LifeStraw®

HOME WATER FILTER PITCHERS

Performance & Test Reports

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LifeStraw products have a history of use in some of the harshest conditions around the world, from refugee camps to natural disasters to extreme back-country, our products have to work because lives depend on them. Now we use the same technology in our home line. Our testing and transparency is unparalleled, as is our commitment to social impact and environmental sustainability.

WHAT SETS LIFESTRAW APART

1. Tough and Minimalist: Advanced technology used in the toughest conditions around the world, but designed for your kitchen.

2. LifeStraw is the only water filter brand that owns and operates its own fully equipped ISO certified water laboratory

3. 4-step quality control including microbiological testing over every single batch of filters.

4. We give back: We provide a year of safe water to a child in need for every LifeStraw product sold.

5. Transparent testing: We share all internal and external lab reports publicly, on our website.

6. Unique advanced two stage filtration. Ensures better performance against emerging contaminants like microplastics and PFAs.

7. Sustainable. Certified climate neutral company offsets the need to use single use plastics

8. Enhanced microbiological performance. It's all about the 9s. For example, we report bacteria log removal (99.999999%) for all of our products.

HOW WE TEST OUR PRODUCTS

LifeStraw's testing and transparency is unparalleled and we use the most trusted performance criteria based on protocols established by the World Health Organization, the US EPA, NSF International and the Water Quality Association.

ALL LIFESTRAW PRODUCTS REMOVE:

- LOG 8 (99.999999%) for Bacteria
- LOG 5 (99.999%) for parasites/amoebas/cysts
- LOG 5 (99.999%) for microplastics
- BPA FREE
- FDA Food Grade Materials

4 STEP QUALITY CONTROL

LifeStraw puts 100% of its filters through a rigorous quality control process.

STEP 1: Resistance test at high pressure.
STEP 2: Bubble test to confirm pore size.
STEP 3: Particle test to ensure nothing the size of bacteria or larger can pass through the filters.
STEP 4: We send a sample from every batch for full Bacteria and Protozoa log removal tests.

MICROBIOLOGICAL TESTING – HOW ITS DONE

The only accepted scientific evaluation of microbiological filtration performance is log values (the number of 9s in 99.999999%). PERIOD. All internationally accepted protocols from ANSI, WQA, NSF International, the US EPA, and the World Health Organization evaluate performance through log removal testing. None of these bodies will certify anyone based on pore size; it is ACTUAL PERFORMANCE that matters. LifeStraw products exceed all log-based performance standards.

LifeStraw is the only water filter brand that owns and operates its own fully equipped ISO certified water laboratory capable of performing cutting age tests on microbiological performance longevity, turbidity and other performance indicators. LifeStraw also tests all products through external internationally recognized labs.

LIFESTRAW HOME
WATER FILTER PITCHER
PERFORMANCE DATA

LifeStraw Home water filter pitchers and dispenser utilize a unique dual filtration process that includes an advanced membrane microfilter that removes bacteria, parasites, microplastics combined with an activated carbon and ion exchange filter which reduces chemicals, heavy metals, and other emerging contaminants. This unique combination of filtration enhances performance and also helps to reduce clogging.

FEATURES + PERFORMANCE	NSF/USEPA REMOVAL REQUIREMENT	LS HOME REMOVAL PERFORMANCE	EXTERNAL LAB CERTIFICATION
Bacteria NSF P231/US EPA Brucella melitensis Campylobacter jejuni Francisella tularensis Pseudomonas aeruginosa Shigella Staphylococcus aureus Vibrio cholerae (Cholera) Vibrio parahaemolyticus Yersinia enterocolitica Yersinia pestis Enteropathogenic Escherichia coli (E. coli) Haemophilus influenzae Klebsiella pneumoniae Legionella pneumophila Mycobacterium tuberculosis Mycoplasma pneumoniae Burkholderia pseudomallei Salmonella enterica Salmonella typhi (Typhoid) Streptococcus pneumoniae Streptococcus pyogenes Leptospira	**min. 99.9999% reduction**	**min. 99.999999% reduction**	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Parasites NSF P231/NSF 53 Ascaris lumbricoides Cryptosporidium spp. Entamoeba histolytica Giardia intestinalis Naegleria gruberi Schistosoma mansoni Taenia saginata	**min. 99.9% reduction**	**min. 99.999% reduction**	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Microplastics *(as small as 1um)*	**NSF standard under development**	**min. 99.999% reduction**	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Asbestos	**min. 99.9% reduction**	**min. 99.999% reduction**	**IAPMO US** *(ANSI accredited)*

PERFORMANCE DATA CONTINUED

FEATURES + PERFORMANCE	NSF/USEPA REMOVAL REQUIREMENT	LS HOME REMOVAL PERFORMANCE	EXTERNAL LAB CERTIFICATION
Chlorine NSF/ANSI 42 certified	**min. 50% reduction**	**min. 97% reduction**	**NSF certified**
Pesticides and herbicides: NSF/ANSI 53 standards			
Atrazine	**max output 3 µg/L** (equal to minimum 66.6% reduction)	**max output 0.35 µg/L** (equal to minimum 96.1% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Lindane	**max output 0.2 µg/L** (equal to minimum 90% reduction)	**maximum output < 0.1 µg/L** (equal to minimum 95% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
No standard Glyphosate	**Standard not available yet.** following the NSF/ANSI 53 test protocol for pesticide reduction with influent glyphosate concentration of 2mg/L ±10%. Reference: Max output: 700 µg/L requirements for pesticide and herbicide	**maximum output 1.12 µg/L** (equal to minimum 99.94% reduction)	**IAPMO US** *(ANSI accredited)*
PFOA + PFOS NSF 473 standard	**max output 0.07 µg/L**	**max output <0.01 µg/L**	**IAPMO US** *(ANSI accredited)*
Lead NSF/ANSI 53 certified	**maximum output 5 µg/L** (equal to minimum 96.7% reduction)	**maximum output 1.7 µg/L** (equal to minimum 98.9% reduction)	**IAPMO US** *(ANSI accredited)*
Mercury NSF/ANSI 53 certified	**maximum output 2 µg/L** (equal to minimum 66.6% reduction)	**maximum output < 1 µg/L** (equal to minimum 83.3% reduction)	**NSF certified**
Chromium III NSF/ANSI 53 standards	**maximum output 100 µg/L** (equal to minimum 66.6% reduction)	**maximum output 100 µg/L** (equal to minimum 84.7% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Cadmium NSF/ANSI 53 standards	**maximum output 5 µg/L** (equal to minimum 83.3% reduction)	**maximum output <2 µg/L** (equal to minimum 93.3% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Copper NSF/ANSI 53 standards	**maximum output 1.3 mg/L** (equal to minimum 56.6% reduction)	**maximum output 0.008 mg/L** (equal to minimum 99.7% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Barium NSF/ANSI 53 standards	**maximum output 2 mg/L** (equal to minimum 80% reduction)	**maximum output 1.6 mg/L** (equal to minimum 84% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Atenolol NSF/ANSI 401 - Grp1	**max permissible product water concentration 60ng/L**	**maximum output <0.1 ng/L** (equal to minimum 99.21% reduction)	**Aquadiagnostics/IAPMO India** *(WQA Accredited)*
Carbamazepine NSF/ANSI 401 - Grp1	**max permissible product water concentration 200ng/L**	**maximum output 80 ng/L** (equal to minimum 94.27% reduction)	**IAPMO US** *(ANSI accredited)*
DEET NSF/ANSI 401 - Grp1	**max permissible product water concentration 200ng/L**	**maximum output 21.5 ng/L** (equal to minimum 98.29% reduction)	**IAPMO US** *(ANSI accredited)*
Metolachlor NSF/ANSI 401 - Grp1	**max permissible product water concentration 200ng/L**	**maximum output 48.5 ng/L** (equal to minimum 96.41% reduction)	**IAPMO US** *(ANSI accredited)*
Meprobamate NSF/ANSI 401 - Grp1	**maximum permissible product water concentration 60ng/L**	**maximum output 3.4 ng/L** (equal to minimum 99.29% reduction)	**IAPMO US** *(ANSI accredited)*
Trimethoprim NSF/ANSI 401 - Grp1	**maximum permissible product water concentration 20ng/L**	**maximum output <1 ng/L** (equal to minimum 99.09% reduction)	**IAPMO US** *(ANSI accredited)*
Linuron NSF/ANSI 401 - Grp1	**maximum permissible product water concentration 20ng/L**	**maximum output <1 ng/L** (equal to minimum 99.28% reduction)	**IAPMO US** *(ANSI accredited)*
TCEP NSF/ANSI 401 - Grp 2	**maximum permissible product water concentration 700ng/L**	**maximum output 236.2 ng/L** (equal to minimum 95.94% reduction)	**IAPMO US** *(ANSI accredited)*
TCPP NSF/ANSI 401 - Grp 2	**maximum permissible product water concentration 700ng/L**	**maximum output 410.3 ng/L** (equal to minimum 91.68% reduction)	**IAPMO US** *(ANSI accredited)*
Phenytoin NSF/ANSI 401 - Grp 3	**maximum permissible product water concentration 30ng/L**	**maximum output <1 ng/L** (equal to minimum 99.45% reduction)	**IAPMO US** *(ANSI accredited)*
Ibuprofen NSF/ANSI 401 - Grp 3	**maximum permissible product water concentration 60ng/L**	**maximum output 43.1 ng/L** (equal to minimum 89.12% reduction)	**IAPMO US** *(ANSI accredited)*
Estrone NSF/ANSI 401 - Grp 3	**maximum permissible product water concentration 20ng/L**	**maximum output 8.5 ng/L** (equal to minimum 93.93% reduction)	**IAPMO US** *(ANSI accredited)*
		maximum output 91.3 ng/L (equal to minimum 95.45% reduction)	**IAPMO US** *(ANSI accredited)*

PERFORMANCE DATA CONTINUED

FEATURES + PERFORMANCE	NSF/USEPA REMOVAL REQUIREMENT	LS HOME REMOVAL PERFORMANCE	EXTERNAL LAB CERTIFICATION
Bisphenol A NSF/ANSI 401 - Group 3	**max permissible product water concentration 300ng/L**	**maximum output 13 ng/L** (equal to minimum 91.1% reduction)	**IAPMO US** *(ANSI accredited)*
Naproxen NSF/ANSI 401 - Group 3	**max permissible product water concentration 20ng/L**	**maximum output 138.4 ng/L** (equal to minimum 88.85% reduction)	**IAPMO US** *(ANSI accredited)*
Nonylphenol NSF/ANSI 401 - Group 3	**max permissible product water concentration 200ng/L**		**IAPMO US** *(ANSI accredited)*

NSF TEST REPORTS

NSF International

789 N. Dixboro Road, Ann Arbor, MI 48105 USA

RECOGNIZES

Vestergaard Frandsen Inc.

Baltimore, MD

AS COMPLYING WITH NSF/ANSI 42, 53 AND ALL APPLICABLE REQUIREMENTS.
PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE
AUTHORIZED TO BEAR THE NSF MARK.

ANSI ACCREDITED
ISO/IEC 17065
Product Certification Body
#0216

Certification Program
Accredited by the
American National
Standards Institute

SCC Accredited
CSA/PS
OCPS
Accredits CCN

Certification Program
Accredited by the
Standards Council
of Canada

This certificate is the property of NSF International and must be returned upon request. This certificate remains valid as long as this client has products in Listing for the referenced standards. For the most current and complete Listing information, please access NSF's website (www.nsf.org).

January 6, 2021
Certificate# 2X190 - 01

David Purkiss
Vice President, Global Water Division

NSF International
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TEST REPORT

Send To: 2X190
Mr. Jean-Luc Maddier
Vestergaard Frandsen Inc.
1920 L Street Northwest
Suite 875
DC 20036

Facility: C0353044
PARA MEMBRANES
#38, 1 GIL, MADOGONGDANRO
MADO-MYEON, HWASEONG-SI
41 18542
Korea, Republic of

Result	**PASS**	Report Date	24-AUG-2020
Customer Name	Vestergaard Frandsen Inc.		
Tested To	Standard 53 Lead Reduction pH 6.5 PT 200%		
Description	LifeStraw Home BPA free - 7 Cup		
Test Type	Qualification		
Job Number	J-00364423		
Project Number	W0622570		
Project Manager	Yeree Park		

Thank you for having your product tested by NSF International.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization David Semak **Date** 24-AUG-2020

David Semak - Director, Engineering Laboratory

Standard 53 Lead Reduction pH 6.5 PT 200%: PASS

Manufacturer's Name: PARA MEMBRANES
Job ID: J-00364423
Date of Job Creation: 15-JUN-2020
Date Sample Received: 15-JUN-2020
Date Test Completed: 21-AUG-2020
Sample Type: Qualification
DCC Number: PW09355
§ **Filter Capacity:** 40 Gallons
§ **Flushing Time:** See notes
§ **Maximum Rated Op. Pressure:** 0 PSI
§ **Percent Capacity:** 200%
§ **Physical Description of Sample:** Pour Through Batch System
Standard Version: NSF/ANSI 53-2019: Drinking Water Treatment Units - Health Effects
Test Description: Std 53 Lead 6.5 - LifeStraw Home BPA free - 7 Cup - QQ
§ **Trade Designation/Model Number:** LifeStraw Home BPA free - 7 Cup
Performance Standard: 053
Lead P/F: PASS
Pass/Fail Criteria (Lead): 5 ug/L
Overall Percent Reduction: >99.6 %
Maximum Effluent: <0.5 ug/L
All effluent values are less than or equal to the pass/fail criteria: YES
§ Data provided by customer and can affect the validity of the results

Data Summary Table

Sample Point	Lead (ug/L)		Accumulated Volume (liters)		Flow Rate (lpm)	
	Effluent 1	Effluent 2	Effluent 1	Effluent 2	Effluent 1	Effluent 2
Startup	ND(0.5)	ND(0.5)	1	1	0.23	0.21
50%	ND(0.5)	ND(0.5)	77	77	0.28	0.25
100%	ND(0.5)	ND(0.5)	152	152	0.38	0.27
150%	ND(0.5)	ND(0.5)	229	229	0.22	0.23
180%	ND(0.5)	ND(0.5)	273	273	0.25	0.25
200%	ND(0.5)	ND(0.5)	304	304	0.25	0.25

Sample Point	Lead (ug/L)
	Influent
Startup	140
50%	130
100%	140
150%	150
180%	150
200%	120

Lead Detection Limit: 0.5 ug/L

Data Analysis Table

Sample Point	Inf. Average (ug/L)	Average (ug/L)		Eff. % Reduction (Ave. Inf.) (%)		
		Effluent 1	Effluent 2	All Effluent	Effluent 1	Effluent 2
150%	140	ND(0.5)	ND(0.5)	99.6	99.6	99.6
180%	140	ND(0.5)	ND(0.5)	99.6	99.6	99.6
200%	140	ND(0.5)	ND(0.5)	99.6	99.6	99.6

Sample Point	Ave. % Reduction (%)	Maximum (ug/L)	Validated Capacity with PID	Validated Capacity without PID	Met Minimum Criteria
150%	99.6	ND(0.5)	191	114	YES
180%	99.6	ND(0.5)	228	136	YES
200%	99.6	ND(0.5)	253	152	YES

Inf. Average: Influent Average
Average: All Effluent Average
Eff. % Reduction (Ave. Inf.): Effluent percent reduction calculated from average of previous influent values.
Ave. % Reduction: Percent reduction calculated from all prior influents and effluents.
Maximum: Maximum Effluent
Met Minimum Criteria: All effluent values are less than or equal to the pass/fail criteria
Validated Capacity with PID: Validated Capacity with Performance Indication Device
Validated Capacity without PID: Validated Capacity without Performance Indication Device

Water Characteristics

		Range		
Characteristic	**Units**	**Minimum**	**Average**	**Maximum**
Alkalinity as CaCO3	mg CaCO3/L	10	11	12
Hardness, Total	mg CaCO3/L	23	24	25
Solids, Total Dissolved	mg/L	54	58	63
Temperature	degrees C	21	21	21
Turbidity	NTU	ND(0.1)	ND(0.1)	ND(0.1)
pH		6.44		6.56

All analyses performed at NSF International, 789 N. Dixboro Road, Ann Arbor MI 48105

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Calculation Definitions

All calculations use values as presented in the Data Summary Table and rounding is performed only at the conclusion of the calculation.

Percent Reduction Calculations

Overall Percent Reduction:

Influent Average includes all influents.
Effluent Average includes all effluents.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction Calculations

Influent Average Percent Reduction for Current Influent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents for the current sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction for Current Effluent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent includes the effluent value for the specific sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent}}{\text{Influent Average}} * 100$$

Average Percent Reduction Calculations

Average Percent Reduction:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents up to and including the current sample point.

$$\text{\% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Test Configuration

HOME PITCHER

NSF 53 LEAD REDUCTION TEST *(CERTIFIED BY NSF)*

NSF International
789 N. Dixboro Rd. Ann Arbor, MI 48105, USA
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

Live Safer™

TEST REPORT

Send To: 2X190
Mr. Jean-Luc Maddier
Vestergaard Frandsen Inc.
1920 L Street Northwest
Suite 875
DC 20036

Facility: C0353044
PARA MEMBRANES
#38, 1 GIL, MADOGONGDANRO
MADO-MYEON, HWASEONG-SI
41 18542
Korea, Republic of

Result	**PASS**	Report Date	25-AUG-2020

Customer Name	Vestergaard Frandsen Inc.
Tested To	Standard 53 Lead Reduction pH 8.5 PT 200%
Description	LifeStraw Home BPA free - 7 Cup
Test Type	Qualification
Job Number	J-00364424
Project Number	W0622570
Project Manager	Yeree Park

Thank you for having your product tested by NSF International.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization David Semak

Date 25-AUG-2020

Semak, David - Director, Engineering Laboratory

Standard 53 Lead Reduction pH 8.5 PT 200%: PASS

Manufacturer's Name: PARA MEMBRANES
Job ID: J-00364424
Date of Job Creation: 15-JUN-2020
Date Sample Received: 15-JUN-2020
Date Test Completed: 24-AUG-2020
Sample Type: QQ
DCC Number: PW09355
§ **Filter Capacity:** 40 Gallons
§ **Flushing Time:** See notes
§ **Maximum Rated Op. Pressure:** 0 PSI
§ **Percent Capacity:** 200%
§ **Physical Description of Sample:** Pour Through Batch System
Standard Version: NSF/ANSI 53-2019: Drinking Water Treatment Units - Health Effects
Test Description: Std 53 Lead 8.5 - LifeStraw Home BPA free - 7 Cup - QQ
§ **Trade Designation/Model Number:** LifeStraw Home BPA free - 7 Cup
Performance Standard: 053
Lead P/F: PASS
Pass/Fail Criteria (Lead): 5 ug/L
Overall Percent Reduction: 99.5 %
Maximum Effluent: 1.7 ug/L
All effluent values are less than or equal to the pass/fail criteria: YES

§ Data provided by customer and can affect the validity of the results

HOME PITCHER

NSF 53 LEAD REDUCTION TEST *(CERTIFIED BY NSF)*

Data Summary Table

Sample Point	Lead (ug/L)		Accumulated Volume (liters)		Fine Particulate (%)
	Effluent 1	Effluent 2	Effluent 1	Effluent 2	Influent
Startup	ND(0.5)	ND(0.5)	1	1	50
50%	ND(0.5)	ND(0.5)	77	77	26
100%	ND(0.5)	ND(0.5)	152	152	44
150%	1.7	1.6	229	229	24
180%	ND(0.5)	ND(0.5)	273	273	25
200%	ND(0.5)	ND(0.5)	304	304	75

Sample Point	Flow Rate (lpm)		Lead (ug/L)	Total Particulate (%)	pH
	Effluent 1	Effluent 2	Influent	Influent	Influent
Startup	0.25	0.21	140	29	8.47
50%	0.27	0.25	150	36	8.31
100%	0.32	0.28	150	36	8.48
150%	0.33	0.29	160	41	8.49
180%	0.32	0.28	150	27	8.52
200%	0.28	0.24	140	29	8.47

Lead Detection Limit: 0.5 ug/L
pH Detection Limit: 0.01

Data Analysis Table

Sample Point	Inf. Average (ug/L)	Average (ug/L)		Eff. % Reduction (Ave. Inf.) (%)		
		Effluent 1	Effluent 2	All Effluent	Effluent 1	Effluent 2
150%	150	0.8	0.8	98.9	98.9	98.9
180%	150	0.7	0.7	>99.7	>99.7	>99.7
200%	150	0.7	0.7	>99.7	>99.7	>99.7

Sample Point	Ave. % Reduction (%)	Maximum (ug/L)	Met Minimum Criteria
150%	99.5	1.7	YES
180%	99.5	1.7	YES
200%	99.5	1.7	YES

Inf. Average: Influent Average

Average: All Effluent Average

Eff. % Reduction (Ave. Inf.): Effluent percent reduction calculated from average of previous influent values.

Ave. % Reduction: Percent reduction calculated from all prior influents and effluents.

Maximum: Maximum Effluent

Met Minimum Criteria: All effluent values are less than or equal to the pass/fail criteria

Water Characteristics

		Range		
Characteristic	**Units**	**Minimum**	**Average**	**Maximum**
Alkalinity as CaCO3	mg CaCO3/L	98	99	100
Chlorine, Total	mg/L	0.42	0.43	0.44
Hardness, Total	mg CaCO3/L	100	110	120
Temperature	degrees C	22	22	22
pH		8.45		8.57
Total Particulate	%	29	34	38

All analyses performed at NSF International, 789 N. Dixboro Road, Ann Arbor MI 48105

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Percent Reduction Calculations

Overall Percent Reduction:

Influent Average includes all influents.
Effluent Average includes all effluents.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction Calculations

Influent Average Percent Reduction for Current Influent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents for the current sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction for Current Effluent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent includes the effluent value for the specific sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average} - \text{Effluent}}{\text{Influent Average}} * 100$$

Average Percent Reduction Calculations

Average Percent Reduction:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents up to and including the current sample point.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Percent Total Particulate:

Total Lead is the total soluble and particulate lead in the sample.
0.1 µ Filtered Lead is the total soluble lead.

$$\text{Percent Total Particulate} = \frac{\text{Total Lead} - \text{0.1 µ Filtered Lead}}{\text{Total Lead}} * 100$$

Percent Fine Particulate:

0.1 µ Filtered Lead is the total soluble lead.
1.2 µ Filtered Lead is the total soluble and particulate lead that is less than 1.2 microns in size.

$$\text{Percent Fine Particulate} = \frac{\text{1.2 µ Filtered Lead} - \text{0.1 µ Filtered Lead}}{\text{Total Lead} - \text{0.1 µ Filtered Lead}} * 100$$

Test Configuration

NSF International
789 N. Dixboro Rd. Ann Arbor, MI 48105, USA
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

TEST REPORT

Send To: 2X190
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1920 L Street Northwest
Suite 875
DC 20036

Facility: C0353044
PARA MEMBRANES
#38, 1 GIL, MADOGONGDANRO
MADO-MYEON, HWASEONG-SI
41 18542
Korea, Republic of

Result	**PASS**	Report Date	01-SEP-2020
Customer Name	Vestergaard Frandsen Inc.		
Tested To	Standard 53 Mercury Reduction pH 6.5 PT 200%		
Description	LifeStraw Home BPA free - 7 Cup		
Test Type	Qualification		
Job Number	J-00364425		
Project Number	W0622570		
Project Manager	Yeree Park		

Thank you for having your product tested by NSF International.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization David Semak **Date** 01-SEP-2020

David Semak - Director, Engineering Laboratory

Standard 53 Mercury Reduction pH 6.5 PT 200%: PASS

Manufacturer's Name: PARA MEMBRANES
Job ID: J-00364425
Date of Job Creation: 15-JUN-2020
Date Sample Received: 15-JUN-2020
Date Test Completed: 31-AUG-2020
Sample Type: Qualification
DCC Number: PW09355
§ **Filter Capacity:** 40 Gallons
§ **Flushing Time:** See notes
§ **Maximum Rated Op. Pressure:** 0 PSI
§ **Percent Capacity:** 200%
§ **Physical Description of Sample:** Pour Through Batch System
Standard Version: NSF/ANSI 53-2019: Drinking Water Treatment Units - Health Effects
Test Description: Std 53 Mercury 6.5 - LifeStraw Home BPA free - 7 Cup - QQ
§ **Trade Designation/Model Number:** LifeStraw Home BPA free - 7 Cup
Performance Standard: 053
Mercury P/F: PASS
Pass/Fail Criteria (Mercury): 2 ug/L
Overall Percent Reduction: 89.9 %
Maximum Effluent: 1.0 ug/L
All effluent values are less than or equal to the pass/fail criteria: YES
§ Data provided by customer and can affect the validity of the results

Data Summary Table

Sample Point	Mercury (ug/L)			Accumulated Volume (liters)	
	Influent	Effluent 1	Effluent 2	Effluent 1	Effluent 2
Startup	5.7	ND(0.2)	ND(0.2)	1	1
50%	5.7	ND(0.2)	ND(0.2)	78	78
100%	5.8	0.6	0.6	153	153
150%	6.0	0.7	0.9	228	228
180%	6.2	0.7	0.9	273	273
200%	5.7	0.9	1.0	304	304

Sample Point	Flow Rate (lpm)	
	Effluent 1	Effluent 2
Startup	0.38	0.32
50%	0.51	0.56
100%	0.50	0.53
150%	0.67	0.72
180%	0.56	0.60
200%	0.52	0.52

Mercury Detection Limit: 0.2 ug/L

Data Analysis Table

Sample Point	Inf. Average (ug/L)	Average (ug/L)		Eff. % Reduction (Ave. Inf.) (%)		
		Effluent 1	Effluent 2	All Effluent	Effluent 1	Effluent 2
150%	5.8	0.4	0.5	86.2	87.9	84.5
180%	5.9	0.5	0.6	86.4	88.1	84.7
200%	5.8	0.6	0.6	83.8	84.6	82.9

Sample Point	Ave. % Reduction (%)	Maximum (ug/L)	Validated Capacity with PID	Validated Capacity without PID	Met Minimum Criteria
150%	92.2	0.9	190	114	YES
180%	91.2	0.9	228	136	YES
200%	89.9	1.0	253	152	YES

Inf. Average: Influent Average

Average: All Effluent Average

Eff. % Reduction (Ave. Inf.): Effluent percent reduction calculated from average of previous influent values.

Ave. % Reduction: Percent reduction calculated from all prior influents and effluents.

Maximum: Maximum Effluent

Met Minimum Criteria: All effluent values are less than or equal to the pass/fail criteria

Validated Capacity with PID: Validated Capacity with Performance Indication Device

Validated Capacity without PID: Validated Capacity without Performance Indication Device

Water Characteristics

		Range		
Characteristic	**Units**	**Minimum**	**Average**	**Maximum**
Alkalinity as CaCO3	mg CaCO3/L	10	10	11
Hardness, Total	mg CaCO3/L	16	18	21
Solids, Total Dissolved	mg/L	43	50	57
Temperature	degrees C	20	21	22
Turbidity	NTU	ND(0.1)	ND(0.1)	ND(0.1)
pH		6.47		6.62

All analyses performed at NSF International, 789 N. Dixboro Road, Ann Arbor MI 48105

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Calculation Definitions

All calculations use values as presented in the Data Summary Table and rounding is performed only at the conclusion of the calculation.

Percent Reduction Calculations

Overall Percent Reduction:

Influent Average includes all influents.
Effluent Average includes all effluents.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction Calculations

Influent Average Percent Reduction for Current Influent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents for the current sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction for Current Effluent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent includes the effluent value for the specific sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent}}{\text{Influent Average}} * 100$$

Average Percent Reduction Calculations

Average Percent Reduction:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents up to and including the current sample point.

$$\text{\% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Test Configuration

NSF International
789 N. Dixboro Rd. Ann Arbor, MI 48105, USA
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

TEST REPORT

Send To: 2X190
Mr. Jean-Luc Maddier
Vestergaard Frandsen Inc.
1920 L Street Northwest
Suite 875
DC 20036

Facility: C0353044
PARA MEMBRANES
#38, 1 GIL, MADOGONGDANRO
MADO-MYEON, HWASEONG-SI
41 18542
Korea, Republic of

Result	**PASS**	Report Date	01-SEP-2020
Customer Name	Vestergaard Frandsen Inc.		
Tested To	Standard 53 Mercury Reduction pH 8.5 PT 200%		
Description	LifeStraw Home BPA free - 7 Cup		
Test Type	Qualification		
Job Number	J-00364426		
Project Number	W0622570		
Project Manager	Yeree Park		

Thank you for having your product tested by NSF International.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization David Semak **Date** 01-SEP-2020

David Semak - Director, Engineering Laboratory

Standard 53 Mercury Reduction pH 8.5 PT 200%: PASS

Manufacturer's Name: PARA MEMBRANES
Job ID: J-00364426
Date of Job Creation: 15-JUN-2020
Date Sample Received: 15-JUN-2020
Date Test Completed: 31-AUG-2020
Sample Type: Qualification
DCC Number: PW09355
§ **Filter Capacity:** 40 Gallons
§ **Flushing Time:** See notes
§ **Maximum Rated Op. Pressure:** 0 PSI
§ **Percent Capacity:** 200%
§ **Physical Description of Sample:** Pour Through Batch System
Standard Version: NSF/ANSI 53-2019: Drinking Water Treatment Units - Health Effects
Test Description: Std 53 Mercury 8.5 - LifeStraw Home BPA free - 7 Cup - QQ
§ **Trade Designation/Model Number:** LifeStraw Home BPA free - 7 Cup
Performance Standard: 053
Mercury P/F: PASS
Pass/Fail Criteria (Mercury): 2 ug/L
Overall Percent Reduction: 94.5 %
Maximum Effluent: 0.5 ug/L
All effluent values are less than or equal to the pass/fail criteria: YES
§ Data provided by customer and can affect the validity of the results

Data Summary Table

Sample Point	Mercury (ug/L)			Accumulated Volume (liters)	
	Influent	Effluent 1	Effluent 2	Effluent 1	Effluent 2
Startup	5.8	ND(0.2)	ND(0.2)	1	1
50%	5.8	ND(0.2)	ND(0.2)	77	77
100%	5.0	0.3	0.3	153	153
150%	5.7	0.4	0.3	228	228
180%	6.5	0.5	0.4	273	273
200%	5.6	0.4	0.4	304	304

Sample Point	Flow Rate (lpm)	
	Effluent 1	Effluent 2
Startup	0.29	0.26
50%	0.39	0.43
100%	0.46	0.42
150%	0.61	0.52
180%	0.61	0.48
200%	0.43	0.37

Mercury Detection Limit: 0.2 ug/L

Data Analysis Table

Sample Point	Inf. Average (ug/L)	Average (ug/L)		Eff. % Reduction (Ave. Inf.) (%)		
		Effluent 1	Effluent 2	All Effluent	Effluent 1	Effluent 2
150%	5.6	0.3	0.2	93.7	92.8	94.6
180%	5.8	0.3	0.3	92.2	91.3	93.1
200%	5.7	0.3	0.3	93.0	93.0	93.0

Sample Point	Ave. % Reduction (%)	Maximum (ug/L)	Validated Capacity with PID	Validated Capacity without PID	Met Minimum Criteria
150%	95.3	0.4	190	114	YES
180%	94.8	0.5	228	136	YES
200%	94.5	0.5	253	152	YES

Inf. Average: Influent Average

Average: All Effluent Average

Eff. % Reduction (Ave. Inf.): Effluent percent reduction calculated from average of previous influent values.

Ave. % Reduction: Percent reduction calculated from all prior influents and effluents.

Maximum: Maximum Effluent

Met Minimum Criteria: All effluent values are less than or equal to the pass/fail criteria

Validated Capacity with PID: Validated Capacity with Performance Indication Device

Validated Capacity without PID: Validated Capacity without Performance Indication Device

Water Characteristics

		Range		
Characteristic	**Units**	**Minimum**	**Average**	**Maximum**
Alkalinity as CaCO3	mg CaCO3/L	120	120	120
Hardness, Total	mg CaCO3/L	130	140	140
Solids, Total Dissolved	mg/L	290	290	290
Temperature	degrees C	22	22	22
Turbidity	NTU	0.1	0.2	0.3
pH		8.36		8.47

All analyses performed at NSF International, 789 N. Dixboro Road, Ann Arbor MI 48105

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Calculation Definitions

All calculations use values as presented in the Data Summary Table and rounding is performed only at the conclusion of the calculation.

Percent Reduction Calculations

Overall Percent Reduction:

Influent Average includes all influents.
Effluent Average includes all effluents.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction Calculations

Influent Average Percent Reduction for Current Influent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents for the current sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction for Current Effluent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent includes the effluent value for the specific sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average - Effluent}}{\text{Influent Average}} * 100$$

Average Percent Reduction Calculations

Average Percent Reduction:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents up to and including the current sample point.

$$\text{\% Reduction} = \frac{\text{Influent Average - Effluent Average}}{\text{Influent Average}} * 100$$

Test Configuration

NSF International
789 N. Dixboro Rd. Ann Arbor, MI 48105, USA
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

TEST REPORT

Send To: 2X190
Mr. Jean-Luc Maddier
Vestergaard Frandsen Inc.
1920 L Street Northwest
Suite 875
DC 20036

Facility: C0353044
PARA MEMBRANES
#38, 1 GIL, MADOGONGDANRO
MADO-MYEON, HWASEONG-SI
41 18542
Korea, Republic of

Result	**PASS**	Report Date	21-JUL-2020
Customer Name	Vestergaard Frandsen Inc.		
Tested To	Standard 42 Chlorine Reduction, Free Available PT		
Description	LifeStraw Home BPA free - 7 Cup		
Test Type	Qualification		
Job Number	J-00362096		
Project Number	W0614851		
Project Manager	Yeree Park		

Thank you for having your product tested by NSF International.

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

Report Authorization David Semak **Date** 21-JUL-2020

David Semak - Director, Engineering Laboratory

Standard 42 Chlorine Reduction, Free Available PT: PASS

Manufacturer's Name: PARA MEMBRANES
Job ID: J-00362096
Date of Job Creation: 15-JUN-2020
Date Sample Received: 15-JUN-2020
Date Test Completed: 16-JUL-2020
Sample Type: Qualification
DCC Number: PW09355
§ **Filter Capacity:** 40 Gallons
§ **Flushing Time:** See notes
§ **Maximum Rated Op. Pressure:** 0 PSI
NSF 55 Test Option: Not Applicable
§ **Percent Capacity:** 100%
§ **Physical Description of Sample:** Pour Through Batch System
Standard Version: NSF/ANSI 42-2019: Drinking Water Treatment Units - Aesthetic Effects
Test Description: Std 42 chlorine - LifeStraw Home BPA free - 7 Cup - QQ
§ **Trade Designation/Model Number:** LifeStraw Home BPA free - 7 Cup
Performance Standard: 042

Pass/Fail Criteria (Chlorine, Free Available %A): 50 %
Chlorine, Free Available P/F: PASS
Overall Percent Reduction: >97.4 %

§ Data provided by customer and can affect the validity of the results

Data Summary Table

Sample Point	Chlorine, Free Available (mg/L)			Accumulated Volume (liters)	
	Influent	Effluent 1	Effluent 2	Effluent 1	Effluent 2
Startup	2.0	ND(0.05)	ND(0.05)	1	1
10%	1.9	ND(0.05)	ND(0.05)	19	19
20%	2.0	ND(0.05)	ND(0.05)	32	32
30%	1.8	ND(0.05)	ND(0.05)	47	47
40%	1.9	ND(0.05)	ND(0.05)	62	62
50%	1.9	ND(0.05)	ND(0.05)	76	76
60%	2.0	ND(0.05)	ND(0.05)	92	92
70%	2.0	ND(0.05)	ND(0.05)	107	107
80%	1.8	ND(0.05)	ND(0.05)	123	123
90%	2.0	ND(0.05)	ND(0.05)	137	137
100%	2.1	ND(0.05)	ND(0.05)	152	152

Sample Point	Flow Rate (lpm)	
	Effluent 1	Effluent 2
Startup	0.34	0.26
10%	0.35	0.37
20%	0.42	0.39
30%	0.43	0.40
40%	0.43	0.41
50%	0.46	0.41
60%	0.47	0.42
70%	0.46	0.44
80%	0.49	0.46
90%	0.44	0.42
100%	0.46	0.45

Chlorine, Free Available Detection Limit: 0.05 mg/L

Data Analysis Table

Sample Point	Inf. Average (mg/L)	Average (mg/L)		Eff. % Reduction (Ave. Inf.) (%)		Ave. % Reduction (%)
		Effluent 1	Effluent 2	Effluent 1	Effluent 2	
30%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
40%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
50%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
60%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
70%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
80%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
90%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4
100%	1.9	ND(0.05)	ND(0.05)	97.4	97.4	97.4

Sample Point	Maximum (mg/L)		Met Minimum Criteria
	Effluent 1	Effluent 2	
30%	ND(0.05)	ND(0.05)	YES
40%	ND(0.05)	ND(0.05)	YES
50%	ND(0.05)	ND(0.05)	YES
60%	ND(0.05)	ND(0.05)	YES
70%	ND(0.05)	ND(0.05)	YES
80%	ND(0.05)	ND(0.05)	YES
90%	ND(0.05)	ND(0.05)	YES
100%	ND(0.05)	ND(0.05)	YES

Inf. Average: Influent Average

Average: All Effluent Average

Eff. % Reduction (Ave. Inf.): Effluent percent reduction calculated from average of previous influent values.

Ave. % Reduction: Percent reduction calculated from all prior influents and effluents.

Maximum: Maximum Effluent

Met Minimum Criteria: Ninety percent of prior effluent percent reduction sample points and this sample point are greater than or equal to the pass/fail criteria.

Water Characteristics

		Range		
Characteristic	**Units**	**Minimum**	**Average**	**Maximum**
Solids, Total Dissolved	mg/L	250	250	250
Temperature	degrees C	21	21	21
Total Organic Carbon	mg/L	2.2	2.2	2.2
Turbidity	NTU	ND(0.1)	ND(0.1)	ND(0.1)
pH		7.06		7.06

All analyses performed at NSF International, 789 N. Dixboro Road, Ann Arbor MI 48105

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

Calculation Definitions

All calculations use values as presented in the Data Summary Table and rounding is performed only at the conclusion of the calculation.

Percent Reduction Calculations

Overall Percent Reduction:

Influent Average includes all influents.
Effluent Average includes all effluents.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Influent Average Percent Reduction Calculations

Influent Average Percent Reduction for Current Effluent Point:

Influent Average includes all influents up to and including the current sample point.
Effluent includes the effluent value for the specific sample point.

$$\text{Average \% Reduction} = \frac{\text{Influent Average} - \text{Effluent}}{\text{Influent Average}} * 100$$

Average Percent Reduction Calculations

Average Percent Reduction:

Influent Average includes all influents up to and including the current sample point.
Effluent Average includes all effluents up to and including the current sample point.

$$\% \text{ Reduction} = \frac{\text{Influent Average} - \text{Effluent Average}}{\text{Influent Average}} * 100$$

Test Configuration

INDEPENDENT TEST REPORTS

LifeStraw®

TEST REPORT

5001 East Philadelphia Street
Ontario, California – USA 91761-2816
Ph: 909.472.4100 | Fax: 909.472.4243
http://www.iapmortl.org

Report Number: **2585-21001** **Project No.:** 37135

Report Issued: November 5, 2021

Report To: Vestergaard Frandsen Inc

Source of Samples: Tested by QFT Laboratory Inc. Williamstown NJ

Location of Testing: 1041 Glassboro Rd. Suite D-1 Williamstown NJ 08094

Dates of Evaluation: October 21, 2021

Product Description: LifeStraw Home Pitcher – Pour through

Reference Standard: NSF/ANSI 53-2020

Scope of Evaluation: Qualification of the sample for Asbestos Reduction per NSF/ANSI 53-2020.

Conclusion: **The samples described in the "Product Description" were evaluated according to the referenced standard, results are below.**

Report Status: **IN COMPLIANCE**

Reviewed By,

Sal Aridi, Director

Requirements for Compliance:
The system shall reduce the influent asbestos fiber concentration in the range of 10^7 to 10^8 fibers per liter by at least 99%

Table One: Specifications of testing

Number of Units	Two
Conditioning	Run for 1 minute
Sampling	Per NSF 53
Flow Rate	2 GPD (7.57 LPD)
Filter Capacity	10 L
Unit Volume	0.1 L
Cycle	Continuous
PID	None
Deviations from Standard	none

Influent water characteristics:

Sample Point	pH (7.5±0.5)	Temperature (20±2.5°C)	TDS (200 to 500 mg/L)	Turbidity: Test Water (<1NTU)	Hardness (<170 mg/L)	TOC (>1 mg/L)	Turbidity: Dust Loading Water (>10NTU)
10 L	7.40	20.1	252	0.42	108	1.1	11.4
Average	**7.40**	**20.1**	**252**	**0.42**	**108**	**1.1**	**11.4**

Filter #1 Data Summary Table

Sample Point	Influent 1 (fibers/L)	Effluent 1 Concentration (fibers/L)	% Reduction
10 L	5.1842×10^7	10	99.99998%

Asbestos Reporting Limit: 10 fibers/L

Filter #2 Data Summary Table

Sample Point	Influent 1 (fibers/L)	Effluent 1 Concentration (fibers/L)	% Reduction
10 L	5.1842×10^7	12	99.99997%

Asbestos Reporting Limit: 10 fibers/L

Figure 1- Filter System Tested

Figure 2- Filter System tested

TEST REPORT

5001 East Philadelphia Street
Ontario, California – USA 91761-2816
Ph: 909.472.4100 | Fax: 909.472.4243
http://www.iapmortl.org

Report Number: **QFT 401** **Lab Project No. VesQFT002**

Report Issued: June 26, 2019

Client: Life straw
Vietnam

Contact: Le Thu Cao

Source of Sample: The samples were shipped to subcontract laboratory QFT Laboratory, LLC and received in good condition.

Testing Location: **QFT Laboratory, LLC**
41 D Germay Drive
Wilmington, DE 19804

Date of Testing: June 1 – June 19, 2019

Sample Description: LS Home Pitcher, Gravity Filter – without warning indicator

Scope of Testing: NSF/ANSI 401-2017a, Section 7, non-plumbed pour-through-type batch treatment system with a manufacturer specified use pattern. Testing subcontracted to QFT Laboratory, LLC.

Conclusion: **The samples passed the requirements of NSF/ANSI 401-2017a for section 7.2 contaminant reduction claims only.**

Reviewed by,
Thomas P. Palkon

Primary Standards: NSF/ANSI 401a, Section 7 Performance Claims

7.1 General requirements

7.1.1 Aesthetic effects claims – N/A

7.1.2 Health effects claims – N/A

7.1.3 Apparatus – N/A for gravity type products

7.2 Chemical reduction claims

7.2.1 Chemical reduction testing-active media

7.2.1.1 Apparatus – N/A

7.2.1.2 Analytical methods – Sample analysis was conducted in accordance with methods referenced in the standard.

7.2.1.3 Premature filter plugging – N/A

7.2.1.4 General test water – Test water used for the challenge tanks complies with the all general test water requirements.

