

LifeStraw

Evidence Dossier

For:
LifeStraw **Flex** with soft bottle
LifeStraw **Flex** with gravity bag

CONTAMINANT REMOVAL BY PRODUCT

		Water filters (membrane pore size: 0.2 microns)			Water purifiers (membrane pore size: 0.02 microns)		
		LifeStraw	LifeStraw Go, Play, Universal, Steel	LifeStraw Flex	LifeStraw Mission	LifeStraw Family	LifeStraw Community
BACTERIA (Removes 99.999999%)	Brucella melitensis	✓	✓	✓	✓	✓	✓
	Campylobacter jejuni	✓	✓	✓	✓	✓	✓
	pasteurella tularensis	✓	✓	✓	✓	✓	✓
	Pseudomonas aeruginosa	✓	✓	✓	✓	✓	✓
	Shigella	✓	✓	✓	✓	✓	✓
	Staphylococcus Aureus	✓	✓	✓	✓	✓	✓
	Vibrio Cholera	✓	✓	✓	✓	✓	✓
	Vibrio parahaemolyticus	✓	✓	✓	✓	✓	✓
	Yersinia enterocolitica	✓	✓	✓	✓	✓	✓
	Yersinia pestis	✓	✓	✓	✓	✓	✓
	Enteropathogenic E.coli	✓	✓	✓	✓	✓	✓
	Haemophilus influenzae	✓	✓	✓	✓	✓	✓
	Klebsiella pneumoniae	✓	✓	✓	✓	✓	✓
	Legionella pneumophila	✓	✓	✓	✓	✓	✓
	Mycobacterium Tuberculosis	✓	✓	✓	✓	✓	✓
	Mycoplasma pneumoniae	✓	✓	✓	✓	✓	✓
	Pseudomonas pseudomallei	✓	✓	✓	✓	✓	✓
	Salmonella hirschfeldii	✓	✓	✓	✓	✓	✓
	Salmonella typhimurium	✓	✓	✓	✓	✓	✓
	Salmonella typhosa	✓	✓	✓	✓	✓	✓
	Shigella dysenteriae	✓	✓	✓	✓	✓	✓
	Streptococcus pneumoniae	✓	✓	✓	✓	✓	✓
	Streptococcus pyogenes	✓	✓	✓	✓	✓	✓
	Leptospirosis				✓	✓	✓
PARASITES (Removes 99.999%)	Ascario lumbricoides	✓	✓	✓	✓	✓	✓
	Cryptosporidium	✓	✓	✓	✓	✓	✓
	Entamoeba	✓	✓	✓	✓	✓	✓
	Giardia Lamblia	✓	✓	✓	✓	✓	✓
	naegleria gruberi	✓	✓	✓	✓	✓	✓
	schistosoma mansoni	✓	✓	✓	✓	✓	✓
	taenis saginata	✓	✓	✓	✓	✓	✓
VIRUS (Removes 99.999%)	Adenoviridae virus				✓	✓	✓
	Astrovirus				✓	✓	✓
	Calicivirus virus				✓	✓	✓
	Enterovirus				✓	✓	✓
	Hepatitis A virus				✓	✓	✓
	Hepatovirus				✓	✓	✓
	Influenza				✓	✓	✓
	Norovirus				✓	✓	✓
	Parainfluenza				✓	✓	✓
	Paramyxovirus				✓	✓	✓
	Parvovirus B19				✓	✓	✓
	Rhinovirus				✓	✓	✓
	Rotavirus				✓	✓	✓
	Togavirus				✓	✓	✓
CHEMICALS	Chlorine		✓	✓			
	Organic chemical matter		✓	✓			
	Pesticides and herbicides		✓	✓			
	Lead			✓			
	Heavy metals			✓			

This list is intended as complementary information. All LifeStraw products are tested under standard laboratory conditions using ISO / IEC 17025 accredited methods. For specific laboratory results, please refer to the Certificate of Analysis document, provided at www.lifestraw.com

LifeStraw

Internal Lab Reports

Performance on Longevity, Microbial Removal and Chlorine Removal of LifeStraw® Flex

Study Number: LSP.17.2004.2.3

Issued by: Chung Nguyen/ Hong Pham	Approved by: Le Cao
Date of issuance: 02/10/2017	

Overview

Performance of LifeStraw® Flex product was tested following US EPA (1) and NSF P231 (2) protocols for microbiological water purifiers, and NSF42 for chlorine removal efficacy.

