LARQ

LARQ Pitcher Filtration Performance

Performance Summary

Our innovative plant-based filters are independently tested to NSF/ANSI 42, 53 & 401 standards against a wide range of pollutants.

	LARQ Pitcher	
Contaminants Filtered	**Essential Filter Initial filter life**	**Advanced Filter Initial filter life**
Lead pH=6.5 (NSF/ANSI 53)	N/A	99.3%
Lead pH=8.5 (NSF/ANSI 53)	N/A	99.6%
Benzene (NSF/ANSI 53)	N/A	>95.3%
HAA5 - Monochloroacetic acid (NSF/ANSI 53)	N/A	99.5%
HAA5 - Monobromoacetic acid (NSF/ANSI 53)	N/A	99.8%
HAA5 - Dichloroacetic acid (NSF/ANSI 53)	N/A	99.8%
HAA5 - Trichloroacetic acid (NSF/ANSI 53)	N/A	99.8%
HAA5 - Bromochloroacetic acid (NSF/ANSI 53)	N/A	99.4%
PFAS / PFOS (NSF/ANSI 53)	N/A	99.0%
Atenolol (NSF/ANSI 401)	N/A	98.3%
DEET (NSF/ANSI 401)	N/A	99.3%
Meprobamate (NSF/ANSI 401)	N/A	98.1%
Linuron (NSF/ANSI 401)	N/A	97.0%
Carbamazepine (NSF/ANSI 401)	N/A	99.0%
Metolachlor (NSF/ANSI 401)	N/A	99.2%
Trimethoprim (NSF/ANSI 401)	N/A	96.4%
TCEP (NSF/ANSI 401)	N/A	99.8%
TCPP (NSF/ANSI 401)	N/A	99.8%
Phenytoin (NSF/ANSI 401)	N/A	99.4%
Estrone (NSF/ANSI 401)	N/A	98.8%
Ibuprofen (NSF/ANSI 401)	N/A	96.0%
Bisphenol A (NSF/ANSI 401)	N/A	99.5%
Naproxen (NSF/ANSI 401)	N/A	99.3%
Nonylphenol (NSF/ANSI 401)	N/A	99.4%
Chlorine (NSF/ANSI 42)	99.5%	98.6%
Cadmium pH=6.5 (NSF/ANSI 53)	99.8%	>99.8%
Cadmium pH=8.5 (NSF/ANSI 53)	99.6%	>99.8%
Copper pH=6.5 (NSF/ANSI 53)	98.8%	99.8%
Copper pH=8.5 (NSF/ANSI 53)	99.5%	99.2%
Mercury pH=6.5 (NSF/ANSI 53)	>98.9%	98.5%
Mercury pH=8.5 (NSF/ANSI 53)	>98.7%	98.6%
VOCs**	97.4%	92.6%
Pesticides	97.4%	92.6%
Alachlor	97.4%	92.6%
Atrazine	97.4%	92.6%
Carbofuran	97.4%	92.6%
Carbon Tetrachloride	97.4%	92.6%

*The LARQ Essential Filter will not remove the contaminants noted with "N/A".

**Based on NSF/ANSI testing standards, Chloroform was used as a surrogate for claims of reduction of Volatile Organic Compounds (VOCs).

Performance Summary Cont'd

Our innovative plant-based filters are independently tested to NSF/ANSI 42, 53 & 401 standards against a wide range of pollutants.

	LARQ Pitcher	
Contaminants Filtered	**Essential Filter Initial filter life**	**Advanced Filter Initial filter life**
Chlordane	97.4%	92.6%
Chlorobenzene	97.4%	92.6%
2,4-D (2,4-dichlorophenoxyacetic acid)	97.4%	92.6%
Dibromochloropropane	97.4%	92.6%
o-dichlorobenzene	97.4%	92.6%
p-dichlorobenzene	97.4%	92.6%
1,2-dichloroethane	97.4%	92.6%
1,1-dichloroethylene	97.4%	92.6%
cis-1,2-dichloroethylene	97.4%	92.6%
trans-1,2-dichloroethylene	97.4%	92.6%
1,2-dichloropropane	97.4%	92.6%
Dinoseb	97.4%	92.6%
Endrin	97.4%	92.6%
Ethylbenzene	97.4%	92.6%
Ethylene dibromide	97.4%	92.6%
Heptachlor (H-34, heptox)	97.4%	92.6%
Heptachlor epoxide	97.4%	92.6%
Hexachlorocyclopentadiene	97.4%	92.6%
Lindane	97.4%	92.6%
Methoxychlor	97.4%	92.6%
Methyltert-butylether (MTBE)	97.4%	92.6%
Pentachlorophenol	97.4%	92.6%
Polychlorinated biphenyls (PCBs)	97.4%	92.6%
Simazine	97.4%	92.6%
Styrene	97.4%	92.6%
2,4,5-TP (silvex)	97.4%	92.6%
Tetrachloroethylene	97.4%	92.6%
Toluene	97.4%	92.6%
Toxaphene	97.4%	92.6%
1,2,4-trichlorobenzene	97.4%	92.6%
1,1,1-trichloroethane	97.4%	92.6%
1,1,2-trichloroethane	97.4%	92.6%
Trichloroethylene	97.4%	92.6%
TTHM (chloroform)	97.4%	92.6%
Xylenes	97.4%	92.6%
Improves tastes and odor	Yes	Yes
Microplastics	N/A	Yes

LARQ

Third-party Lab Reports

LARQ Advanced Filter

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210525 and SZ20210526

Study: Efficacy of LARQ Advanced Filter Against Lead

Date Received: Feb 19, 2021

Date Analyzed: Feb 28, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing lead based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Advanced Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the lead concentration was 0.15mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Lead (pH6.5 and pH8.5)		

Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the lead concentration was 0.15mg/L±10%.