7.2.1.5 Cycle time – N/A

7.2.1.6 Methods

7.2.1.6.1 plumbed-in system without reservoirs and all faucet-mounted systems – N/A

7.2.1.6.1.1 Refrigerator filters without integral flow control – N/A

7.2.1.6.1.2 Refrigerators filters without integral flow control, with water dispenser and ice maker – N/A

7.2.1.6.2 Plumbed-in systems with reservoirs – N/A

7.2.1.6.3 Non plumbed pour-through-type batch treatment systems – N/A

7.2.1.6.3.1 Systems with a manufacturer's recommended use patter – Use Pattern: Four 500 ml fills followed by a 20-minute rest, process 40 liters of influent water per day. Leave water in the pitcher overnight so that the filter does not dry out.

7.2.1.6.3.2 Systems without a manufacturer's recommended use pattern – N/A

7.2.1.6.3.3 Mouth drawn drinking water treatment units – N/A

7.2.1.6.3.4 Squeeze bottle drinking water treatment units – N/A

7.2.1.7 Sampling – System does not have a performance indication device. Samples were collected after start up, 50%, 100%, 180% and 200% of the estimated capacity of 150 liters.

7.2.2 Chemical reduction claims – RO device with carbon media – N/A

Executive Summary
LS Home Pitcher filters reduced the emerging chemical contaminants listed in NSF/ANSI 401 below the allowable levels. The filtered water did not contain the contaminants above the allowable effluent levels throughout the tested volume of 300Liters. The tested LS Home Pitcher products complied with NSF/ANSI 401 – 2017a standard in reducing the emerging chemical contaminants throughout its claimed lifetime of 150L.

Test Conditions

- Manufacturer's Name: Vestergaard
- Sample Type: Qualification
- Product: Batch Filter
- Flow Rate: 40 liters/ day
- Filter Capacity: 150 liters
- Cycle: Pour 500 mL fills four times followed by 20-minute rest. Leave Filtered water in the pitcher to prevent drying of the cartridge during overnight stagnation.
- Conditioning Procedure: Remove and rinse housing, remove filter housing cap and install active carbon and ion exchange filter, fill housing with water, cover and shake for 30 seconds to remove air bubbles, discard water, place housing in pitcher and ensure water spouts align, fill with water again and discard filtered water
- Physical Description of Sample: Gravity Filter
- Performance Indicator Device: No, test to 200% Capacity
- Test Description: NSF/ANSI 401 chemical Reduction Testing
- Trade Designation/Model Number: LS Home Pitcher
- Unit Volume: 0.1 L
- Performance Standard: NSF/ANSI 401 – 2017a
- Pass/Fail Criteria (Emerging Compound Maximum Product Water Concentration):
  Group 1
  - 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

  Group 2
  - TCEP passing criteria: 700 ng/L
  - TCPP passing criteria: 700 ng/L

  Group 3
  - Phenytoin passing criteria: 30 ng/L
  - Ibuprofen passing criteria: 60 ng/L
  - Estrone passing criteria: 20 ng/L
  - Bisphenol A passing criteria: 300 ng/L
  - Naproxen passing criteria: 20 ng/L
  - Nonylphenol passing criteria: 200 ng/L

Test Results Group 1

Meprobamate Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	390	<0.1	>99.74%
50%	75 Liters	532	<0.1	>99.81%
100%	150 liters	481	3.4	>99.29%
150%	225 liters	333	<0.1	>99.70%
180%	270 liters	381	<0.1	>99.74%
200%	300 liters	468	<0.1	>99.79%

Meprobamate Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	390	<0.1	>99.74%
50%	75 Liters	532	<0.1	>99.81%
100%	150 liters	481	<0.1	>99.79%
150%	225 liters	333	<0.1	>99.70%
180%	270 liters	381	<0.1	>99.74%
200%	300 liters	468	<0.1	>99.74%

Meprobamate Detection Limit: 0.1 ng/L

Atenolol Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	199	<0.1	>99.50%
50%	75 Liters	138	<0.1	>99.28%
100%	150 liters	222	<0.1	>99.55%
150%	225 liters	127	<0.1	>99.21%
180%	270 liters	255	<0.1	>99.61%
200%	300 liters	194	<0.1	>99.48%

Atenolol Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	199	<0.1	>99.50%
50%	75 Liters	138	<0.1	>99.28%
100%	150 liters	222	<0.1	>99.55%
150%	225 liters	127	<0.1	>99.21%
180%	270 liters	255	<0.1	>99.61%
200%	300 liters	194	<0.1	>99.48%

Atenolol Detection Limit: 0.1 ng/L

Carbamazepine Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1396	80.0	94.27%
50%	75 Liters	1324	<10	>99.24%
100%	150 liters	1594	<10	>99.37%
150%	225 liters	1347	<10	>99.26%
180%	270 liters	1731	<10	>99.42%
200%	300 liters	1389	<10	>99.28%

Carbamazepine Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1396	14.5	98.96%
50%	75 Liters	1324	61.3	95.37%
100%	150 liters	1594	<10	>99.37%
150%	225 liters	1347	<10	>99.26%
180%	270 liters	1731	<10	>99.42%
200%	300 liters	1389	<10	>99.28%

Carbamazepine Detection Limit: 10 ng/L

DEET Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1399	<10	>99.29%
50%	75 Liters	1240	<10	>99.19%
100%	150 liters	1389	<10	>99.28%
150%	225 liters	1222	<10	>99.18%
180%	270 liters	1643	<10	>99.39%
200%	300 liters	1621	<10	>99.38%

DEET Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent 1 (ng/L)	Reduction
10 UV	10 UV	1399	11.2	99.20%
50%	75 Liters	1240	<10	>99.19%
100%	150 liters	1389	<10	>99.28%
150%	225 liters	1222	<10	>99.18%
180%	270 liters	1643	<10	>99.39%
200%	300 liters	1621	<10	>99.38%

DEET Detection Limit: 10 ng/L

Metolachlor Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1356	<10	>99.26%
50%	75 Liters	871	<10	>98.85%
100%	150 liters	956	<10	>99.95%
150%	225 liters	1352	11.7	99.13%
180%	270 liters	1254	21.5	98.29%
200%	300 liters	1309	<10	>99.24%

Metolachlor Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1356	<10	>99.26%
50%	75 Liters	871	<10	>98.85%
100%	150 liters	956	14.3	98.50%
150%	225 liters	1352	48.5	96.41%
180%	270 liters	1254	10.9	99.13%
200%	300 liters	1309	10.7	99.18%

Metolachlor Detection Limit: 10 ng/L

Trimethoprim Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	139	<1	>99.28%
50%	75 Liters	88	<1	>98.86%
100%	150 liters	128	<1	>92.22%
150%	225 liters	134	<1	>99.25%
180%	270 liters	153	<1	>99.35%
200%	300 liters	110	<1	>99.09%

Trimethoprim Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	139	<1	>99.28%
50%	75 Liters	88	<1	>98.86%
100%	150 liters	128	<1	>92.22%
150%	225 liters	134	<1	>99.25%
180%	270 liters	153	<1	>99.35%
200%	300 liters	110	<1	>99.09%

Trimethoprim Detection Limit: 1 ng/L

Linuron Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	139	<1	>99.28%
50%	75 Liters	167	<1	>98.40%
100%	150 liters	195	<1	>92.49%
150%	225 liters	149	<1	>99.33%
180%	270 liters	171	<1	>99.42%
200%	300 liters	157	<1	>99.36%

Linuron Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	139	<1	>99.28%
50%	75 Liters	167	<1	>98.40%
100%	150 liters	195	<1	>92.49%
150%	225 liters	149	<1	>99.33%
180%	270 liters	171	<1	>99.42%
200%	300 liters	157	<1	>99.36%

Linuron Detection Limit: 1 ng/L

Influent Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1)
10 UV	7.3	22.1	291	0.6	1.4
50%	7.2	22.3	293	0.7	1.4
100%	7.2	22.5	295	0.6	1.4
150%	7.3	22.1	291	0.6	1.7
180%	7.2	22.5	297	0.7	1.5
200%	7.3	22.4	295	0.6	1.4
Average	**7.3**	**22.3**	**294**	**0.6**	**1.5**

Group 1 Product Picture

Test Results Group 2

TCEP Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	5089	<100	>98.03%
50%	75 Liters	4824	<100	>97.93%
100%	150 liters	5198	<100	>98.08%
150%	225 liters	5814	<100	>98.28%
180%	270 liters	4768	<100	>97.90%
200%	300 liters	4438	<100	>97.75%

TCEP Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	5089	<100	>98.03%
50%	75 Liters	4824	145.8	96.98%
100%	150 liters	5198	<100	>98.08%
150%	225 liters	5814	236.2	95.94%
180%	270 liters	4768	<100	>97.90%
200%	300 liters	4438	142.0	96.80%

TCEP Detection Limit: 100 ng/L

TCPP Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	5518	201.2	96.35%
50%	75 Liters	4929	<100	>97.97%
100%	150 liters	4517	<100	>97.79%
150%	225 liters	4805	<100	>97.92%
180%	270 liters	4358	<100	>97.71%
200%	300 liters	4693	124.6	97.34%

TCPP Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	5518	<100	>99.19%
50%	75 Liters	4929	410.3	91.68%
100%	150 liters	4517	344.4	92.38%
150%	225 liters	4805	116.4	97.58%
180%	270 liters	4358	111.1	97.45%
200%	300 liters	4693	146.8	96.87%

TCPP Detection Limit: 100 ng/L

Influent Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1)
10 UV	7.2	22.2	296	0.6	1.5
50%	7.3	22.1	294	0.7	1.4
100%	7.2	22.4	295	0.6	1.7
150%	7.2	22.3	291	0.7	1.4
180%	7.3	22.4	297	0.6	1.5
200%	7.3	22.1	294	0.6	1.4
Average	**7.3**	**22.3**	**295**	**0.6**	**1.5**

Group 2 Product Picture

Test Results Group 3

Phenytoin Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	202	<1	>99.50%
50%	75 Liters	260	<1	>99.62%
100%	150 liters	212	<1	>99.53%
150%	225 liters	219	<1	>99.54%
180%	270 liters	250	<1	>99.60%
200%	300 liters	182	<1	>99.45%

Phenytoin Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	202	<1	>99.50%
50%	75 Liters	260	<1	>99.62%
100%	150 liters	212	<1	>99.53%
150%	225 liters	219	<1	>99.54%
180%	270 liters	250	<1	>99.60%
200%	300 liters	182	<1	>99.45%

Phenytoin Detection Limit: 1 ng/L

Ibuprofen Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	396	<10	>97.47%
50%	75 Liters	325	<10	>96.92%
100%	150 liters	445	28	93.71%
150%	225 liters	386	17	95.60%
180%	270 liters	417	22.8	94.53%
200%	300 liters	392	<10	>97.45%

Ibuprofen Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	396	43.1	89.12%
50%	75 Liters	325	21.5	93.38%
100%	150 liters	445	13.0	97.08%
150%	225 liters	386	<10	>97.41%
180%	270 liters	417	12.9	96.91%
200%	300 liters	392	<10	>97.45%

Ibuprofen Detection Limit: 10 ng/L

Naproxen Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	139	7.4	94.68%
50%	75 Liters	109	<1	>99.08%
100%	150 liters	111	9.0	91.89%
150%	225 liters	151	1.6	98.94%
180%	270 liters	146	2.2	98.49%
200%	300 liters	158	<1	>99.37%

Naproxen Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	% Reduction
10 UV	10 UV	139	11.0	92.09%
50%	75 Liters	109	<1	>99.08%
100%	150 liters	111	2.1	98.11%
150%	225 liters	151	3.0	98.01%
180%	270 liters	146	13.0	91.10%
200%	300 liters	158	<1	>99.37%

Naproxen Detection Limit: 1 ng/L

Estrone Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	140	<1	>99.29%
50%	75 Liters	196	<1	>99.49%
100%	150 liters	178	<1	>99.44%
150%	225 liters	191	<1	>99.48%
180%	270 liters	164	<1	>99.39%
200%	300 liters	115	<1	>99.13%

Estrone Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	140	8.5	93.93%
50%	75 Liters	196	<1	>99.49%
100%	150 liters	178	<1	>99.44%
150%	225 liters	191	<1	>99.48%
180%	270 liters	164	<1	>99.39%
200%	300 liters	115	<1	>99.13%

Estrone Detection Limit: 1 ng/L

Bisphenol A Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	2008	<10	>99.95%
50%	75 Liters	1707	<10	>99.41%
100%	150 liters	2228	<10	>99.55%
150%	225 liters	2060	<10	>99.51%
180%	270 liters	2249	<10	>99.56%
200%	300 liters	1806	25.5	98.59%

Bisphenol A Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	2008	91.3	95.45%
50%	75 Liters	1707	<10	>99.41%
100%	150 liters	2228	38.5	98.27%
150%	225 liters	2060	82.9	95.98%
180%	270 liters	2249	24.8	98.90%
200%	300 liters	1806	65.0	96.40%

Bisphenol A Detection Limit: 10 ng/L

Nonylphenol Filter #1 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1408	<10	>99.29%
50%	75 Liters	1622	<10	>99.38%
100%	150 liters	1654	<10	>99.40%
150%	225 liters	1856	<10	>99.46%
180%	270 liters	1461	<10	>99.32%
200%	300 liters	1241	114.2	90.80%

Nonylphenol Filter #2 Data Summary Table

Sample Point	Accumulated Volume	Influent (ng/L)	Effluent (ng/L)	Reduction
10 UV	10 UV	1408	<10	>99.29%
50%	75 Liters	1622	<10	>99.38%
100%	150 liters	1654	<10	>99.40%
150%	225 liters	1856	<10	>99.46%
180%	270 liters	1461	<10	>99.32%
200%	300 liters	1241	138.4	88.85%

Nonylphenol Detection Limit: 10 ng/L

Influent Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1)
10 UV	7.2	22.3	289	0.6	1.4
50%	7.3	22.5	294	0.7	1.5
100%	7.3	22.1	291	0.5	1.4
150%	7.2	22.3	297	0.4	1.4
180%	7.3	22.2	293	0.6	1.6
200%	7.3	22.5	295	0.7	1.4
Average	**7.3**	**22.3**	**293**	**0.6**	**1.5**

Group 3 Product Picture

IAPMO R&T LAB

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TEST REPORT

Report Number: **QFT 402** **Lab Project No. VesQFT003**

Report Issued: June 27, 2019

Client: Life straw
Vietnam

Contact: Le Thu Cao

Source of Sample: The samples were shipped to subcontract laboratory QFT Laboratory, LLC and received in good condition.

