.2	
<i>Salmonella typhimurium</i> TA100	-	249, 238, 232	252, 277, 272	609, 598, 704	<u>Azide</u> (1.0µg)
Mean ± Standard deviation		239.7 ± 8.6	267.0 ± 13.2	637.0 ± 58.3	
	+	342, 292, 293	300, 298, 295	1406, 1500, 1548	<u>2-AF</u> (20µg)
Mean ± Standard deviation		309.0 ± 28.6	297.7 ± 2.5	1484.7 ± 72.2	
<i>Salmonella typhimurium</i> TA102	-	483, 531, 534	463, 501, 412	1799, 1815, 926	<u>Mitomycin C</u> (2µg)
Mean ± Standard deviation		516.0 ± 28.6	458.7 ± 44.7	1513.3 ± 508.7	
	+	522, 556, 587	497, 457, 477		
Mean ± Standard deviation		555.0 ± 32.5	477.0 ± 20.0		

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 5000 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 consisted of a piece of material measuring 50 mm x 50 mm giving an approximate surface area of 5000 mm² per Litre. Extracts were prepared using 1000 mL of 50 mg/L hardness water.

Extraction Temperature 85°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	0.0020	0.0016	0.0016	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	0.0006	0.0003	<0.0001	2.0
Lead	0.0001	0.0001	0.0002	<0.0001	0.01
Mercury	0.00003	0.00004	<0.00003	<0.00003	0.001
Molybdenum	0.0001	<0.0001	<0.0001	<0.0001	0.05
Nickel	0.0001	0.0002	<0.0001	<0.0001	0.02
Selenium	0.0001	<0.0001	<0.0001	<0.0001	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 5000 mm² per litre

Number of Samples 1.

Test Comment Not applicable.


Dzung Bui
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