Results:

Figure 1. Testing results for lead at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.149	0.00102	0.00125	99.3	99.2
62.5	0.154	0.00251	0.00287	98.4	98.1
125	0.156	0.00136	0.00203	99.1	98.7
187.5	0.149	0.00147	0.00159	99.0	98.9
250	0.149	0.00107	0.00092	99.3	99.4
300	0.152	0.00129	0.00120	99.2	99.2

Figure 3. Testing results for lead at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.151	0.00038	0.00068	99.7	99.5
62.5	0.149	0.00117	0.00142	99.2	99.0
125	0.159	0.00083	0.00110	99.5	99.3
187.5	0.152	0.00222	0.00224	98.5	98.5
250	0.147	0.00127	0.00126	99.2	99.1
300	0.147	0.00135	0.00133	99.1	99.1

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210529

Study: Efficacy of LARQ Advanced Filter Against Chlorine

Date Received: Feb 19, 2021

Date Analyzed: Apr 11, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing chlorine based on NSF/ANSI42-2015 (Drinking Water Treatment Units – Aesthetic Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 2 Advanced Filters for testing. For this study, the chlorine concentration was 2.0mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% of the estimated filter life, ending at a net total of 250 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	2	Type and specification	PAFR190A
Testing Standard	NSF/ANSI42-2015 (Drinking Water Treatment Units - Aesthetic Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Chlorine		
Remarks	The test plan is as follows: 1. Rated total water volume of 250L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% of rated filter life; 4. The chlorine concentration was 2.0mg/L±10%.		

Results:

Figure 1. Testing results for chlorine

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	2.13	0.03	0.03	98.6	98.6
25	2.07	0.03	0.03	98.6	98.6
50	1.97	0.03	0.04	98.5	98.0
75	1.99	0.04	0.04	98.0	98.0
100	2.01	0.05	0.05	97.5	97.5
125	2.07	0.07	0.08	96.6	96.1
150	2.03	0.09	0.09	95.6	95.6
175	2.11	0.11	0.10	94.8	95.3
200	2.07	0.13	0.14	93.7	93.2
225	2.11	0.16	0.15	92.4	92.9
250	2.03	0.18	0.17	91.1	91.6

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210519 and SZ20210520

Study: Efficacy of LARQ Advanced Filter Against Cadmium

Date Received: Feb 19, 2021

Date Analyzed: Feb 22, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing cadmium based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Advanced Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the cadmium concentration was 0.03mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Cadmium (pH6.5 and pH8.5)		

Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the cadmium concentration was0.03mg/L±10%.

Results:

Figure 1. Testing results for cadmium at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.0305	<0.00006	<0.00006	>99.8	>99.8
62.5	0.0314	0.00023	0.00009	99.3	99.7
125	0.0299	0.00019	0.00014	99.4	99.5
187.5	0.0322	0.00030	0.00043	99.1	98.7
250	0.0312	0.00059	0.00049	98.1	98.4
300	0.0326	0.00094	0.00095	97.1	97.1

Figure 3. Testing results for cadmium at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.0302	<0.00006	<0.00006	>99.8	>99.8
62.5	0.0321	0.00028	0.00034	99.1	98.9
125	0.0297	0.00018	0.00023	99.4	99.2
187.5	0.0318	0.00017	0.00023	99.5	99.3
250	0.0318	0.00033	0.00033	99.0	99.0
300	0.0316	0.00052	0.00046	98.4	98.5

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210521 and SZ20210522

Study: Efficacy of LARQ Advanced Filter Against Copper

Date Received: Feb 19, 2021

Date Analyzed: May 17, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing copper based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Advanced Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the copper concentration was 3.0mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Copper (pH6.5 and pH8.5)		

Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the copper concentration was 3.0mg/L±10%.

Results:

Figure 1. Testing results for copper at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	3.07	0.00818	0.00457	99.7	99.9
62.5	3.08	0.0194	0.0212	99.4	99.3
125	3.12	0.0286	0.0330	99.1	98.9
187.5	3.08	0.0320	0.0465	99.0	98.5
250	2.88	0.0540	0.0652	98.1	97.7
300	3.18	0.0647	0.0734	98.0	97.7

Figure 2. Testing results for copper at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	3.04	0.0229	0.0231	99.2	99.2
62.5	3.25	0.165	0.0849	94.9	97.4
125	3.05	0.224	0.0937	92.7	96.9
187.5	3.10	0.299	0.139	92.6	95.5
250	3.19	0.229	0.140	92.8	95.6
300	3.03	0.237	0.157	92.2	94.8

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210523 and SZ20210524

Study: Efficacy of LARQ Advanced Filter Against Mercury

Date Received: Feb 19, 2021

Date Analyzed: Feb 24, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing mercury based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Advanced Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the mercury concentration was 0.006mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Mercury (pH6.5 and pH8.5)		

Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the mercury concentration was 0.006mg/L±10%.