LifeStraw® Flex product worked well until 2000L: E.coli bacteria removal was higher than log 8.4, protozoan cyst removal was higher than log 5.2, and average turbidity of filtered water of LifeStraw® Flex was 0.4 NTU. The quality of the filtered water exceeded requirements of WHO (4)/ US EPA/NSF P231 on bacteria removal ($\geq \log 6$), protozoan cysts removal ($\geq \log 4$), and turbidity removal (≤ 0.5 NTU).

LifeStraw® Flex with carbon capsule could remove chlorine well up to more than 300L as under NSF42 testing conditions. This capacity exceeded Vestergaard's requirement and claim of 100L.

References

- 1) US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers. April 1987.
- 2) NSF Protocol P231, Microbiological Water Purifiers. February 2003.
- 3) WL.SOP.120.v1. SOP Normal Aging procedure of LifeStraw® Flex. (Water Laboratory's internal standard operating procedure).
- 4) WHO (2011). Evaluating household water treatment options: Health-based targets and microbiological performance standards, Geneva, World Health Organization.
- 5) NSF/ ANSI 42, Drinking water treatment units – Aesthetic effects, 2015.



Testing principles

Following US EPA/ NSF P231 protocols, three replicates of LS® Flex were aged with general test water. Every 500L along the aging process, microbial removal efficacy of the product was evaluated by being subjected to a challenging test with challenge test water.

Following NSF42 protocol, three replications of LifeStraw® Flex were tested. Chlorine concentration of influent water was controlled at 2 ± 0.2 mg/L. Chlorine concentration of effluent water was checked frequently to evaluate chlorine removal efficacy.

Test waters were prepared and controlled following US EPA (1), NSF P231 (2) and NSF42 (5). Operating the product during testing was done following WL.SOP.120.v1.

Results and discussions

1. Longevity performance

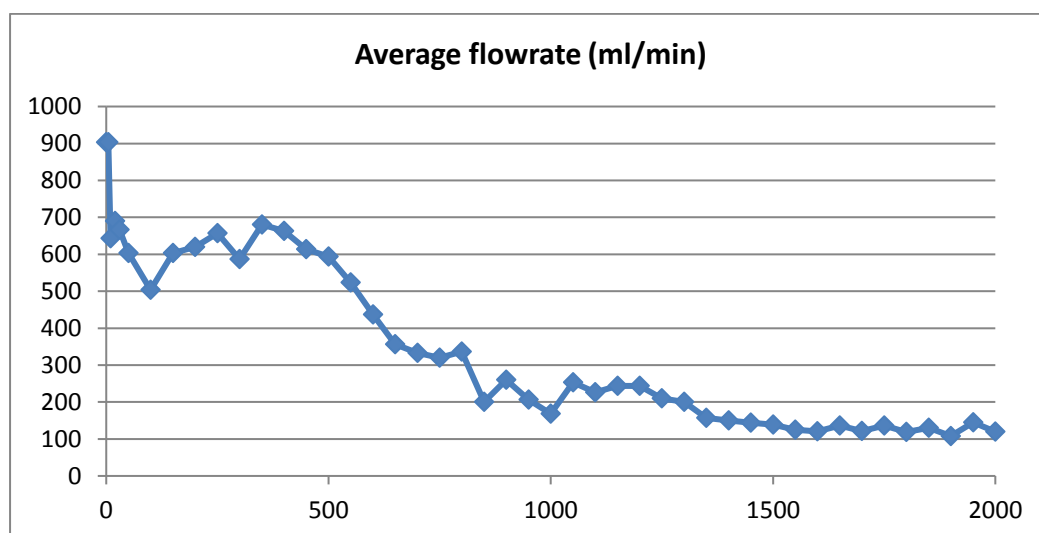


Figure 1. Average flow-rate of LS Flex during its lifetime

LifeStraw® Flex product has reached 2000L. At 2000L point, average filtration rate was about 120ml/min. The average turbidity of filtrated water up to 2000L point was ca. 0.4 NTU and thus meets requirement of NSF International Standard/American National Standard.

