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Australian Water Quality Centre

FINAL REPORT

Report ID : 202569

Report Information

Submitting Organisation	00120787 : Elysee Irrigation Ltd
Account :	141472 : Elysee Irrigation Ltd
AWQC Reference :	141472-2016-CSR-1 : Prod Test: TEEs 16mm
Project Reference :	PT-3017
Product Designation :	334016016 TEE 16mm x 16mm x 16mm Compression Fitting
Composition of Product :	Polypropylene (see attachment for additional information).
Product Manufacturer :	Elysee Irrigation Ltd., Ergates Industrial Area, Nicosia, CYPRUS.
Use of Product :	In-Line/Polypropylene (PP) Compression Fitting Pipe Connection for Water Piping Networks.
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	24-Apr-2017
Project Comment :	The results presented herein demonstrate compliance of 334016016 TEE 16mm x 16mm x 16mm Compression Fitting to AS/NZS 4020 when tested at the 'in-the-product' exposure with a 0.01 scaling factor at 20°C ± 2°C.

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

Peter Christopoulos
APPROVED SIGNATORY

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Summary of Results

APPENDIX	RESULTS
C – Taste of Water Extract	Passed when tested in-the-product with a scaling factor of 0.01 applied.
D – Appearance of Water Extract	Passed when tested in-the-product with a scaling factor of 0.01 applied.
E – Growth of Aquatic Micro-organisms	Passed when tested at the in-use exposure.
F – Cytotoxic Activity of Water Extract	Passed when tested in-the-product with a scaling factor of 0.01 applied.
G – Mutagenic Activity of Water Extract	Passed when tested in-the-product with a scaling factor of 0.01 applied.
H – Extraction of Metals	Passed when tested in-the-product with a scaling factor of 0.01 applied.

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.

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CLAUSE 6.2 Taste of Water Extract

Sample Description	The compression fitting was tested at the in-the-product exposure. Each fitting held approximately 20 mL of water. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.
Extraction Temperatur	20°C ± 2°C.
Test Method	Taste of Water Extract (Appendix C)
Test Information	
Scaling Factor	A scaling factor of 0.01 was applied.
Results	Not detected.
Evaluation	The product passed the requirements of clause 6.2 when tested at the in-the-product exposure with a scaling factor of 0.01 applied.
Number of Samples	2.
Test Comment	Not applicable.

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CLAUSE 6.3 Appearance of Water Extract

Sample Description The compression fitting was tested at the in-the-product exposure. Each fitting held approximately 20 mL of water. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

Extraction Temperatur 20°C ± 2°C.

Test Method Appearance of Water Extract (Appendix D)

Scaling Factor A scaling factor of 0.01 was applied.

Results

	Test (- Blank)	Maximum Allowed	Units
Colour	<1	5	HU
Turbidity	<0.1	0.5	NTU

Evaluation The product passed the requirements of clause 6.3 when tested at the in-the-product exposure with a scaling factor of 0.01 applied.

Number of Samples 1.

Test Comment Not applicable.

Andrew Paul Ford

Andrew Ford
APPROVED SIGNATORY

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CLAUSE 6.4 Growth of Aquatic Micro-organisms

Sample Description The non-metallic components were immersed at the in-use exposure. The surface area was in the range 1000 mm² per Litre and 15,000 mm² per Litre. Extracts were prepared using 1170 mL volumes of test water.

Test Method Growth of Aquatic Micro-organisms (Appendix E)

Inoculum The volume of the inoculum was 117 mL

Scaling Factor Not applicable.

Results

Mean Dissolved Oxygen	Control	7.3	mg/L
Mean Dissolved Oxygen Differenc	Positive Reference	6.0	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 the in-use exposure.

Number of Samples 1.

Test Comment Not applicable.

Thuy Diep
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CLAUSE 6.5 Cytotoxic Activity of Water Extract

Sample Description	The compression fitting was tested at the in-the-product exposure. Each fitting held approximately 20 mL of water. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.
Extraction Temperatur	20°C ± 2°C.
Test Method	Cytotoxic Activity of Water Extract (Appendix F)
Scaling Factor	A scaling factor of 0.01 was applied.
Results	Non-cytotoxic.
Evaluation	The product passed the requirements of clause 6.5 when tested at the in-the-product exposure with a scaling factor of 0.01 applied.
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.

Brendon King
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CLAUSE 6.6 Mutagenic Activity of Water Extract

Sample Description The compression fitting was tested at the in-the-product exposure. Each fitting held approximately 20 mL of water. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

Extraction Temperatur 20°C ± 2°C.

Test Method Mutagenic Activity of Water Extract (Appendix G)

Scaling Factor A scaling factor of 0.01 was applied.