Results:

Figure 1. Testing results for mercury at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.00633	0.00009	0.00011	98.6	98.3
62.5	0.00629	<0.00007	<0.00007	>98.9	>98.9
125	0.00633	0.00014	0.00014	97.8	97.8
187.5	0.00601	0.00014	0.00012	97.7	98.0
250	0.00640	0.00015	0.00015	97.7	97.7
300	0.00617	0.00037	0.00032	94.0	94.8

Figure 3. Testing results for mercury at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.00609	0.00010	0.00008	98.4	98.7
62.5	0.0065	0.00007	0.00008	98.9	98.8
125	0.0061	0.00012	0.00016	98.0	97.4
187.5	0.00595	0.00035	0.00021	94.1	96.5
250	0.00662	0.00051	0.00049	92.3	92.6
300	0.00618	0.00050	0.00056	91.9	90.9

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210528

Study: Efficacy of LARQ Advanced Filter Against Chloroform

Date Received: Feb 19, 2021

Date Analyzed: Apr 15, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing chloroform based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 2 Advanced Filters for testing. For this study, the chloroform concentration was 0.3mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	2	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Chloroform		
Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The chloroform concentration was 0.3mg/L±10%.		

Results:

Figure 1. Testing results for chloroform

Water yield (L)	Concentration before filtration (ug/L)	Concentration after filtration (ug/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	285	20.4	21.8	92.8	92.4
25	297	29.9	24.5	89.9	91.8
50	315	57.9	41.0	81.6	87.0
75	350	61.0	52.9	82.6	84.9
100	348	69.3	66.2	80.1	81.0
125	306	75.2	70.9	75.4	76.8
150	311	85.6	81.5	72.5	73.8
175	311	93.1	96.2	70.1	69.1
200	287	91.3	92.4	68.2	67.8
225	322	119	118	63.0	63.4
250	340	127	128	62.6	62.4
275	301	143	119	52.5	60.5
300	315	160	158	49.2	49.8

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210527

Study: Efficacy of LARQ Advanced Filter Against Benzene

Date Received: Feb 19, 2021

Date Analyzed: Apr 15, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Advanced Filter at removing benzene based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 2 Advanced Filters for testing. For this study, the benzene concentration was 0.015mg/L ±10%. The challenge water was passed through the Advanced Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Advanced Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	2	Type and specification	PAFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Benzene		
Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Advanced Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The benzene concentration was 0.015mg/L±10%.		

Results:

Figure 1. Testing results for benzene

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	15.0	<0.7	<0.7	>95.3	>95.3
62.5	15.1	0.9	0.7	94.0	95.3
125	14.7	<0.7	<0.7	>95.3	>95.2
187.5	14.1	<0.7	<0.7	>95.0	>95.0
250	13.5	1.1	1.5	91.8	88.8
300	14.0	1.6	2.2	88.5	84.2

QFT LABORATORY, LLC. Test Report

1041 Glassboro Road Suite D-1, Williamstown NJ 08094
PHONE 856-583-0445 www.enviroteklab.com
EPA ID # NJ01298 IAPMO ID# 000102 ANAB Cert ID AT-2866

Send To:

Justin Wang

LARQ

Result: Passed Date: 12/06/2021

Company Name: LARQ

Tested To: NSF/ANSI Std. 53 – Haloacetic Acids Reduction Testing

Description: LARQ Pitcher PureVis with Advanced Filter

Test Type: R&D testing

Project Manager: Jaime Young

Thank you for having your product tested by Envirotek Laboratory, LLC.
Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization *Jaime A. Young* Date: 12/06/2021

Jaime A. Young
Lab Director

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NSF/ANSI Std. 53 – Haloacetic Acids Reduction Testing: Passed

Company's Name: LARQ

Sample Type: R&D testing

Product: LARQ Pitcher PureVis with Advanced Filter

Flow Rate: 10 LPD

Filter Capacity: 270 Liters

Conditioning Procedure: Soak in tap water for 10 minutes. Flush with 1 liter or 1 reservoir of water and discard.

Cycle: 40-60 minutes between loads

Physical Description of Sample: Pour Through

Performance Indicator Device: No, test to 100% Capacity

Test Description: NSF/ANSI Std. 53 – Haloacetic Acids Reduction Testing

Trade Designation/Model Number: Gravity Pitcher Filter

Unit Volume: 0.1 L

Performance Standard: NSF/ANSI Std 600 – 2020

Pass/Fail Criteria (Maximum Product Water Concentration)**:**

Monochloroacetic acid: 6 µg/L *Monobromoacetic acid: 6 µg/L*

Dichloroacetic acid: 0.7 µg/L *Bromochloroacetic acid: 6 µg/L*

Trichloroacetic acid: 6 µg/L

As per NSF/ANSI Std 600/EPA primary drinking water standard

Decision Rule: Simple Acceptance based on the NSF/ANSI/EPA drinking water limits

Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	TOC (≥1.0 mg/L)	Turbidity (<1 NTU)
10 UV	7.42	19.1	288	1.3	0.42
20%	7.38	19.9	251	1.2	0.44
40%	7.5	20.0	260	1.1	0.45
60%	7.62	20.3	260	1.2	0.41
80%	7.71	20.9	280	1.3	0.44
100%	7.51	20.4	210	1.2	0.42
Average	**7.52**	**20.1**	**258**	**1.2**	**0.43**

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Filter Data Summary Tables

Monochloroacteic Acid			
Accumulated Volume(L)	**Influent Concentration µg/L**	**Effluent Concentration µg/L**	**Pass/Failed**
10 UV	57.9	0.3	Pass
54 Liters	57.9	0.3	Pass
108 liters	74.4	<0.1	Pass
162 liters	75.5	<0.1	Pass
216 liters	47.7	0.4	Pass
270 liters	55.5	0.1	Pass

Bromochloroacetic Acid			
Accumulated Volume(L)	**Influent Concentration µg/L**	**Effluent Concentration µg/L**	**Pass/Failed**
10 UV	48.9	0.3	Pass
54 Liters	48.9	0.3	Pass
108 liters	58.9	0.2	Pass
162 liters	59.1	0.1	Pass
216 liters	46.8	<0.1	Pass
270 liters	47.7	0.1	Pass