Testing Location: **QFT Laboratory, LLC**
41 D Germay Drive
Wilmington, DE 19804

Date of Testing: June 19 – June 24, 2019

Sample Description: LS Home Pitcher, Gravity Filter – without warning indicator

Scope of Testing: Custom test protocol for Glyphosate Reduction for a non-plumbed pour-through-type batch treatment system with a manufacturer specified use pattern following the NSF/ANSI 53 test protocol for pesticide reduction with influent glyphosate concentration of 2mg/L ±10%. Testing subcontracted to QFT Laboratory, LLC.

Conclusion: **The samples complied with the test protocol.**

Reviewed by,
Thomas P. Palkon

Executive Summary
LS Home Pitcher filters reduced a minimum 99.94% glyphosate in the water throughout the tested volume of 300 Liters when tested with 2000ug/L influent. The filtered water did not contain Glyphosate above the allowable effluent levels. The tested LS Home Pitcher products complied with the test protocol throughout its claimed lifetime of 150L.

Test Conditions

- **Manufacturer's Name:** Vestergaard
- **Sample Type:** Qualification
- **Product:** Gravity Filter
- **Flow Rate:** 40 Liters/Day
- **Filter Capacity:** 150 Liters
- **Conditioning Procedure:** Fill 4 times with RO water then rest
- **Cycle:** Fill 4 times with 500 mL then 20 minutes rest
- **Physical Description of Sample:** Gravity Pitcher
- **Performance Indicator Device:** No, test to 200% Capacity
- **Test Description:** Glyphosate Reduction Test
- **Trade Designation/Model Number:** LS Home Pitcher
- **Unit Volume:** 0.5 L
- **Performance Standard:** N/A
- **Pass/Fail Criteria** (Glyphosate Maximum Product Water Concentration)**:** 700 ug/L

Filter #1 Data Summary Table

Accumulated Volume Effluent 1	Influent 1 Glyphosate (µg/L)	Effluent 1 Glyphosate Concentration (µg/L)	% Reduction
4 Liters	2264	<0.1	100.00%
25 Liters	2073	<0.1	100.00%
50 Liters	2106	<0.1	100.00%
100 Liters	1932	<0.1	99.99%
150 Liters	1970	<0.1	99.99%
200 Liters	2084	<0.1	100.00%
250 Liters	2012	0.47	99.98%
300 Liters	2004	1.07	99.95%

Filter #2 Data Summary Table

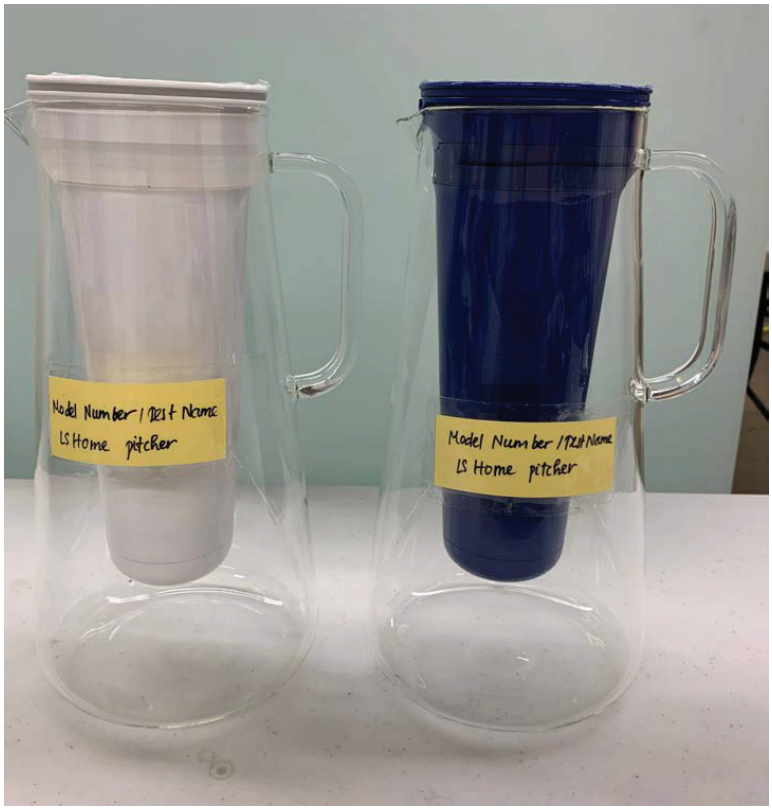
Accumulated Volume Effluent 2	Influent 2 Glyphosate (µg/L)	Effluent 2 Glyphosate Concentration (µg/L)	% Reduction
4 Liters	2264	<0.1	100.00%
25 Liters	2073	<0.1	100.00%
50 Liters	2106	<0.1	100.00%
100 Liters	1932	<0.1	99.99%
150 Liters	1970	<0.1	99.99%
200 Liters	2084	1.12	99.95%
250 Liters	2012	0.34	99.98%
300 Liters	2004	1.11	99.94%

Glyphosate Detection Limit: 0.1 µg/L

Influent Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Hardness (≥170)	Turbidity (<1 NTU)
4 Liters	7.4	22.4	297	150	0.6
25 Liters	7.3	22.3	295	145	0.7
50 Liters	7.4	22.4	297	150	0.7
100 Liters	7.3	22.1	381	162	0.8
150 Liters	7.4	20.9	363	154	0.6
200 Liters	7.4	21.8	374	163	0.7
250 Liters	7.2	22.3	297	150	0.6
300 Liters	7.2	22.5	281	145	0.6
Average	7.3	22.1	323	152	0.7

Filter System Tested



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TEST REPORT

Report No: AWRTCL/PRTR/ 14967G /18-19 **Date: 21.11.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw - Vietnam	Sample received: 05.11.2018 Sample code no:- AWRTCL/14967G/18-19 Sample Description: LIFE STRAW HOME water filter Sample Quantity for Testing: 1 No. Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 16.11.2018 Date of Analysis Completed: 20.11.2018 Subcontract : Not Applicable Sample condition when received : Intact	Method: Chlorine reduction following NSF/ANSI 42 standard

TEST DATA: CHLORINE REDUCTION FOR 150 Lit Filtration

Volume of filtration Liters	Influent water Chlorine mg/L	Effluent water Chlorine mg/L	Time taken for filtration Min – Sec	% Reduction
4	2.05	<0.05	3-25	97.56
25	2.2	<0.05	4-09	97.72
50	2.1	<0.05	3-30	97.61
75	2.2	<0.05	3-20	97.72
100	2.2	<0.05	3-21	97.72
125	2.2	<0.05	3-53	97.72
150	2.2	<0.05	4-08	97.72

FILTRATION CYCLE USED FOR TESTING: Four pourings (2 Litres) and 20 Minutes rest. Total Filtration per day:40Lit

TEST WATER CHRACTERISTICS

Test Characteristics	NSF/ANSI 42 Recommendation	Concentration maintained by the Laboratory			
		Tank-1	Tank-2	Tank-3	Tank – 4
pH	7.5 ± 0.5	7.91	7.86	7.38	7.50
Turbidity NTU	<1.0	<1.0	<1.0	<1.0	<1.0
TDS mg/L	200 - 500	426	355	368	333
TOC mg/L	≥ 1.0	1.1	1.1	1.1	1.1
Temperature	20 ± 3	22	23	23	22

<0.05 – Not detected

INFERENCE: Tested LS Home product performs well meeting the specification of NSF/ANSI 42 for Chlorine reduction from 2mg/L±10% to at least 50% (1.0 mg/L). Reduction percentage was exceeding 97% throughout the tested volume of 150L.

Page 1 of 2

We under take analytical job for water, food, biocidal resins, detergents & sanitizers and soil. We carry out performance evaluation of drinking water treatment units as per NSF/ANSI specifications. Based on performance we can arrange for certification from IAPMO – USA

Note:
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2. Samples will be disposed after 15 days from the issue of test certificate unless otherwise specified, in case of bacteriological tests, the samples will be disposed after 7 days itself from the date of issuing the certificate.
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PRODUCT PICTURE

Dr S.MURALIDHARA RAO
Head - Laboratory

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We under take analytical job for water, food, biocidal resins, detergents & sanitizers and soil. We carry out performance evaluation of drinking water treatment units as per NSF/ANSI specifications. Based on performance we can arrange for certification from IAPMO – USA

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TEST REPORT

Report No: AWRTCL/PRTR/ 14967A-14967B/18-19 **Date:16.11.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw - Vietnam	Sample received: 05.11.2018 Sample code no:- AWRTCL/14967A-14967B/18-19 Sample Description: LIFE STRAW HOME water filters Sample Quantity for Testing: 2 Nos Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 06.11.2018 Date of Analysis Completed: 16.11.2018 Subcontract : Not Applicable Sample condition when received : Intact	Method: Lead reduction following NSF/ANSI 53 Standard

TEST DATA: LEAD REDUCTION at pH 8.5 and 6.5

Volume of Filtration Liters	LEAD REDUCTION AT pH 8.5 AWRTCL/14967A/18-19						LEAD REDUCTION At pH 6.5 AWRTCL/14967B/18-19			
	LEAD CONCENTRATION µg/L					Unit 1	Time taken for filtration Min-sec	LEAD CONCENTRATION µg/L		Time taken for filtration Min-sec
	INPUT WATER Total Lead	Lead after filtration through 1.2 Micron filter	Lead after filtration through 0.1 Micron filter	% Particulates	% Fines	OUTPUT WATER Lead		INPUT WATER Total Lead	OUTPUT WATER Lead	
4 Lit	151.02	129.17	113.85	24.61	41.22	6.76	05 - 15	143.07	5.47	03 - 34
75 Lit (50%)	150.47	128.68	114.08	25.28	42.70	<5.0	05 - 10	157.76	<5.0	05 - 08
150Lit (100%)	156.68	134.01	106.05	32.31	55.24	<5.0	04 - 09	153.35	<5.0	04 – 40
225 Lit (150%)	158.63	139.12	105.90	33.24	63.0	<5.0	04 - 40	156.06	<5.0	04 - 37
270Lit (180%)	154.25	120.66	109.48	29.03	24.97	<5.0	04 - 15	168.57	<5.0	04 - 55
300 Lit (200%)	148.67	126.23	108.33	27.13	44.39	<5.0	03 – 49	151.62	<5.0	04 – 05
Average →	153.28			28.60	45.25	5.29	04-39	155.07	5.07	4 - 29
NSF/ANSI53 Requirement Average	135- 165	---	---	20-40%	≥20%	Maximum allowable Product water Lead concentration :10 µg/L				STATUS PASS

Averages of Lead was maintained at 150µg/L ± 10% level (135– 165µg/L)

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INFERENCE: Tested LS Home products perform well meeting the specification of NSF/ANSI 53 for lead reduction at both pH 8.5 and pH 6.5 throughout the tested volume of 300L.

TEST WATER COMPOSITION : Lead reduction at pH 8.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH:	8.5±2.5	8.35	8.68	8.71	8.55	8.69	8.59	8.63	8.61
Hardness as CaCO3	100 ± 10%	111.08	88.87	111.08	116.64	116.64	88.87	116.64	116.64
Alkalinity as CaCO3	100 ± 10%	90.0	90.0	100.0	100.0	100.0	80.0	100.0	90.0
Free Available chlorine	0.25 to 0.75	0.7	0.6	0.75	0.55	0.70	0.65	0.70	0.50
Temperature	22±2.5	20	21	21	21	21	21	21	20

TEST WATER COMPOSITION : Lead reduction at pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH:	6.5±0.25	6.52	6.66	6.27	6.57	6.66	6.70	6.62	6.52
Hardness as CaCO3 mg/L	10-30	22.21	22.21	22.21	27.77	27.77	27.77	27.77	27.77
Alkalinity as CaCO3 mg/L	10-30	30.0	30.0	20.8	20.8	30.0	30.0	20.8	20.0
TDS mg/L	<100	41	45	41	57	51	58.0	71	66
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1
Temperature ^{0}C	22±2.5	20	21	21	21	21	21	21	2
Poly PO4 as P mg/L	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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TEST PRODUCTS

Lead reduction at pH 6.5

Lead reduction at pH 8.5

FILTRATION CYCLE USED FOR TESTING: Four pourings (2 Litres) and 20 Minutes rest. Total Filtration per day:40Lit

Dr S.MURALIDHARA RAO
Head - Laboratory

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085F/18-19 **Date: 22.01.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085F/18-19 Sample Description: LIFE STRAW HOME Pitcher Filters Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 10.01.2019 Date of Analysis Completed: 22.01.2019 Subcontract : Not Applicable Sample condition when received : Intact	Method: NSF/ANSI 53.

TEST DATA: ATRAZINE REDUCTION

Volume of Filtration Liters	ATRAZINE REDUCTION TESTS		
	ATRAZINE CONCENTRATION µg/L		
	INPUT WATER Atrazine Concentration µg/L	OUTPUT WATER Atrazine Concentration µg/L	Time taken for 500 ml filtration Min – Sec
4 Ltr	10.17	<0.1	04-38
75 Ltr(50%)	8.91	<0.1	05-19
150 Ltr(100%)	8.80	<0.1	05-22
225 Ltr(150%)	9.20	0.35	05-51
270 Ltr(180%)	8.78	0.33	06-52
300Ltr(200%)	9.50	0.31	07-02
Average →	9.23	**0.215**	
NSF/ANSI53 Requirement Average	**8.1 to 9.9 µg/L**		Maximum allowable Product water Atrazine concentration 3 µg/L

Average of Atrazine was maintained at 9µg/L ± 10% level (8.1 – 9.9µg/L)

INTERPRETATION: Tested product of LS Home Pitcher filter meets Atrazine reduction as per NSF/ANSI53 specification throughout the tested volume of 300 Liters of filtration.

Dr S.MURALIDHARA RAO
Head - Laboratory

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TEST DATA: LINDANE REDUCTION

Volume of Filtration Liters	LINDANE REDUCTION TESTS		
	LINDANE CONCENTRATION µg/L		
	INPUT WATER Lindane Concentration µg/L	OUTPUT WATER Lindane Concentration µg/L	Time taken for 500 ml filtration Min – Sec
4 Ltr	2.05	<0.1	04-38
75 Ltr(50%)	2.12	<0.1	05-19
150 Ltr(100%)	2.15	<0.1	05-22
225 Ltr(150%)	2.27	<0.1	05-51
270 Ltr(180%)	2.27	<0.1	06-52
300Ltr(200%)	2.30	<0.1	07-02
Average →	2.19	<0.1	
NSF/ANSI53 Requirement Average	1.8 to 2.2 µg/L	< 0.1 µg/L	Maximum allowable Product water Lindane concentration 0.2 µg/L

Average of Lindane was maintained at 2µg/L ± 10% level (1.8 – 2.2µg/L)

INTERPRETATION: Tested product of LS Home Pitcher filter meets Lindane reduction as per NSF/ANSI53 specification throughout the tested volume of 300Liters of filtration.

TEST WATER COMPOSITION : ATRAZINE & LINDANE REDUCTION

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	7.5±0.5	7.92	7.50	746	7.55	7.61	7.75	7.62	7.59
TDS mg/L	200-500	305	308	325	312	284	327	332	411
TOC mg/L	>1.0	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Turbidity NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Temperature	20±2.5	19	19	19	19	19	19	19	19

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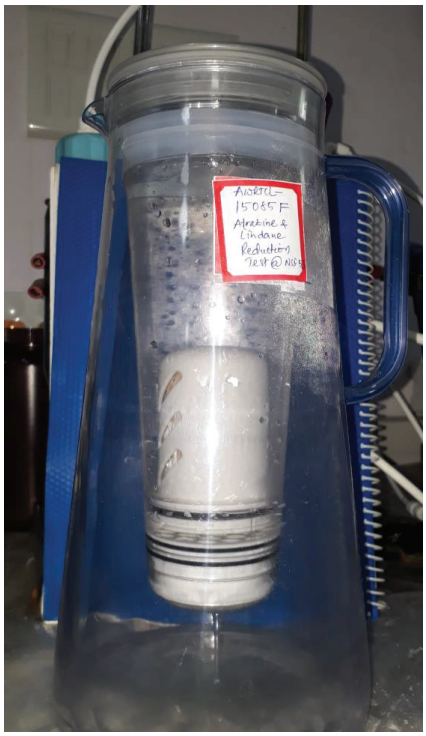
TEST SETUP :As agreed between the testing Laboratory and the customer.



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TEST REPORT

Report No: IAPMOLAB/PRTR/18531A/21-22 **Date: 28.05.2021**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : **Vu Huu Toan** **Vestergaard Frandsen Inc.** **M: +84 901 736 899**	**Sample received: 25.05.2021**	**Method: NSF P 231 protocol**
	Sample code no: IAPMOLAB/PRTR/18531A/21-22	
	Sample Description: LS Home Pitcher Filter	
	Sample Quantity for Testing: 1 No.	
	Submitted by : Vestergaard Frandsen Inc.	
	Date of Analysis started:26.05.2021	
	Date of Analysis Completed:28.05.2021	
	Subcontract : Not Applicable	
	Sample condition when received : Intact	

TEST DATA: 3 Micron Microsphere Reduction: After 10 Liter Filtration

Sample Code	Parameter	Input water concentration microspheres/Liter	Output water concentration microspheres/Liter	% Reduction
IAPMOLAB/18531A/ 21-22 LS Home Pitcher Filter	**3 micron microspheres**	**1.64×10^7 microspheres/ Litre**	**<160 microspheres/ Litre**	**99.9990 (5.01 log)**

Flow Rate of Filtration: 200 ml/min

INFERENCE: Tested LS Home products performs well by reducing 3 micron microspheres to the tune of 99.999% (≥ 5 log reduction) exceeding the specification of NSF P 231 norm i.e 99.9 % (3 log reduction).

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TEST WATER COMPOSITION: GTW#1 (General Test water – 1)

Test water Characteristic	Recommended Concentration	Concentration maintained by the Laboratory
pH	6.5 to 8.5	7.52
TDS mg/L	50 – 500	430
TOC mg/L	>1	>1
Turbidity NTU	0.1 to 5.0	1.0
Temperature ^{0}C	20±5 ^{0}C	24

TEST PRODUCT

Dr S.MURALIDHARA RAO
Head – Laboratory

Report No: IAPMOLAB/PRTR/18531A/21-22, Date: 28.05.2021, Page 2 of 2

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TEST REPORT

Report No: IAPMOLAB/PRTR/18531A/21-22 **Date: 28.05.2021**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Vu Huu Toan Vestergaard Frandsen Inc. M: +84 901 736 899	Sample received: 25.05.2021	Method: NSF P 231 protocol
	Sample code no: IAPMOLAB/PRTR/18531A/21-22	
	Sample Description: LS Home Pitcher Filter	
	Sample Quantity for Testing: 1 No.	
	Submitted by : Vestergaard Frandsen Inc.	
	Date of Analysis started:26.05.2021	
	Date of Analysis Completed:28.05.2021	
	Subcontract : Not Applicable	
	Sample condition when received : Intact	

TEST DATA: 3 Micron Microsphere Reduction: After 10 Liter Filtration

Sample Code	Parameter	Input water concentration microspheres/Liter	Output water concentration microspheres/Liter	% Reduction
IAPMOLAB/18531A/21-22 LS Home Pitcher Filter	3 micron microspheres	1.64×10^7 microspheres/ Litre	<160 microspheres/ Litre	99.9990 (5.01 log)

Flow Rate of Filtration: 200 ml/min

INFERENCE: Tested LS Home products performs well by reducing 3 micron microspheres to the tune of 99.999% (≥ 5 log reduction) exceeding the specification of NSF P 231 norm i.e 99.9 % (3 log reduction).

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TEST WATER COMPOSITION: GTW#1 (General Test water – 1)

Test water Characteristic	Recommended Concentration	Concentration maintained by the Laboratory
pH	6.5 to 8.5	7.52
TDS mg/L	50 – 500	430
TOC mg/L	>1	>1
Turbidity NTU	0.1 to 5.0	1.0
Temperature ^{0}C	20±5 ^{0}C	24

TEST PRODUCT

Dr S.MURALIDHARA RAO
Head – Laboratory

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TEST REPORT

Report Number: **19131** **Lab Project No. PN32201**

Report Issued: May 6, 2019

Client: Life straw
Vietnam

Contact: Le Thu Cao

Source of Sample: The samples were shipped to subcontract laboratory QFT Laboratory, LLC and received in good condition.

Testing Location: **QFT Laboratory, LLC**
41 D Germay Drive
Wilmington, DE 19804

Date of Testing: April 20 – April 29, 2019

Sample Description: LS Home Pitcher, Gravity Filter – without warning indicator

Scope of Testing: NSF P473-2016, Section 7, non-plumbed pour-through-type batch treatment system with a manufacturer specified use pattern. Testing subcontracted to QFT Laboratory, LLC.

Conclusion: **The samples passed the requirements of NSF P473-2016 for PFOA and PFOS reduction requirements specified in section 7 only.**

Reviewed by,
Thomas P. Palkon

Primary Standards: NSF P473 – 2016, Section 7 Performance Claims

7.1 General requirements

7.1.1 Claims contained in other NSF/ANSI Standards – N/A

7.1.2 Apparatus – The test apparats for pour through pitchers is not applicable.

7.2 PFOA/PFOS reduction claims

7.2.1 Carbon-based systems

7.2.1.2 Apparatus – N/A

7.2.1.3 Analytical methods – Sample analysis was conducted in accordance with methods referenced in Annex E.

7.2.1.4 Premature filter plugging – N/A

7.2.1.5 General test water – Test water used for the challenge tanks complies with the all general test water requirements.

7.2.1.6 Cycle time – N/A

7.2.1.7 Methods

7.2.1.7.1 plumbed-in system without reservoirs and all faucet-mounted systems – N/A

7.2.1.7.1.1 Refrigerator filters without integral flow control – N/A

7.2.1.7.1.2 Refrigerators filters without integral flow control, with water dispenser and ice maker – N/A

7.2.1.7.2 Plumbed-in systems with reservoirs – N/A

7.2.1.7.3 Non plumbed pour-through-type batch treatment systems – N/A

7.2.1.7.3.1 Systems with a manufacturer's recommended use patter – Use Pattern: Four 500 ml fills followed by a 20-minute rest, process 40 liters of influent water per day. Leave water in the pitcher overnight so that the filter does not dry out.

7.2.1.7.3.3 Mouth drawn drinking water treatment units – N/A

7.2.1.7.3.4 Squeeze bottle drinking water treatment units – N/A

7.2.1.8 Sampling – System does not have a performance indication device. Samples were collected after start up, 50%, 100%, 180% and 200% of the estimated capacity of 150 liters.

Executive Summary

LS Home Pitcher filters reduced PFOA and PFOS chemical contaminants below the allowable level of 0.07 µg/L. The filtered water did not contain PFOA and PFOS above (<0.01 µg/L) throughout the tested volume of 300Liters. The tested LS Home Pitcher products complied with NSF P473 standard in reducing PFOA and PFOS chemicals throughout its claimed lifetime of 150L.

Test Conditions

- Manufacturer's Name: Vestergaard
- Sample Type: Qualification
- Product: Batch Filter
- Flow Rate: 40 liters/ day
- Filter Capacity: 150 liters
- Cycle: Pour 500 mL fills four times followed by 20-minute rest. Leave Filtered water in the pitcher to prevent drying of the cartridge during overnight stagnation.
- Conditioning Procedure: Remove and rinse housing, remove filter housing cap and install active carbon and ion exchange filter, fill housing with water, cover and shake for 30 seconds to remove air bubbles, discard water, place housing in pitcher and ensure water spouts align, fill with water again and discard filtered water
- Physical Description of Sample: Gravity Filter
- Performance Indicator Device: No, test to 200% Capacity
- Test Description: NSF P473 PFOA Reduction Testing
- Trade Designation/Model Number: LS Home Pitcher
- Unit Volume: 0.1 L
- Performance Standard: NSF P473 – 2016
- Pass/Fail Criteria (PFOA+PFOS Combined Maximum Product Water Concentration): 0.07 µg/L

Test Results

PFOA Filter #1 Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 PFOA (µg/L)	Effluent 1 PFOA Concentration (µg/L)	% Reduction
10 UV	10 UV	0.42	<0.01	>97.62%
50%	75 Liters	0.46	<0.01	>97.83%
100%	150 liters	0.43	<0.01	>97.67%
150%	225 liters	0.52	<0.01	>98.08%
180%	270 liters	0.50	<0.01	>98.00%
200%	300 liters	0.46	<0.01	>97.83%

PFOA Filter #2 Data Summary Table

Sample Point	Accumulated Volume Effluent 2	Influent 2 PFOA (µg/L)	Effluent 2 PFOA Concentration (µg/L)	% Reduction
10 UV	10 UV	0.42	<0.01	>97.62%
50%	75 Liters	0.46	<0.01	>97.83%
100%	150 liters	0.43	<0.01	>97.67%
150%	225 liters	0.52	<0.01	>98.08%
180%	270 liters	0.50	<0.01	>98.00%
200%	300 liters	0.46	<0.01	>97.83%

PFOS Filter #1 Data Summary Table

Sample Point	Accumulated Volume Effluent 1	Influent 1 PFOS (µg/L)	Effluent 1 PFOS Concentration (µg/L)	% Reduction
10 UV	10 UV	0.92	<0.01	>98.91%
50%	75 Liters	1.09	<0.01	>99.08%
100%	150 liters	1.04	<0.01	>99.04%
150%	225 liters	1.15	<0.01	>99.13%
180%	270 liters	0.99	<0.01	>98.99%
200%	300 liters	1.06	0.01	99.06%

PFOS Filter #2 Data Summary Table

Sample Point	Accumulated Volume Effluent 2	Influent 2 PFOS (µg/L)	Effluent 2 PFOS Concentration (µg/L)	% Reduction
10 UV	10 UV	0.92	<0.01	>98.91%
50%	75 Liters	1.09	<0.01	>99.08%
100%	150 liters	1.04	<0.01	>99.04%
150%	225 liters	1.15	<0.01	>99.13%
180%	270 liters	0.99	<0.01	>98.99%
200%	300 liters	1.06	0.01	99.06%

PFOA and PFOS Detection Limit: 0.01 µg/L

PFOA and PFOS Data Summary Filter 1

Sample Point	Accumulated Volume Effluent 1	Influent Total PFOA + PFOS Concentration (µg/L)	Effluent 1 Total PFOA + PFOS Concentration (µg/L)	Passing Criteria
10 UV	10 UV	1.34	<0.01	Passed
50%	75 Liters	1.55	<0.01	Passed
100%	150 liters	1.47	<0.01	Passed
150%	225 liters	1.67	<0.01	Passed
180%	270 liters	1.49	<0.01	Passed
200%	300 liters	1.52	0.01	Passed

PFOA and PFOS Data Summary Filter 2

Sample Point	Accumulated Volume Effluent 2	Influent Total PFOA + PFOS Concentration (µg/L)	Effluent 2 Total PFOA + PFOS Concentration (µg/L)	Passing Criteria
10 UV	10 UV	1.34	<0.01	Passed
50%	75 Liters	1.55	<0.01	Passed
100%	150 liters	1.47	<0.01	Passed
150%	225 liters	1.67	<0.01	Passed
180%	270 liters	1.49	<0.01	Passed
200%	300 liters	1.52	0.01	Passed

Influent Water Characteristics

Sample Point	pH (7.5±0.5)	Temperature (20±3°C)	TDS (200 to 500 mg/L)	Turbidity (<1 NTU)	TOC (>1)
10 UV	7.2	18.9	311	0.6	1.4
50%	7.3	18.1	298	0.4	1.4
100%	7.3	17.6	306	0.6	1.6
150%	7.4	17.7	301	0.6	1.8
180%	7.2	18.3	297	0.5	1.7
200%	7.2	17.8	298	0.4	1.8
Average	**7.27**	**18.1**	**302**	**0.52**	**1.6**

Product Picture

AQUADIAGNOSTICS WATER RESEARCH & TECHNOLOGY CENTRE LIMITED
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Near Hosa Road Junction, Hosur Main Road, Bangalore – 560 100
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TEST REPORT

Report No: AWRTCL/PRTR/ 15085/18-19 **Date: 24.12.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 12.12.2018 Date of Analysis Completed: 20.12.2018 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: MERCURY REDUCTION at pH 6.5

Volume of Filtration Liters	INFLUENT WATER MERCURY Concentration µg/L	EFFLUENT WATER MERCURY Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)	
4 Lit	6.20	<1.0	4-00	
75 Lit	6.24	<1.0	4-09	
150Lit	6.21	<1.0	5-25	
225Lit	6.20	<1.0	5-25	
275Lit	6.20	<1.0	5-00	
300Lit	6.38	<1.0	4-50	
Average →	6.23	<1.0		
NSF/ANSI 53 Requirement Average	6.0 µg/L ±10 %	<1.0µg/L	NSF/ANSI53 specification is 2 µg/L Maximum Allowable Product water Concentration	

<1.0 µg/L = Below Detection Limit
INFERENCE: Tested LS Home Pitcher Filter conforms to Mercury reduction from 6 µg/L to 2µg/L (maximum) when tested at pH 6.5 which is in compliance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085A/18-19 **Date: 24.12.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085A/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 12.12.2018 Date of Analysis Completed: 20.12.2018 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: MERCURY REDUCTION at pH 8.5

Volume of Filtration Liters	INFLUENT WATER MERCURY Concentration µg/L	EFFLUENT WATER MERCURY Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)	
4 Lit	6.34	<1.0	3-00	
75 Lit	6.23	<1.0	4-00	
150Lit	6.26	<1.0	5-05	
225Lit	6.43	<1.0	5-08	
275Lit	6.28	<1.0	5-30	
300Lit	6.24	<1.0	5-20	
Average →	6.29	<1.0		
NSF/ANSI 53 Requirement Average	6.0 µg/L ±10 %	<1.0 µg/L	NSF/ANSI53 specification is 2 µg/L Maximum Allowable Product water Concentration	

<1.0 µg/L = Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Mercury reduction from 6 µg/L to 2µg/L (maximum) when tested at pH 8.5 which is in compliance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

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TEST WATER COMPOSITION : pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	6.5±0.25	6.29	6.38	6.39	6.42	6.30	6.32	6.49	6.52
TDS mg/L	<100	52	50	48	44	49	50	45	52
Total Hardness as CaCO3 mg/L	10-30	23.21	23.21	11.60	11.60	11.60	23.21	23.21	11.60
Total Alkalinity as CaCO3 mg/L	10-30	20.80	20.80	20.80	10.40	10.40	20.80	20.80	20.80
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	19	19	19	19	19	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

TEST WATER COMPOSITION : pH 8.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	8.5±0.25	8.49	8.43	8.52	8.49	8.35	8.39	8.30	8.42
TDS mg/L	200-500	356	376	376	366	377	345	353	350
Total Hardness as CaCO3 mg/L	100-200	139.31	162.52	162.52	139.31	116.09	185.74	185.74	162.52
Total Alkalinity as CaCO3 mg/L	100-250	187.20	228.8	228.8	228.8	208.0	208.0	228.8	249.60
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	19	19	19	19	19	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

PRODUCT PICTURES

LS Home : pH 6.5

LS Home: pH 8.5

Report No: AWRTCL/PRTR/ 15085/18-19 , Date: 24.12.2018, Page 3 of 3

Dr S.MURALIDHARA RAO
Head - Laboratory

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Note:
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TEST REPORT

Report No: AWRTCL/PRTR/ 15085D-15085E/18-19 **Date: 11.01.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085D/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 31.12.2018 Date of Analysis Completed: 10.01.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: CHROMIUM III REDUCTION at pH 6.5

Volume of Filtration Liters	INFLUENT WATER CHROMIUM – III Concentration µg/L	EFFLUENT WATER CHROMIUM – III Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)	
4 Lit	324.56	43.92	6-10	
75 Lit	318.29	22.21	5-00	
150Lit	320.91	31.36	4-46	
225Lit	323.41	45.85	5-20	
275Lit	325.0	37.45	5-38	
300Lit	316.89	45.30	4-40	
Average →	322.0	38.0		
NSF/ANSI 53 Requirement Average	300µg/L ±10 %	100µg/L	NSF/ANSI53 specification is 100 µg/L Maximum Allowable Product water Concentration	

<1.0 µg/L = Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Chromium III reduction from 300µg/L to 100µg/L (maximum) when tested at pH 6.5 which is in compliance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

Page 1 of 3

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085D-15085E/18-19 **Date: 11.01.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018	Protocol NSF/ANSI 53
	Sample code no:- AWRTCL/15085E/18-19	
	Sample Description: LS HOME Pitcher Filter	
	Sample Quantity for Testing: 1 No	
	Submitted by : LIFE STRAW – VIETNAM	
	Date of Analysis started : 31.12.2018	
	Date of Analysis Completed: 10.01.2019	
	Subcontract : Not Applicable	
	Sample condition when received : Intact	

TEST DATA: CHROMIUM III REDUCTION at pH 8.5

Volume of Filtration Liters	INFLUENT WATER CHROMIUM – III Concentration µg/L	EFFLUENT WATER CHROMIUM – III Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)	
4 Lit	320.59	44.55	6-08	
75 Lit	310.80	21.71	5-07	
150Lit	316.64	15.54	4-33	
225Lit	323.43	33.28	4-58	
275Lit	324.66	20.90	5-50	
300Lit	326.35	20.71	5-19	
Average →	320.0	26.0		
NSF/ANSI 53 Requirement Average	300µg/L ±10 %	100µg/L	NSF/ANSI53 specification is 100 µg/L Maximum Allowable Product water Concentration	

<1.0 µg/L = Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Chromium III reduction from 300µg/L to 100µg/L (maximum) when tested at pH 8.5 which is in compliance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

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TEST WATER COMPOSITION : pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	6.5±0.25	6.29	6.48	6.52	6.38	6.59	6.28	6.58	6.37
TDS mg/L	<100	52	51	49	48	49	49	49	47
Total Hardness as CaCO3 mg/L	10-30	23.21	11.60	23.21	23.81	11.90	23.81	23.81	23.81
Total Alkalinity as CaCO3 mg/L	10-30	10.40	20.80	20.80	21.30	10.65	21.30	21.30	21.30
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	19	19	19	20	19	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

TEST WATER COMPOSITION : pH 8.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	8.5±0.25	8.42	8.52	8.49	8.33	8.42	8.35	8.46	8.53
TDS mg/L	200-500	365	364	365	363	356	369	358	353
Total Hardness as CaCO3 mg/L	100-200	139.31	162.52	185.74	167.73	142.91	166.73	142.91	142.91
Total Alkalinity as CaCO3 mg/L	100-250	208.0	228.8	249.6	213.0	191.70	213.0	191.70	191.70
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	19	19	19	20	19	19
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

PRODUCT PICTURES

LS Home : pH 6.5

LS Home: pH 8.5

Report No: AWRTCL/PRTR/ 15085D-15085E/18-19 , Date: 11.01.2019, Page 3 of 3

Dr S.MURALIDHARA RAO
Head - Laboratory

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We under take analytical job for water, food, biocidal resins, detergents & sanitizers and soil. We carry out performance evaluation of drinking water treatment units as per NSF/ANSI specifications. Based on performance we can arrange for certification from IAPMO – USA

Note:
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TEST REPORT

Report No: AWRTCL/PRTR/ 15085I-150851J/18-19 **Date: 06.02.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address: Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085I/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 28.01.2019 Date of Analysis Completed: 05.02.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: CADMIUM REDUCTION at pH 6.5

Volume of Filtration Liters	INFLUENT WATER CADMIUM Concentration µg/L	EFFLUENT WATER CADMIUM Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	31.18	<2.0	3-46
75 Lit	29.55	<2.0	4-13
150Lit	31.31	<2.0	4-24
225Lit	30.62	<2.0	4-34
275Lit	30.50	<2.0	4-41
300Lit	31.15	<2.0	5-25
Average →	30.72	<2.0	
NSF/ANSI 53 Requirement Average	30µg/L ±10 %	<2.0	NSF/ANSI53 specification is 5.0µg/L Maximum Allowable Product water Concentration

<2.0 µg/L = Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Cadmium reduction from 30µg/L to 5µg/L (maximum) when tested at pH 6.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

Dr S.MURALIDHARA RAO
Head - Laboratory

Page 1 of 4

NABL ACCREDITED LABORATORY | RECOGNIZED BY IAPMO R&T – USA
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We under take analytical job for water, food, biocidal resins, detergents & sanitizers and soil. We carry out performance evaluation of drinking water treatment units as per NSF/ANSI specifications. Based on performance we can arrange for certification from IAPMO – USA

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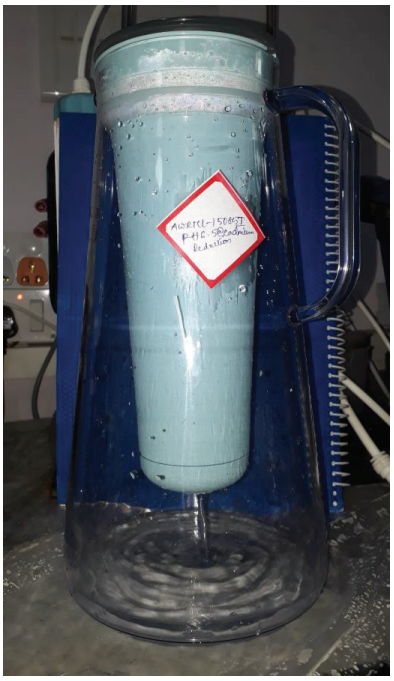
TEST WATER COMPOSITION : pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	6.5±0.25	6.29	6.31	6.41	6.38	6.53	6.59	6.61	6.60
TDS mg/L	<100	50	52	48	49	49	49	50	49
Total Hardness as CaCO3 mg/L	10-30	23.81	23.81	23.81	23.81	23.81	23.81	11.90	11.90
Total Alkalinity as CaCO3 mg/L	10-30	21.30	21.30	21.30	21.30	21.30	21.30	10.65	10.65
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	20	20	20	20	20	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

PRODUCT PICTURE



LS Home : Lead Reduction at pH 6.5

Report No: AWRTCL/PRTR/ 15085I-150851J/18-19, Date: 06.02.2019, page 2 of 4

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085I-15085J /18-19 **Date: 06.02.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085J/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 28.01.2019 Date of Analysis Completed: 05.02.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: CADMIUM REDUCTION at pH 8.5

Volume of Filtration Liters	INFLUENT WATER CADMIUM Concentration µg/L	EFFLUENT WATER CADMIUM Concentration µg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	30.17	<2.0	3-36
75 Lit	30.59	<2.0	4-14
150Lit	30.02	<2.0	4-29
225Lit	30.06	<2.0	4-28
275Lit	32.06	<2.0	4-35
300Lit	31.17	<2.0	5-15
Average →	30.68	<2.0	
NSF/ANSI 53 Requirement Average	30µg/L ±10 %	<2.0	NSF/ANSI53 specification is 5.0µg/L Maximum Allowable Product water Concentration

<2.0 µg/L = Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Cadmium reduction from 30µg/L to 5µg/L (maximum) when tested at pH 8.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

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Near Hosa Road Junction, Hosur Main Road, Bangalore – 560 100

TEST WATER COMPOSITION : pH 8.5

CHARACTERISTICS	NSF/ANSI -53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	8.5±0.25	8.29	8.64	8.66	8.59	8.66	8.53	8.58	8.46
TDS mg/L	200-500	364	357	358	359	360	365	350	354
Total Hardness as CaCO3 mg/L	100-200	119.09	142.91	142.91	166.73	166.73	190.55	190.55	142.91
Total Alkalinity as CaCO3 mg/L	100-250	170.40	191.70	191.70	149.1	149.1	191.7	191.7	213.0
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	19	19	20	20	20	20	20	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

Product Picture

LS Home : Lead Reduction at pH 8.5

Report No: AWRTCL/PRTR/ 15085I-150851J/18-19, Date: 06.02.2019, page 4 of 4

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085K-150851L/18-19 **Date: 15.02.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address: Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085K/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 06.02.2019 Date of Analysis Completed: 15.02.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: COPPER REDUCTION at pH 6.5

Volume of Filtration Liters	INFLUENT WATER COPPER Concentration mg/L	EFFLUENT WATER COPPERM Concentration mg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	3.07	<0.005	3-46
75 Lit	2.96	<0.005	4-07
150Lit	3.00	<0.005	3-56
225Lit	3.24	<0.005	3-58
275Lit	3.05	<0.005	3-44
300Lit	2.97	0.0051	4-16
Average →	3.04	0.005	
NSF/ANSI 53 Requirement Average	3.0mg/L ±10 %	0.005	NSF/ANSI53 specification is 1.30 mg/L Maximum Allowable Product water Concentration

<0.005mg/L= Below Detection Limit
INFERENCE: Tested LS Home Pitcher Filter conforms to Copper reduction from 3.0mg/L to 1.3mg/L (maximum) when tested at pH 6.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

Dr S.MURALIDHARA RAO
Head - Laboratory

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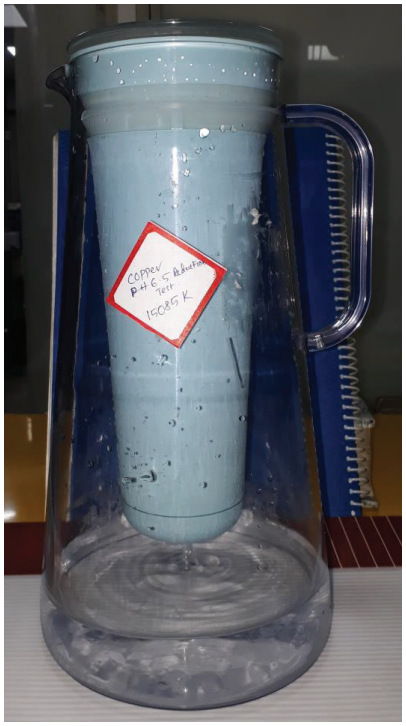
TEST WATER COMPOSITION: pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	6.5±0.25	6.42	6.67	6.30	6.52	6.30	6.36	6.66	6.39
TDS mg/L	<100	58	48	49	40	50	49	49	52
Total Hardness as CaCO3 mg/L	10-30	23.81	23.81	23.81	24.02	24.02	24.02	24.02	24.02
Total Alkalinity as CaCO3 mg/L	10-30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	20	20	20	19	20	20	20	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

Product Picture



LS Home:Copper Reduction at pH 6.5

Report No: AWRTCL/PRTR/ 15085K-150851L/18-19, Date: 15.02.2019, page 2 of 4

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085K-15085L /18-19 **Date: 15.02.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085L/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 06.02.2019 Date of Analysis Completed: 15.02.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: COPPER REDUCTION at pH 8.5

Volume of Filtration Liters	INFLUENT WATER COPPER Concentration mg/L	EFFLUENT WATER COPPERM Concentration mg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	2.95	0.0078	4-08
75 Lit	2.97	<0.005	4-17
150Lit	3.07	<0.005	5-15
225Lit	3.08	<0.005	6-51
275Lit	2.94	0.0055	7-56
300Lit	3.02	0.0073	9-19
Average →	3.0		
NSF/ANSI 53 Requirement Average	3.0mg/L±10 %	0.0059	NSF/ANSI53 specification is 1.30 mg/L Maximum Allowable Product water Concentration

<0.005mg/L= Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Copper reduction from 3.0 mg/L to 1.3mg/L (maximum) when tested at pH 8.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

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TEST WATER COMPOSITION : pH 8.5

CHARACTERISTICS	NSF/ANSI -53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	8.5±0.25	8.53	8.29	8.51	8.54	8.30	8.49	8.58	8.51
TDS mg/L	200-500	367	365	367	370	359	357	349	390
Total Hardness as CaCO3 mg/L	100-200	166.73	166.73	142.91	192.15	192.15	192.15	168.13	168.13
Total Alkalinity as CaCO3 mg/L	100-250	234.3	213.0	234.3	234.3	234.3	234.3	234.3	234.3
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	20	20	20	19	20	20	20	20
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

Product Picture

LS Home:Copper Reduction at pH 8.5

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085O-150851P/18-19 **Date: 13.03.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address: Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no: AWRTCL/15085O/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing:1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 25.02.2019 Date of Analysis Completed: 13.03.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: BARIUM REDUCTION at pH 6.5

Volume of Filtration Liters	INFLUENT WATER BARIUM Concentration mg/L	EFFLUENT WATER BARIUM Concentration mg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	9.921	1.491	3-45
75 Lit	10.382	1.485	4-20
150Lit	10.369	1.461	4-16
225Lit	10.637	1.585	4-34
275Lit	10.597	1.594	4-23
300Lit	10.613	1.594	4-52
Average →	10.419	1.535	
NSF/ANSI 53 Requirement Average	10.0mg/L±10 %	2.0 mg/L	NSF/ANSI53 specification is 2.0 mg/L Maximum Allowable Product water Concentration

<0.005mg/L= Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Barium reduction from 10.0mg/L to 2.0mg/L (maximum) when tested at pH 6.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

Dr S.MURALIDHARA RAO
Head - Laboratory

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TEST WATER COMPOSITION: pH 6.5

CHARACTERISTICS	NSF/ANSI-53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	6.5±0.25	6.28	6.62	6.41	6.53	6.44	6.69	6.51	6.33
TDS mg/L	<100	62	60	62	57	63	60	60	59
Total Hardness as CaCO3 mg/L	10-30	29.72	29.72	29.72	29.72	29.72	29.72	29.72	29.72
Total Alkalinity as CaCO3 mg/L	10-30	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	21	21	21	21	21	21	21	21
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

Product Picture

LS Home:Barium Reduction at pH 6.5

Report No: AWRTCL/PRTR/ 15085K-150851L/18-19, Date: 15.02.2019, page 2 of 4

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TEST REPORT

Report No: AWRTCL/PRTR/ 15085OK-15085P /18-19 **Date: 13.03.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 04.12.2018 Sample code no:- AWRTCL/15085P/18-19 Sample Description: LS HOME Pitcher Filter Sample Quantity for Testing: 1 No Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 25.02.2019 Date of Analysis Completed: 13.03.2019 Subcontract : Not Applicable Sample condition when received : Intact	Protocol NSF/ANSI 53

TEST DATA: BARIUM REDUCTION at pH 8.5

Volume of Filtration Liters	INFLUENT WATER BARIUM Concentration mg/L	EFFLUENT WATER BARIUM Concentration mg/L	Time Taken for 500 ml filtration (min – Sec)
4 Lit	9.930	0.748	3-41
75 Lit	10.457	1.472	4-04
150Lit	10.528	1.466	4-30
225Lit	10.539	1.586	4-38
275Lit	10.751	1.590	4-54
300Lit	10.640	1.599	5-29
Average →	10.474	1.41	
NSF/ANSI 53 Requirement Average	10.0mg/L±10 %	2.0 mg/L	NSF/ANSI53 specification is 2.0 mg/L Maximum Allowable Product water Concentration

<0.005mg/L= Below Detection Limit

INFERENCE: Tested LS Home Pitcher Filter conforms to Barium reduction from 10.0mg/L to 2.0mg/L (maximum) when tested at pH 8.5 in accordance with NSF/ANSI 53 specification requirement throughout the tested volume of 300Lit.

Report No: AWRTCL/PRTR/ 15085K-150851L/18-19, Date: 15.02.2019, page 3 of 4

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TEST WATER COMPOSITION : pH 8.5

CHARACTERISTICS	NSF/ANSI -53	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7	Tank 8
pH	8.5±0.25	5.58	8.65	8.41	8.49	8.35	8.29	8.39	8.41
TDS mg/L	200-500	377	369	376	371	377	379	366	362
Total Hardness as CaCO3 mg/L	100-200	138.71	158.52	158.52	158.52	158.52	178.34	178.34	178.34
Total Alkalinity as CaCO3 mg/L	100-250	184.0	207.0	230.0	230.0	207.0	207.0	230.0	230.0
Poly Phosphate as P mg/L	>0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Temperature ^{0}C	20±2.5	21	21	21	21	21	21	21	21
Turbidity NTU	<1	<1	<1	<1	<1	<1	<1	<1	<1

Product Picture

LS Home:Barium Reduction at pH 8.5

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TEST REPORT

Report No: AWRTCL/PRTR/ 15662A /19-20 **Date: 05.08.2019**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Ms. Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 30.03.2019 Sample code no:- AWRTCL/15662A/19-20 Sample Description: LS Home Pitcher Filter Sample Quantity for Testing: 1 No. Submitted by : LIFE STRAW – VIETNAM Date of Analysis started:01.08.2019 Date of Analysis Completed:03.08.2019 Subcontract : Not Applicable Sample condition when received : Intact	Method: NSF P 231 protocol

TEST DATA: Microbial reduction @ Flow rate- 500ml/4.32min

Sample Code/ Customer Code	Tested parameter	Input Water Microbial Count	Output Water Microbial Count	% Reduction
AWRTCL /15662A/ 19-20 LS Home Pitcher's	E.Coli MTCC 68	7.0×10^6 cfu/ml	No Viable Counts/100 ml	99.999999 (8.81 Log)
		6.0×10^6 cfu/ml	No Viable Counts/100 ml	
	Average count	$6.5.0 \times 10^6$ cfu/ml (8.81 Log)	No Viable Counts/100 ml (0 Log)	

Cfu: Colony forming units. Sampling was done after 10 Lit filtration.

INFERENCE: Tested LS Home Pitcher filter performs effectively by reducing E.Coli MTCC 68 bacterium to the tune of 99.999999 (8.81 log) exceeding the minimum requirement of 99.9999% (6 log reduction) as per NSFP231 norm.

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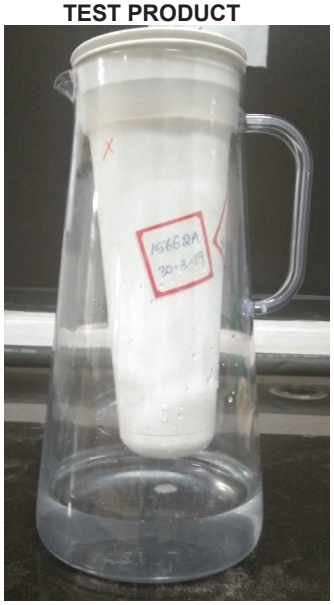
TEST WATER COMPOSITION: GTW#1 (General Test water – 1)

Test water Characteristic	Recommended Concentration	Concentration maintained by the Laboratory
pH	6.5 to 8.5	7.28
TDS mg/L	50 – 500	422
TOC mg/L	0.1 to 5.0	1.0
Turbidity NTU	0.1 to 5.0	1.0
Temperature ^{0}C	20±5 ^{0}C	24

TEST PRODUCT



Dr S.MURALIDHARA RAO
Head - Laboratory

Report No: AWRTCL/PRTR/ 15662A /19-20, Date: 05.08.2019, Page 2 of 2

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3 MICRON MICROSPHERE REDUCTION: AFTER 10 LITER FILTRATION FOLLOWING NSF/ANSI 53 STANDARD

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TEST REPORT

Report No: AWRTCL/PRTR/ 14967C /18-19 **Date: 14.11.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 05.11.2018 Sample code no:- AWRTCL/14967C/18-19 Sample Description: LIFE STRAW HOME water filters Sample Quantity for Testing: 2 No. Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 15.11.2018 Date of Analysis Completed: 16.11.2018 Subcontract : Not Applicable Sample condition when received : Intact	Method: Turbidity and cyst (as 3 micron spheres) reduction following NSF/ANSI 53 standard

TEST DATA: 3 Micron Microsphere Reduction: After 10 Liter Filtration

Test water composition: pH-7.32, TDS-432ppm, Turbidity- 0.91 NTU, Temperature- 24^{0}C

Sample code	Microbial culture	Input Water concentration cfu/ml	Output Water concentration cfu/ml	% Reduction
AWRTCL/14987C/ 18-19 LS Home Pitcher Filter	3 micron microspheres	1.74 x 10^7 cells/ Liter	<160cells/Liter	99.9990 (5.04 log)

Flow Rate of Filtration : 120 ml/min

INFERENCE: Tested LS Home products perform well meeting the specification of NSF/ANSI 53 for cyst reduction (as 3 micron spheres). Reduction performance were higher than 99.999% (>5 Log).

TEST DATA: TURBIDITY REDUCTION after 10 Liters of Filtration

Volume of Filtration Liters	TURBIDITY REDUCTION NTU					TEST WATER		
	INPUT WATER Turbidity NTU	OUTPUT WATER Turbidity NTU	% Reduction	NSF/ANSI53 Reduction Requirement of Turbidity	Time taken for filtration Min-Sec	Test Water Characteristic	Requirement	Tank – 1
1Lit	10.70	0.6	94.39	From 11±1 to not more than 0.5 NTU	04 - 05	Hardness as CaC3 mg/L	Not more than 170 mg/L	166.63
10 Lit	10.30	<0.1	99.02		04 - 25	pH	7.5±0.5	7.05
						Temperature ^{0}C	20±2.5	22
						TDS mg/L	200-500	316
						Turbidity NTU	<1.0	<1.0

A2 dust was added for adjusting Turbidity

INFERENCE: Tested LS Home products perform well meeting the specification of NSF/ANSI 53 for turbidity removal. Turbidity of filtered water was smaller than 0.5 NTU.

3 MICRON MICROSPHERE REDUCTION: AFTER 10 LITER FILTRATION FOLLOWING NSF/ANSI 53 STANDARD

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Product Pictures

Turbidity test

3 micron sphere test

Page 2 of 2

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TEST REPORT

Report No: AWRTCL/PRTR/ 14967D /18-19 **Date: 17.11.2018**

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 05.11.2018 Sample code no:- AWRTCL/14967D/18-19 Sample Description: LIFE STRAW Pitcher filter Sample Quantity for Testing: 1 No. Submitted by : LIFE STRAW – VIETNAM Date of Analysis started : 16.11.2018 Date of Analysis Completed: 17.11.2018 Subcontract : Not Applicable Sample condition when received : Intact	Method: Microplastic reduction (as 1 micron plastic spheres) - black dyed Microspheres

TEST DATA: 1 micron polystyrene microspheres reduction: After 10 Liter Filtration

Sample code	Microbial culture	Input Water concentration counts/Liter	Output Water concentration counts/Liter	% Reduction
AWRTCL/14987D/18-19 LS Home Pitcher Filter	1 micron microspheres	3.20×10^7 cells/ Liter	320 cells/Liter	99.9990 (5.0 log)

Test water composition: pH-9.23, TDS-1490ppm, Turbidity- 31.0 NTU, Temperature- 5°C, TOC-10 mg/L
Flow Rate of Filtration : 116 ml/min

INFERENCE: Tested LS Home product reduces well microplastics as 1 micron polystyrene black dyed micro spheres with reduction percentage higher than 99.999% (> 5 Log).

1 MICRON POLYSTYRENE MICROSPHERES REDUCTION: AFTER 10 LITER FILTRATION

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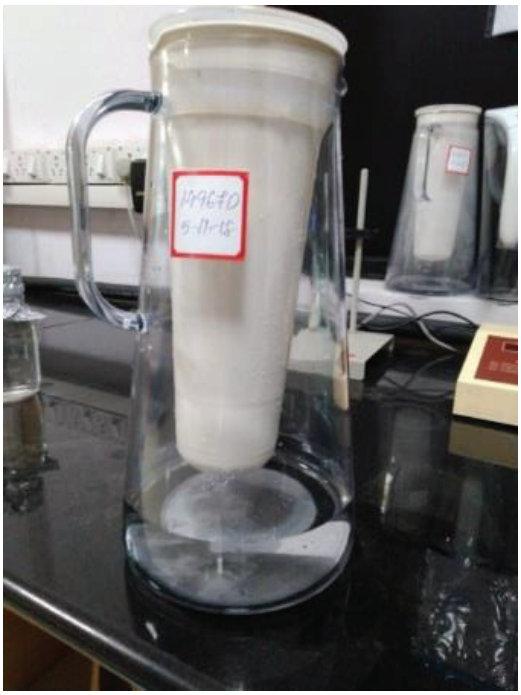
Product Picture



Dr S.MURALIDHARA RAO
Head - Laboratory

NABL ACCREDITED LABORATORY | RECOGNIZED BY IAPMO R&T – USA
Registered Office: No. 143 C-4, Bommassandra Layout Area, Hosur Road, Anekal Taluk, Bangalore – 560 099 Karnataka

We under take analytical job for water, food, biocidal resins, detergents & sanitizers and soil. We carry out performance evaluation of drinking water treatment units as per NSF/ANSI specifications. Based on performance we can arrange for certification from IAPMO – USA

Note:
1. The results pertain only to the tested samples and applicable parameters.
2. Samples will be disposed after 15 days from the issue of test certificate unless otherwise specified, in case of bacteriological tests, the samples will be disposed after 7 days itself from the date of issuing the certificate.
3. This report is not to be reproduced either wholly or in parts and cannot be used as evidence in the court of Law and should not be used in any advertising media without prior written permission.
4. In case, any recommendation of contents of this certificate is required please contact our office.

Certificate of Analysis

PHÒNG THÍ NGHIỆM NƯỚC/ *Water Laboratory*
ISO/IEC 17025 accredited

Sample Information

Test	: LifeStraw® Home	**Requested by**	: QC
Quantity	: 1 pc	**Description**	: QC sample

Analysis Results

Parameter		Microbiological log_{10} reduction		Physico-chemical characteristics			
		Bacteria (E.coli)	Protozoa (3µm spheres surrogate)	Turbidity of effluent water (NTU)	Flow rate (ml/min)	Chlorine removal (%)	Lead removal (%)
Reference method		SMEWW 9222G	US EPA 05/9205/ EPADWC (Modified) (*)	SMEWW 2130B (*)	In house method	Hach 8167 - DPD method (*)	SMEWW 3125:2012
1	LS.18.486.29	>8.6	>5.3	0.1	145	100%	100%

Note: (*) ISO/IEC 17025 accredited methods

I, the undersigned, hereby declare that the findings provide a true and accurate record of the results obtained on samples as received.

Date and signature

23/11/2018

Cao Thu Le
Water Laboratory Manager

VILAS 751

LifeStraw®