Results

Bacteria Strain	S9	Number of Revertants per Plate: Blank	Sample Extract	Positive Controls	
Salmonella typhimurium TA98	-	35, 49, 42	43, 38, 49	2181, 2108, 2420	NPD (20µg)
Mean ± Standard deviation		42.0 ± 7.0	43.3 ± 5.5	2236.3 ± 163.2	
	+	33, 29, 35	32, 33, 29	1637, 1511, 1790	2-AF (20µg)
Mean ± Standard deviation		32.3 ± 3.1	31.3 ± 2.1	1646.0 ± 139.7	
Salmonella typhimurium TA100	-	286, 281, 286	242, 264, 228	868, 846, 944	Azide (1.0µg)
Mean ± Standard deviation		284.3 ± 2.9	244.7 ± 18.1	886.0 ± 51.4	
	+	208, 219, 222	193, 188, 191	1396, 1208, 1372	2-AF (20µg)
Mean ± Standard deviation		216.3 ± 7.4	190.7 ± 2.5	1325.3 ± 102.3	
Salmonella typhimurium TA102	-	576, 648, 659	605, 660, 564	2924, 2894, 2515	Mitomycin C(10µg)
Mean ± Standard deviation		627.7 ± 45.1	609.7 ± 48.2	2777.7 ± 228.0	
	+	423, 375, 427	428, 487, 481	2359, 2223, 2408	
Mean ± Standard deviation		408.3 ± 28.9	465.3 ± 32.5	2330.0 ± 95.8	

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 the in-the-product exposure with a scaling factor of 0.01 applied.

Number of Samples 1.

Test Comment Not applicable.

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CLAUSE 6.7 Extraction of Metals

Sample Description The compression fitting was tested at the in-the-product exposure. Each fitting held approximately 20 mL of water. Extracts were prepared using 1000 mL volumes of 50 mg/L hardness water.

Extraction Temperatur 20°C ± 2°C.

Test Method Extraction of Metals (Appendix H)

Scaling Factor A scaling factor of 0.01 was 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

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	0.0001	<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	0.0002	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	0.0003	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 the in-the-product exposure with a scaling factor of 0.01 applied.

Number of Samples 1.

Test Comment Not applicable.

Dzung Bui
APPROVED SIGNATORY

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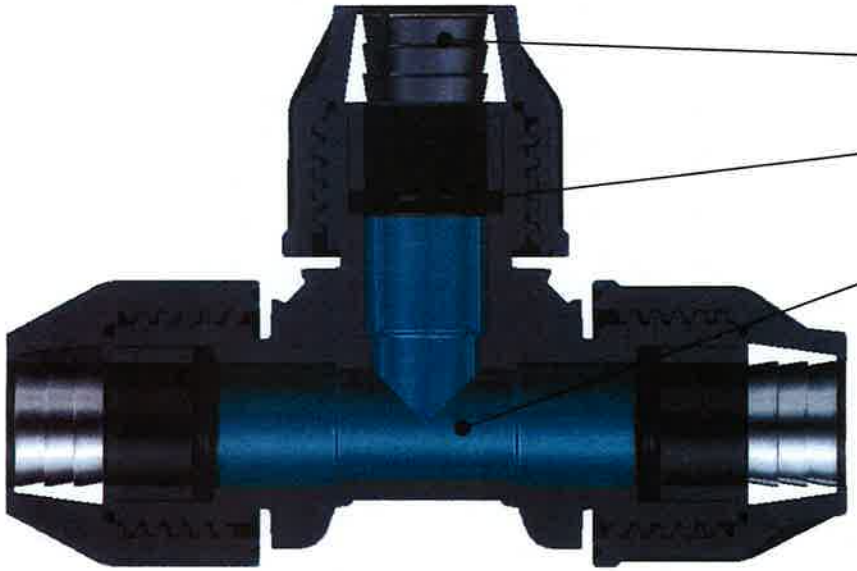
DRAWING NOTES:

1. All dimensions in milimeters.



Surface Area Values

Fitting Part		Area (mm^2)
TEE 16mm	Whole Body	23149
	Wet Surface	4045
O-Ring	Whole Body	534
	Wet Surface	267
Acetal (split ring)	The part is not in contact with water	

Australian Water Quality Centre

Report Number 202569

Date 24/4/2017

Document reviewed by MICHAEL GLASSON

Signature M Glasson

This Fitting is approved for water supply application

TOLERANCES
UNLESS OTHERWISE SPECIFIED
DECIMALS
0. ± .5 mm
0.0 ± .05 mm
0.00 ± .025 mm
ANGLES
± 0.1°

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TEE 16mm

DRAWN BY: Antonis Kalogerou DATE 25/11/09
APPROVED BY: Andreas Chimaris DATE 25/11/09
SHEET NO. 1 OF 1 | SCALE 1 : 1 | PART NO.