2. Microbial removal efficacy

LifeStraw® Flex uses hollow fiber microfiltration technology which can remove microorganisms bigger than its pore size of $0.2\mu\text{m}$, thus, it can remove *E.coli* bacteria (ca. $0.5 \times 2\mu\text{m}$) and protozoa cysts (minimum $3\mu\text{m}$). Although the removal of protozoan cysts was only tested at random testing points, removal of *E.coli* (the smaller tested organisms) guaranteed removal of protozoan cysts.

Results showed that LifeStraw® Flex product exceeded requirements of US EPA, NSF P231 and WHO for microbiological water purifiers on removal of bacteria and protozoa cysts up to 2000L.

Table 1. Bacteria removal efficacy

Replicates	<i>E.coli</i> removal (log ₁₀ reduction) (*)				
	10L	500L	1000L	1500L	2000L
1	>8.7	>8.8	>8.8	>8.4	>8.6
2	>8.7	>8.8	>8.8	>8.4	>8.6
3	>8.7	>8.8	>8.8	>8.4	>8.6

(*) *E.coli* in water was analyzed following SMEWW-9222G (Standard Methods for Examination of Water and Wastewater)

Table 2. Protozoan removal efficacy

Replicates	Protozoa removal (log ₁₀ reduction) (**)	
	2000L	
1	>5.2	
2	>5.2	
3	>5.2	

(**) Protozoa cysts were tested with 3µm spheres surrogate as alternative. Sphere concentration in water was analyzed following US EPA 05/9205/EPADWCTR

3. Chlorine removal efficacy

LifeStraw® Flex with its carbon capsule could remove chlorine very well up to more than 300L when tested with chlorine water following the NSF42 protocol (NSF42 required chlorine removal efficacy must be higher than 50%). This chlorine removal capacity was higher than Vestergaard's requirement and claim of 100L.

Table 2: Chlorine removal efficacy of the LS Flex prototype

Sample Code	Average flowrate*	Initial chlorine removal	Chlorine removal at 100L aging	Chlorine removal at 200L aging	Chlorine removal at 300L aging
	800ml/min±10%	≥50%	≥50%	≥50%	≥50%
LS.17.143.20	777	100%	88%	60%	87%
LS.17.143.21	793	98%	86%	56%	69%
LS.17.143.22	776	99%	88%	60%	75%
Average	782	99%	88%	59%	77%

* Actual flowrate controlled in the first 300L aging

Conclusions

LifeStraw® Flex product has reached 2000L when tested following USEPA (1) and NSF P231 (2): *E.coli* bacteria removal was higher than log 8.6, protozoan cyst removal was higher than log 5.2, and average turbidity of filtered water of LifeStraw® Flex was 0.4NTU.

The quality of the filtered water exceeded requirements of WHO/ US EPA/NSF P231 on bacteria removal ($\geq \log 6$) and protozoan cysts removal ($\geq \log 4$), and turbidity removal (≤ 0.5 NTU).

Regarding to chlorine removal efficacy, LifeStraw® Flex with its carbon capsule could remove chlorine well up to more than 300L – exceeded requirement of NSF42 of minimum 50% removal. It also exceeded the Vestergaard's requirement and claim of 100L.

LifeStraw

External Lab Reports

TEST REPORT

Report No: AWRCL/PRTR/ 14748 /18-19

Date: 06.10.2018

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Laboratory manager Life Straw Vietnam	Sample received: 11.09.2018	Method: Chlorine reduction test follows NSF/ANSI 42.
	Sample code no:- AWRCL/14748/18-19	
	Sample Description: LIFE STRAW Flex with Gravity Bag	
	Sample Quantity for Testing: 1 Nos	
	Submitted by : LIFE STRAW – VIETNAM	
	Date of Analysis started : 05.10.2018	
	Date of Analysis Completed: 06.10.2018	
	Subcontract : Not Applicable	
	Sample condition when received : Intact	

TEST DATA: CHLORINE REDUCTION at 460 ml/min Flow Rate (initial)

Volume of Filtration Liters	CHLORINE REDUCTION mg/L		% Reduction	Flow Rate ml/min
	INPUT WATER CHLORINE	OUTPUT WATER CHLORINE		
4 Lit	2.2	<0.05	97.72	460
25 Lit	2.1	0.5	76.19	330
50 Lit	1.9	0.2	89.47	320
75 Lit	2.1	0.3	85.71	280
100 Lit	2.0	0.25	87.50	220
→ Average	2.06	0.26	87.32	322
NSF/ANSI 42 Requirement Average	1.8 to 2.2		Minimum reduction : 50%	

Tested LIFE STRAW FLEX performed well for Chlorine reduction requirement in accordance with NSF/ANSI 42 protocol for 100L filtration at 460 ml/min Flow rate initially. STATUS: PASS

Dr.S.MURALIDHARA RAO
Head – Laboratory

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NABL ACCREDITED LABORATORY | RECOGNIZED BY IAPMO R&T – USA

Registered Office: No. 143 C-4, Bommasandra Layout Area, Hosur Road, Anekal Taluk, Bangalore – 560 099 Karnataka

We undertake 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:

- The results pertain only to the tested samples and applicable parameters.
- 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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- In case, any recommendation of contents of this certificate is required please contact our office.

TEST WATER COMPOSITION

CHARACTERISTICS	NSF/ANSI-42	Tank 1	Tank 2
pH:	7.5±0.5	7.13	7.79
TDS mg/L	200-500	392	390
TOC mg/L	≥1.0	1.0	1.0
Turbidity NTU	<1	<1	<1
Temperature °C	20±3.0	22	22
Free Available chlorine mg/L	2.0±0.2	2.2	2.2

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



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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: 2585-18002-003

Report Issued: March 7, 2018

Project No.: 29630

Client: Vestergaard
Place Saint Francois 1
Lausanne, Switzerland
CH-1003

Contact: Vu Huu Toan

Source of Samples: The units were shipped to IAPMO R&T Lab from Vestergaard and were received on 1/12/2018

Date of Evaluation: February 6th, 2018-February 9th, 2018

Product Description: Lifestraw Flex

Scope of Evaluation: The purpose of the evaluation/testing was to determine how the units described in the product description would perform NSF/ANSI 53 section 7.4.3-Lead pH 6.5 reduction, following Annex F protocol

Conclusion: The samples described in the "Product Description" were evaluated according to NSF/ANSI 53 7.4.3-Lead pH 6.5 reduction, following Annex F protocol. The results indicate the specimens tested would comply with the requirements of NSF/ANSI 53 Section 7.4.3 Lead pH 6.5 reduction.

Tested By,

Kaitlin Rommelfanger, Product Analyst

Reviewed By,

Michael N. Briggs, Manager, Analytical Lab

Primary Standard: NSF/ANSI 53 – 2016 Section 7.4.3, Annex F

Instructions for testing: Two units were preconditioned per the manufacturers instructions. A flowrate between 720-880mL/minute was used at a maximum vacuum of 20.5 +/- 3 kPa, which was generated using a peristaltic pump. The test was run using a 50/50 cycle of 30 seconds on followed by 30 seconds off. Samples were taken at startup, 40, 80, 120, 160, and 200 liters. A back pressure test was performed at the 100 liters (50 percent) following the protocol in F.3.4.

Findings:

	Lead Influent (ppb)	Lead E1 (ppb)
initial	155	1.36
40	155	1.48
80	155	ND
Back pressure	155	0.27
120	155	ND
160	155	ND
200	155	ND

	Lead Influent (ppb)	Lead E2 (ppb)
initial	162	1.24
40	162	2.23
80	162	2.52
Back pressure	162	2.53
120	162	2.86
160	162	4.07
200	165	3.69

Note: Tables show influent and effluent reported to 2 significant digits. Results are shown to three significant digits. Rounding as described in section 6.4 of ASTM E29162. Method detection limit for lead is 0.13ppb.



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: 2585-18001-002

Report Issued: March 6, 2018

Project No.: 29630

Client: Vestergaard
Place Saint Francois 1
Lausanne, Switzerland
CH-1003

Contact Vu Huu Toan

Source of Samples: The units were shipped to IAPMO R&T Lab from Vestergaard and were received on 1/12/2018

Date of Evaluation: January 22nd 2018-February 2nd 2018

Product Description: Lifestraw Flex

Scope of Evaluation: The purpose of the evaluation/testing was to determine how the units described in the product description would perform NSF/ANSI 53 section 7.4.3- Lead pH 8.5 reduction, following Annex F protocol

Conclusion: The samples described in the "Product Description" were evaluated according to NSF/ANSI 53 7.4.3-Lead pH 8.5 reduction, following Annex F protocol. The results indicate the specimens tested would comply with the requirements of NSF/ANSI 53 Section 7.4.3 Lead pH 8.5 reduction.

Tested By,

Katlin Rommelfanger, Product Analyst

Reviewed By,

Michael N. Briggs, Manager, Analytical Lab

Primary Standard: NSF/ANSI 53 – 2016 Section 7.4.3, Annex F

Instructions for testing: Two units were preconditioned per the manufacturers instructions. A flowrate between 720-880mL/minute was used at a maximum vacuum of 20.5 +/- 3 kPa, which was generated using a peristaltic pump. The test was run using a 50/50 cycle of 30 seconds on followed by 30 seconds off. Samples were taken at startup, 40, 80, 120, 160, and 200 liters. A back pressure test was performed at the 100 liters (50 percent) following the protocol in F.3.4.

Findings: Filter 1:

	Lead Total (ppb)	Lead after 0.1 µ (ppb)	Lead after 1.2 µ (ppb)	Lead E1 (ppb)
initial	149	114	121	1.81
40	149	114	121	2.72
80	149	114	121	3.24
Back pressure	149	114	121	1.16
120	149	114	121	0.689
160	149	114	121	3.70
200	149	114	121	4.06

Findings Filter 2:

	Lead Total (ppb)	Lead after 0.1 µ (ppb)	Lead after 1.2 µ (ppb)	Lead E2 (ppb)
initial	149	114	121	1.12
40	176	128	140	1.17
80	169	148	152	2.72
Back pressure	178	120	135	8.19
120	178	120	135	2.43
160	169	148	152	3.58
200	139	101	111	2.78

Note: Tables show influent and effluent reported to 3 significant digits. Results are shown to three significant digits. Rounding as described in section 6.4 of ASTM E29162

**TEST REPORT**

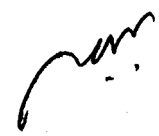
Report No: AWRCL/ PRTR/ 14209&14211/18-19

Date:17.05.2018

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
Name & Address : Le Thu Cao Water Laboratory manager - Life Straw Vestergaard Vietnam Ltd.	Sample received: 03.05.2018	TEST BENCH As agreed between the Testing Laboratory and the customer Protocol : NSF/ANSI 53
	Sample code no:- AWRCL/14209&14211/18-19	
	Sample Description: Life Straw Flex with Gravity Bag	
	Sample Quantity for Testing: 2 Nos each	
	Submitted by : Lifestraw, Vestergaard Vietnam Ltd	
	Date of Analysis Started : 09.05.2018	
	Date of Analysis Completed : 16.05.2018	
	Subcontract : Not Applicable	
	Sample condition when received : Intact	

PERFORMANCE TESTING OF LEAD REDUCTION AT pH 8.5 FOR LS18.092.1& LS18.092.2 CARTRIDGES**PICTURE OF THE CARTRIDGES**

Page 1 of 5


Dr S.MURALIDHARA RAO
 Head - Laboratory

WE UNDER TAKE ANALYTICAL JOBS 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 GOLD SEAL CERTIFICATION FROM WQA - USA

Note:

1. The Results pertain only to the tested samples and applicable parameters.
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4. In case, any reconfirmation of contents of this certificate is required please contact our office.

Mailing Address:**AQUADIAGNOSTICS WATER RESEARCH & TECHNOLOGY CENTRE LIMITED.**

No. No. 43, PMR Towers, 3rd Floor, Above State Bank of India, Beretena Agrahara, Near Hosa Road Junction, Hosur Main Road, Bangalore - 560 100.

Tel: 080-25743042, email: aquadiagnostics@gmail.com, website: www.aquadiagnostics.com

Registered Office : No. 143 C-4, Bommasandra Layout Area, Hosur Road, Anekal Taluk, