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kwik-ZIP Pty Ltd  
Attn: Jason Linaker  
3 Barnard St  
Bunbury  
WA 6230  
AUSTRALIA

17/08/2021

Dear Jason,

Please find the attached report to AS/NZS 4020:2018 for HDXT-43 Pipe Spacer (Representative Model) 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,

Michael Glasson  
Supervisor Product Testing



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## FINAL REPORT

Report ID : 317526

### Report Information

**Submitting Organisation :** 00120267 : kwik-ZIP Pty Ltd  
**Account :** 140780 : kwik-ZIP Pty Ltd  
**AWQC Reference :** 140780-2021-CSR-1 : Prod Test: HDXT-43 Pipe Spacer (Representative Model)  
**Project Reference :** PT-4606  
**Product Designation :** HDXT-43 Pipe Spacer (Representative Model)  
**Composition of Product :** Acetal POM (see attachment 1).  
**Product Manufacturer :** kwik-ZIP Pty Ltd.  
**Use of Product :** In-Line/Pipe Spacer.  
**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 :** 17-Aug-2021  
**Project Comment :** Product sample received in the week 05-May-2021, testing commenced 10-May-2021.

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

**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 :** Refer to attachment for product range. Primary Part + Runner Wear Pad (15000 mm<sup>2</sup>/L) and Rubber Grip Pad + Setting Screw (1000 mm<sup>2</sup>/L).



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**CLAUSE 6.2 Taste**

**Sample Description** The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L.

**Number of Samples** 2.

**Test Comment** The 24 hour extracts were not analysed in this test.

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**CLAUSE 6.3 Appearance**

**Sample Description** The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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>/L and 1000 mm<sup>2</sup>/L.

**Number of Samples** 1.

**Test Comment** Not applicable.

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**CLAUSE 6.4 Growth of Aquatic Micro-organisms**

**Sample Description** The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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.

<b>Results</b>			
Mean Dissolved Oxygen	Control		7.7 mg/L
Mean Dissolved Oxygen Difference	Positive Reference		5.4 mg/L
	Negative Reference		<0.1 mg/L
	Test		1.00 mg/L

**Evaluation** The product passed the requirements of clause 6.4 when tested at an exposure of 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L.

**Number of Samples** 1.

**Test Comment** Not applicable.

Thuy Diep  
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### CLAUSE 6.5 Cytotoxic Activity

<b>Sample Description</b>	The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm <sup>2</sup> /L and 1000 mm <sup>2</sup> /L. 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 (Appendix F)
<b>Scaling Factor</b>	Not applied.
<b>Results</b>	Non-cytotoxic (sample and controls).
<b>Evaluation</b>	The product passed the requirements of clause 6.5 when tested at an exposure of 15000 mm <sup>2</sup> /L and 1000 mm <sup>2</sup> /L.
<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.

Mira Maric

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**CLAUSE 6.6 Mutagenic Activity**

**Sample Description** The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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	-	18, 17, 21	19, 23, 21	3268, 3122, 3604		<u>NPD</u> (20µg)
Mean ± Standard deviation		18.7 ± 2.1	21.0 ± 2.0	3331.3 ± 247.2		
	+	34, 36, 24	31, 28, 25	2814, 3775, 3173		<u>2-AF</u> (20µg)
Mean ± Standard deviation		31.3 ± 6.4	28.0 ± 3.0	3254.0 ± 485.6		
<i>Salmonella typhimurium</i> TA102	-	211, 229, 250	183, 232, 238	1536, 1808, 1197		<u>Mitomycin C</u> (10µg)
Mean ± Standard deviation		230.0 ± 19.5	217.7 ± 30.2	1513.7 ± 306.1		
	+	210, 296, 238	227, 240, 197	1608, 1132, 1494		
Mean ± Standard deviation		248.0 ± 43.9	221.3 ± 22.1	1411.3 ± 248.5		

**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>/L and 1000 mm<sup>2</sup>/L.

**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.



Heather Menzies  
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**CLAUSE 6.7**

**Metals**

**Sample Description**

The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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	0.005	0.005	0.005	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>/L and 1000 mm<sup>2</sup>/L.

**Number of Samples**

1.

**Test Comment**

Not applicable.



Dzung Bui

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## FINAL REPORT

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### CLAUSE 6.8 Organic Compounds

**Sample Description** The sample consisted of the Primary Part + Runner Wear Pad and Rubber Grip Pad + Setting Screw providing a surface area of approximately 15000 mm<sup>2</sup>/L and 1000 mm<sup>2</sup>/L. 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

Nitrosamines	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2119162	ES2119162	
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	<0.003	0.1 µg/L
N-Nitrosodi-n-propylamine (NDPA)	<0.003	<0.003	
N-Nitrosomethylethylamine (NMEA)	<0.003	<0.003	

#### Organic Compound

Phenols	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2119162	ES2119162	
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**

<b>Phthalate Esters</b>	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2119162	ES2119162	
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**

<b>Polycyclic Aromatic Hydrocarbons</b>	Blank µg/L	Test µg/L	Max Allowed
!External Lab Report No.	ES2119162	ES2119162	
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**

<b>Volatile Organic Compounds GCMS</b>	<b>Blank µg/L</b>	<b>Test µg/L</b>	<b>Max Allowed</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

Organic Compound	Blank µg/L	Test µg/L	Max Allowed
<b>Volatile Organic Compounds GCMS</b>			
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>/L and 1000 mm<sup>2</sup>/L.

**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

Qiong Huang

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**REPORT ATTACHMENT 1.**

**REPORT ID** 317526  
**PROJECT REFERENCE** PT-4606  
**DATE** 13/08/2021

Product range to include:

- GT 10
- GT 20
- GT 30
- GT 40
  
- 155 HT-C
- 155 HT-D
- 155 HT-E
  
- 380 HT-D
- 380 HT-E
  
- HD 30
- HD 50
- HD 75
- HD 100
  
- HDX 38
- HDX 65
- HDX 90
- HDX 125
  
- HDXT 43 & Load Inserts
- HDXT 63 & Load Inserts
- HDXT 103 & Load Inserts
- HDXT 153 & Load Inserts

Australian Water Quality Centre	
Report Number.....	207
Date.....	17/8/1
Document reviewed by.....	MICHAEL BLASSON
Signature.....	M. Blason