Monobromoacteic Acid			
Accumulated Volume(L)	**Influent Concentration µg/L**	**Effluent Concentration µg/L**	**Pass/Failed**
10 UV	56.6	<0.1	Pass
54 Liters	56.6	<0.1	Pass
108 liters	67.6	<0.1	Pass
162 liters	61.9	<0.1	Pass
216 liters	58.9	<0.1	Pass
270 liters	51.5	<0.1	Pass

Trichloroacetic Acid			
Accumulated Volume(L)	**Influent Concentration µg/L**	**Effluent Concentration µg/L**	**Pass/Failed**
10 UV	46.2	<0.1	Pass
54 Liters	46.2	<0.1	Pass
108 liters	56.7	<0.1	Pass
162 liters	57.8	<0.1	Pass
216 liters	49.9	<0.1	Pass
270 liters	47.8	<0.1	Pass

Dichloroacetic Acid			
Accumulated Volume(L)	**Influent Concentration µg/L**	**Effluent Concentration µg/L**	**Pass/Failed**
10 UV	52.8	<0.1	Pass
54 Liters	52.8	<0.1	Pass
108 liters	63.4	<0.1	Pass
162 liters	63.3	<0.1	Pass
216 liters	47.3	0.3	Pass
270 liters	49.2	<0.1	Pass

Haloacetic acids minimum reporting limit 0.1 µg/L

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Filter System Tested

Disclaimer: The test results are only related to the filter cartridges tested, in the condition received at the laboratory.

Jaime A. Young
Jaime A. Young
Lab Director

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Send To:

Justin Wang

LARQ

Result: Passed Date: 12/06/2021

Customer Name: LARQ

Tested To: NSF/ANSI Standard 53- PFAS Reduction

Description: LARQ Pitcher PureVis with Advanced Filter

Test Type: R&D Testing

Project Manager: Jaime Young

Thank you for having your product tested by QFT Laboratory, LLC.
Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization *Jaime A. Young* Date: 12/06/2021
Jaime A. Young
Lab Director

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NSF/ANSI Standard 53 PFAS Reduction PT 100%: Passed

Manufacturer's Name: LARQ

Sample Type: R&D Testing

Product: LARQ Pitcher PureVis with Advanced Filter

Flow Rate: 10 LPD

Filter Capacity: 270 Liters

Conditioning Procedure: Soak filter in tap water for 10 minutes. Run 1 liter or 1 reservoir full of water and discard.

Cycle: 40-60 minutes between loads.

Physical Description of Sample: Pour Through

Performance Indicator Device: No, test to 100% Capacity

Test Description: Modified NSF/ANSI STD 53 – 2020 PFOA/PFOS

Trade Designation/Model Number: Gravity Pitcher Filter

Unit Volume: 0.1 L

Performance Standard: Modified NSF/ANSI STD 53 – 2020 PFOA/PFOS

Pass/Fail Criteria: ≤ 0.07 µg/L

Decision Rule: Pass/Fail based on simple acceptance of the analytical results above the NSF/ANSI Std limit

Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±2.5°C)	Turbidity (<1 NTU)	TOC (>1 mg/L)	TDS (200-500)
Start	7.58	19.4	0.43	1.2	268
20%	7.62	19.5	0.42	1.2	271
40%	7.65	19.4	0.45	1.1	270
60%	7.72	20.1	0.5	1.2	288
80%	7.81	21.2	0.48	1.3	298
100%	7.78	20.1	0.44	1.2	299
Average	**7.69**	**20.0**	**0.45**	**1.2**	**282**

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PFOA Filter Data Summary Table

Sample Point	Accumulated Volume	Influent 1 PFOA (µg/L)	Effluent A PFOA Concentration (µg/L)
Start	10 UV	0.50	<0.01
20%	54 Liters	0.47	<0.01
40%	108 liters	0.64	<0.01
60%	162 liters	0.40	<0.01
80%	216 liters	0.47	<0.01
100%	270 liters	0.64	<0.01

PFOA Reporting Limit: 0.01 µg/L

PFOS Filter Data Summary Table

Sample Point	Accumulated Volume	Influent 1 PFOS (µg/L)	Effluent 1 PFOS Concentration (µg/L)
Start	10 UV	1.07	<0.01
20%	54 Liters	0.97	<0.01
40%	108 liters	1.04	<0.01
60%	162 liters	1.04	<0.01
80%	216 liters	1.14	0.03
100%	270 liters	0.96	<0.01

PFOS Reporting Limit: 0.01 µg/L

PFOA & PFOS Data Summary Filter

Sample Point	Accumulated Volume	Influent 1 Total PFOA + PFOS Concentration (µg/L)	Effluent 1 Total PFOA + PFOS Concentration (µg/L)	Passing Criteria
Start	10 UV	1.57	<0.01	**Pass**
20%	54 Liters	1.44	<0.01	**Pass**
40%	108 liters	1.68	<0.01	**Pass**
60%	162 liters	1.44	<0.01	**Pass**
80%	216 liters	1.61	0.03	**Pass**
100%	270 liters	1.60	<0.01	**Pass**

Filter System Tested

Disclaimer: The test results are only related to the filter cartridges tested, in the condition received at the laboratory.

Jaime A. Young
Jaime A. Young
Lab Director

QFT LABORATORY, LLC. Test Report

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Send To:

Justin Wang

LARQ

Result: Passed Date: 12/06/2021

Customer Name: LARQ.

Tested To: NSF/ANSI Std 401 Section 7, Group 1

Description: LARQ Pitcher PureVis with Advanced Filter

Test Type: R&D Testing

Project Manager: Jaime Young

Thank you for having your product tested by QFT Laboratory, LLC.
Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization *Jaime A. Young* Date: 12/06/2021
Jaime A. Young
Lab Director

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Standard 401 Emerging Compounds Group 1 Reduction PT 100%: Passed

Manufacturer's Name: LARQ

Sample Type: R&D Testing

Product Type: LARQ Pitcher PureVis with Advanced Filter

Flow Rate: 10 LPD

Filter Capacity: 270 Liters

Conditioning Procedure: Soak for 10 minutes in tap water. Run 1 liter or 1 reservoir through and discard.

Cycle: 40-60 minutes between loads.

Physical Description of Sample: Pour Through

Performance Indicator Device: No, test to 100% of Capacity

Test Description: NSF/ANSI Std 401 Section 7, Group 1– Emerging Compound Reduction Testing Group 1

Trade Designation/Model Number: Gravity Pitcher Filter

Unit Volume: 0.1 L

Performance Standard: NSF/ANSI Std 401 Section 7 – 2020

Pass/Fail Criteria (Emerging Compound Maximum Product Water Concentration)**:**

Atenolol Passing criteria: 30 ng/L; **Carbamazepine** Passing criteria: 200 ng/L

DEET passing criteria: 200 ng/L; **Metolachlor** passing criteria: 200 ng/L

Meprobamate passing criteria: 60 ng/L; **Trimethoprim** passing criteria: 20 ng/L

Linuron passing criteria: 20 ng/L

Decision Rule: Pass/Fail based on simple acceptance of the analytical results above the NSF/ANSI Std limit

Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1 mg/L)
Start	7.58	19.4	268	0.44	1.2
20%	7.31	19.6	281	0.45	1.2
40%	7.5	20.1	280	0.44	1.1
60%	7.62	20.1	240	0.48	1.3
80%	7.78	20.8	250	0.44	1.3
100%	7.62	20.3	248	0.45	1.2
Average	**7.57**	**20.1**	**261**	**0.45**	**1.2**

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Trimethoprim Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Trimethoprim (112-168 ng/L)	Effluent 1 Trimethoprim (ng/L)	Passed/Failed ≤20 ng/L
Start	10 UV	137	5	Pass
20%	54 Liters	157	<1	Pass
40%	108 liters	151	<1	Pass
60%	162 liters	142	2	Pass
80%	216 liters	149	<1	Pass
100%	270 liters	153	<1	Pass

Trimethoprim Reporting Limit: 1 ng/L

Carbamazepine Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Carbamazepine (1120-1680 ng/L)	Effluent 1 Concentration (ng/L)	Passed/Failed ≤200 ng/L
Start	10 UV	982	10	Pass
20%	54 Liters	1141	<10	Pass
40%	108 liters	1426	55	Pass
60%	162 liters	1495	6	Pass
80%	216 liters	1343	170	Pass
100%	270 liters	1379	124	Pass

Carbamazepine Reporting Limit: 10 ng/L

Atenolol Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Atenolol (160-240 ng/L)	Effluent 1 Atenolol (ng/L)	Passed/Failed ≤30 ng/L
Start	10 UV	239	4	Pass
20%	54 Liters	239	<1	Pass
40%	108 liters	200	<1	Pass
60%	162 liters	204	19	Pass
80%	216 liters	206	1	Pass
100%	270 liters	214	1	Pass

Atenolol Detecting Limit: 1 ng/L

Meprobamate Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Meprobamate (320-480 ng/L)	Effluent 1 Meprobamate (ng/L)	Passed/Failed ≤60 ng/L
Start	10 UV	465	9	Pass
20%	54 Liters	239	10	Pass
40%	108 liters	408	<1	Pass
60%	162 liters	409	38	Pass
80%	216 liters	353	44	Pass
100%	270 liters	474	48	Pass

Meprobamate Reporting Limit: 1 ng/L

Metolachlor Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Metolachlor (1120-1680 ng/L)	Effluent 1 Metolachlor (ng/L)	Passed/Failed ≤200 ng/L
Start	10 UV	1279	<10	Pass
20%	54 Liters	1349	<10	Pass
40%	108 liters	1586	<10	Pass
60%	162 liters	1477	112	Pass
80%	216 liters	1452	38	Pass
100%	270 liters	1535	48	Pass

Metolachlor Reporting Limit: 10 ng/L

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DEET Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 DEET (1120-1680 ng/L)	Effluent 1 DEET (ng/L)	Passed/Failed ≤200 ng/L
Start	10 UV	1394	<10	Pass
20%	54 Liters	2186	<10	Pass
40%	108 liters	1220	<10	Pass
60%	162 liters	1337	<10	Pass
80%	216 liters	1136	55	Pass
100%	270 liters	1279	85	Pass

DEET Reporting Limit: 10 ng/L

Linuron Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Linuron (112-184 ng/L)	Effluent 1 (ng/L)	Passed/Failed ≤20 ng/L
Start	10 UV	93	3	Pass
20%	54 Liters	83	<1	Pass
40%	108 liters	135	<1	Pass
60%	162 liters	141	<1	Pass
80%	216 liters	160	<1	Pass
100%	270 liters	133	<1	Pass

Linuron Reporting Limit: 1 ng/L

Filter System Tested

Disclaimer: The test results are only related to the filter cartridges tested, in the condition received at the laboratory.

Jaime A. Young
Jaime A. Young
Lab Director

QFT LABORATORY, LLC. Test Report

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Send To:

Justin Wang

LARQ

Result: Passed Date: 12/06/2021

Customer Name: LARQ

Tested To: NSF/ANSI Std 401 Section 7, Group 2

Description: LARQ Pitcher PureVis with Advanced Filter

Test Type: R&D Testing

Project Manager: Jaime Young

Thank you for having your product tested by QFT Laboratory, LLC.
Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization *Jaime A. Young* Date: 12/06/2021

Jaime A. Young
Lab Director

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NSF/ANSI Standard 401 Emerging Compounds Group 2 Reduction PT 100%: Passed

Manufacturer's Name: LARQ

Sample Type: LARQ Pitcher PureVis with Advanced Filter

Flow Rate: 10 LPD

Filter Capacity: 270 liters

Conditioning Procedure: Soak in tap water for 10 minutes. Run 1 liter or 1 reservoir and discard.

Cycle: 40-60 minutes between loads

Physical Description of Sample: Pour Through

Performance Indicator Device: No, test to 100% of Capacity

Test Description: NSF/ANSI Std. 401, Section7, Group 2 – Emerging Compound Group 2 Reduction Testing

Trade Designation/Model Number: Gravity Pitcher Filter

Unit Volume: 0.1 L

Performance Standard: NSF/ANSI 401, Section 7 – 2020

Pass/Fail Criteria (Emerging compound Maximum Product Water Concentration)**:**

TCEP passing criteria: 700 ng/L

TCPP passing criteria: 700 ng/L

Decision Rule: Pass/Fail based on simple acceptance of the analytical results above the NSF/ANSI Std limit

Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (≥1.0 mg/L)
Start	7.58	19.3	238	0.43	1.2
20%	7.42	19.5	251	0.41	1.2
40%	7.43	19.9	288	0.41	1.1
60%	7.72	20.1	310	0.44	1.1
80%	7.81	22.1	310	0.45	1.2
100%	7.68	20.3	300	0.44	1.2
Average	**7.61**	**20.2**	**283**	**0.43**	**1.2**

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TCEP Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 TCEP (ng/L)	Effluent 1 TCEP Concentration (ng/L)	Passed/Failed
Start	10 UV	5854	<10	Pass
20%	54 Liters	5854	25	Pass
40%	108 liters	5062	30	Pass
60%	162 liters	5178	32	Pass
80%	216 liters	5622	78	Pass
100%	270 liters	5344	104	Pass

TCEP Reporting Limit: 10 ng/L

TCPP Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 TCPP (ng/L)	Effluent 1 TCPP Concentration (ng/L)	Passed/Failed
Start	10 UV	4975	<10	Pass
20%	54 Liters	4975	<10	Pass
40%	108 liters	4271	34	Pass
60%	162 liters	4849	<10	Pass
80%	216 liters	5286	688	Pass
100%	270 liters	5001	422	Pass

TCPP Reporting Limit: 10 ng/L

Filter System Tested

Disclaimer: The test results are only related to the filter cartridges tested, in the condition received at the laboratory.

Jaime A. Young
Jaime A. Young
Lab Director

QFT LABORATORY, LLC. Test Report

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Send To:

Justin Wang

LARQ

Result: Passed Date: 12/06/2021

Customer Name: LARQ

Tested To: NSF/ANSI Standard 401 Emerging Compounds Group 3 Reduction PT 100%

Description: LARQ Pitcher PureVis with Advanced Filter

Test Type: R&D Testing

Project Manager: Jaime Young

Thank you for having your product tested by QFT Laboratory, LLC.
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Report Authorization *Jaime A. Young* Date: 12/06/2021

Jaime A. Young
Lab Director

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NSF/ANSI Standard 401 Emerging Compound Group 3 Reduction PT 100%: Passed

Manufacturer's Name: LARQ

Sample Type: R&D Testing

Product Type: LARQ Pitcher PureVis with Advanced Filter

Flow Rate: 10 LPD

Filter Capacity: 270 liters

Conditioning Procedure: Soak in tap water for 10 minutes. Flush with 1 liter or 1 reservoir and discard.

Cycle: 40-60 minutes between loads

Physical Description of Sample: Pour through

Performance Indicator Device: NA, test to 100% of Capacity

Test Description: NSF/ANSI Std. 401, Section 7, Group 3 – Emerging Compound Group 3 Reduction Testing

Trade Designation/Model Number: Gravity pitcher Filter

Unit Volume: 0.1 L

Performance Standard: NSF/ANSI 401 – 2020

Pass/Fail Criteria (Emerging Compound Maximum Product Water Concentration)**:**

Phenytoin passing criteria: 30 ng/L

Ibuprofen passing criteria: 60 ng/L

Naproxen passing criteria: 20 ng/L

Estrone passing criteria: 20 ng/L

Bisphenol A passing criteria: 300 ng/L

Nonylphenol passing criteria: 200 ng/L

Decision Rule: Pass/Fail based on simple acceptance of the analytical results above the NSF/ANSI Std limit

Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1)
Start	7.48	19.3	256	0.43	1.2
20%	7.21	19.8	288	0.44	1.1
40%	7.51	20.1	290	0.45	1.2
60%	7.31	20.2	280	0.41	1.2
80%	7.58	20.9	320	0.45	1.3
100%	7.62	20.4	308	0.45	1.2
Average	**7.45**	**20.1**	**290**	**0.44**	**1.2**

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Phenytoin Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Phenytoin (160-240 ng/L)	Effluent 1 Phenytoin (ng/L)	Passed/Faile d ≤ 30ng/L
Start	10 UV	166	1	Pass
20%	54 Liters	200	<1	Pass
40%	108 liters	211	<1	Pass
60%	162 liters	175	16	Pass
80%	216 liters	118	8	Pass
100%	270 liters	229	20	Pass

Phenytoin Reporting Limit: 1 ng/L

Naproxen Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Naproxen (112-168 ng/L)	Effluent 1 Naproxen (ng/L)	Passed/Failed ≤20 ng/L
Start	10 UV	135	<1	Pass
20%	54 Liters	200	<1	Pass
40%	108 liters	148	<1	Pass
60%	162 liters	141	<1	Pass
80%	216 liters	181	6	Pass
100%	270 liters	178	<1	Pass

Naproxen Reporting Limit: 1 ng/L

Bisphenol A Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Bisphenol A (1600-2400 ng/L)	Effluent 1 Bisphenol A (ng/L)	Passed/Failed ≤300 ng/L
Start	10 UV	2221	12	Pass
20%	54 Liters	1959	<10	Pass
40%	108 liters	2222	<10	Pass
60%	162 liters	1980	<10	Pass
80%	216 liters	2605	<10	Pass
100%	270 liters	2480	23	Pass

Bisphenol A Reporting Limit: 10 ng/L

Estrone Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Estrone (112-168 ng/L)	Effluent 1 Estrone (ng/L)	Passed/Failed ≤20 ng/L
Start	10 UV	163	2	Pass
20%	54 Liters	229	<1	Pass
40%	108 liters	147	<1	Pass
60%	162 liters	140	<1	Pass
80%	216 liters	159	<1	Pass
100%	270 liters	152	<1	Pass

Estrone Reporting Limit: 1 ng/L

Ibuprofen Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Ibuprofen (320-480 ng/L)	Effluent 1 Ibuprofen (ng/L)	Passed/Failed ≤ 60 ng/L
Start	10 UV	247	<10	Pass
20%	54 Liters	435	<10	Pass
40%	108 liters	434	<10	Pass
60%	162 liters	400	<10	Pass
80%	216 liters	541	<10	Pass
100%	270 liters	491	<10	Pass

Ibuprofen Reporting Limit: 10 ng/L

QFT LABORATORY, LLC.

1041 Glassboro Road Suite E-4, Williamstown NJ 08094
PHONE 856-583-0445 www.enviroteklab.com
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Nonylphenol Filter Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 Nonylphenol (1120-1680 ng/L)	Effluent 1 Nonylphenol (ng/L)	Passed/Failed ≤ 200 ng/L
Start	10 UV	2140	13	Pass
20%	54 Liters	1281	<10	Pass
40%	108 liters	1524	<10	Pass
60%	162 liters	1362	<10	Pass
80%	216 liters	1931	<10	Pass
100%	270 liters	1760	<10	Pass

Nonylphenol Reporting Limit: 10 ng/L

Filter System Tested

Disclaimer: The test results are only related to the filter cartridges tested, in the condition received at the laboratory.

Jaime A. Young
Jaime A. Young
Lab Director

LARQ

Third-party Lab Reports

LARQ Essential Filter

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210537

Study: Efficacy of LARQ Essential Filter Against Chlorine

Date Received: Feb 19, 2021

Date Analyzed: Apr 11, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Essential Filter at removing chlorine based on NSF/ANSI42-2015 (Drinking Water Treatment Units – Aesthetic Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 2 Essential Filters for testing. For this study, the chlorine concentration was 2.0mg/L ±10%. The challenge water was passed through the Essential Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% of the estimated filter life, ending at a net total of 250 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Essential Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	2	Type and specification	PEFR190A
Testing Standard	NSF/ANSI42-2015 (Drinking Water Treatment Units - Aesthetic Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Chlorine		
Remarks	The test plan is as follows: 1. Rated total water volume of 250L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Essential Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% of rated filter life; 4. The chlorine concentration was 2.0mg/L±10%.		

Results:

Figure 1. Testing results for chlorine

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	2.13	0.01	0.01	99.5	99.5
25	2.07	0.01	0.01	99.5	99.5
50	1.97	0.02	0.01	99.0	99.5
75	1.99	0.03	0.03	98.5	98.5
100	2.01	0.04	0.04	98.0	98.0
125	2.07	0.05	0.05	97.6	97.6
150	2.03	0.05	0.06	97.5	97.0
175	2.11	0.07	0.07	96.7	96.7
200	2.07	0.08	0.08	96.1	96.1
225	2.11	0.08	0.09	96.2	95.7
250	2.03	0.11	0.12	94.6	94.1

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210530 and SZ20210531

Study: Efficacy of LARQ Essential Filter Against Cadmium

Date Received: Feb 19, 2021

Date Analyzed: Feb 22, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Essential Filter at removing cadmium based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Essential Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the cadmium concentration was 0.03mg/L ±10%. The challenge water was passed through the Essential Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Essential Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PEFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Cadmium (pH6.5 and pH8.5)		
Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Essential Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the cadmium concentration was 0.03mg/L±10%.		

Results:

Figure 1. Testing results for cadmium at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.0305	0.00006	0.00008	99.8	99.7
62.5	0.0314	0.00065	0.00122	97.9	96.1
125	0.0299	0.00055	0.00071	98.2	97.6
187.5	0.0322	0.00086	0.00082	97.3	97.5
250	0.0312	0.00091	0.00136	97.1	96.0
300	0.0326	0.00090	0.00115	97.2	96.5

Figure 3. Testing results for cadmium at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.0302	0.00013	0.00014	99.6	99.5
62.5	0.0321	0.00068	0.00104	97.9	96.8
125	0.0297	0.00021	0.00045	99.3	98.5
187.5	0.0318	0.00018	0.00045	99.4	98.6
250	0.0318	0.00033	0.00052	99.0	98.4
300	0.0316	0.00084	0.00120	97.3	96.2

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210532 and SZ20210533

Study: Efficacy of LARQ Essential Filter Against Copper

Date Received: Feb 19, 2021

Date Analyzed: May 17, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Essential Filter at removing copper based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Essential Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the copper concentration was 3.0mg/L ±10%. The challenge water was passed through the Essential Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Essential Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PEFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Copper (pH6.5 and pH8.5)		
Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Essential Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the copper concentration was 3.0mg/L±10%.		

Results:

Figure 1. Testing results for copper at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	3.07	0.0416	0.0309	98.6	99.0
62.5	3.08	0.0671	0.0702	97.8	97.7
125	3.12	0.0723	0.0884	97.7	97.2
187.5	3.08	0.0814	0.0869	97.4	97.2
250	2.88	0.0861	0.0973	97.0	96.6
300	3.18	0.0946	0.119	97.0	96.3

Figure 3. Testing results for copper at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	3.04	0.0151	0.0181	99.5	99.4
62.5	3.25	0.111	0.176	96.6	94.6
125	3.05	0.0989	0.200	96.8	93.4
187.5	3.10	0.199	0.270	93.6	91.3
250	3.19	0.209	0.265	93.4	91.7
300	3.03	0.215	0.276	92.9	90.9

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210534 and SZ20210535

Study: Efficacy of LARQ Essential Filter Against Mercury

Date Received: Feb 19, 2021

Date Analyzed: Feb 24, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Essential Filter at removing mercury based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 4 Essential Filters for testing. For this study, the challenge water was adjusted to pH6.5 and pH8.5 with the mercury concentration was 0.006mg/L ±10%. The challenge water was passed through the Essential Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 25%. 50%, 75%, 100%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Essential Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	4	Type and specification	PEFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Mercury (pH6.5 and pH8.5)		

Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Essential Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 25%, 50%, 75%, 100%, 120% of rated filter life; 4. The test water condition was tested at pH6.5 and pH8.5, and the mercury concentration was 0.006mg/L±10%.

Results:

Figure 1. Testing results for mercury at pH 6.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.00633	<0.00007	<0.00007	>98.9	>98.9
62.5	0.00629	0.00008	<0.00007	98.7	>98.9
125	0.00633	0.00016	0.00008	97.5	98.7
187.5	0.00601	0.00019	0.00012	96.8	98.0
250	0.00640	0.00017	0.00010	97.3	98.4
300	0.00617	0.00033	0.00030	94.7	95.1

Figure 3. Testing results for mercury at pH8.5

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	0.00609	0.00009	<0.00007	98.5	>98.9
62.5	0.0065	<0.00007	<0.00007	>98.9	>98.9
125	0.0061	0.00007	<0.00007	98.9	>98.9
187.5	0.00595	0.00009	0.00008	98.5	98.7
250	0.00662	0.00024	0.00025	96.4	96.2
300	0.00618	0.00042	0.00035	93.2	94.3

(MA: 202019005395

Client: LARQ, Inc., 950 Tower Lane, STE 2100, Foster City, CA 94404

Test Number: SZ20210536

Study: Efficacy of LARQ Essential Filter Against Chloroform

Date Received: Feb 19, 2021

Date Analyzed: Apr 15, 2021

Certificate of Analysis

Background:

The objective of this experiment was to test the efficacy of LARQ's Essential Filter at removing chloroform based on NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water) testing guidelines. LARQ provided 2 Essential Filters for testing. For this study, the chloroform concentration was 0.3mg/L ±10%. The challenge water was passed through the Essential Filter at a rate of 1 liter with a 30-60-minute interval. Each sample was taken at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, 110%, and 120% of the estimated filter life, ending at a net total of 300 liters of water filtered through.

Materials and methods:

Name of Sample	LARQ Essential Filter	Source of Sample	Delivery
Applicant	LARQ, Inc.	Client	LARQ, Inc.
Producing Company	SIP Topology Environmental Protection & Purification Co.,Ltd.	Trademark	LARQ
Date and Batch Number of Production	2020/12/29	Sample Description	Solid filter
Quantity of Sample	2	Type and specification	PEFR190A
Testing Standard	NSF/ANSI53-2019 (Drinking Water Treatment Units - Health Effects) and GB/T 5750-2006 (Standard examination methods for drinking water)		
Items of Analysis	Spiking Test: Chloroform		
Remarks	The test plan is as follows: 1. Rated total water volume of 300L, water flow rate of 0.25 L/min; 2. Test method: the LARQ Essential Filter was tested in individual fills of the hopper. For each fill, 1 liter of the spiked water was used as the input. 10 liters of water per day were processed by the sample product. 30-60 min interval for each fill; 3. Sampling test at 0%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, 110%, and 120% of rated filter life; 4. The chloroform concentration was 0.3mg/L±10%.		

Results:

Figure 1. Testing results for chloroform

Water yield (L)	Concentration before filtration (mg/L)	Concentration after filtration (mg/L)		Removal rate (%)	
		Sample 1	Sample 2	Sample 1	Sample 2
0	285	10.1	5.2	96.5	98.2
25	297	11.8	8.8	96.0	97.0
50	315	18.6	16.6	94.1	94.7
75	350	20.4	16.1	94.2	95.4
100	348	24.3	21.2	93.0	93.9
125	306	20.2	17.0	93.4	94.4
150	311	25.8	27.6	91.7	91.1
175	311	19.9	17.8	93.6	94.3
200	287	21.3	18.2	92.6	93.7
225	322	26.8	25.7	91.7	92.0
250	340	34.8	26.9	89.8	92.1
275	301	36.1	31.1	88.0	89.7
300	315	36.1	33.6	88.5	89.3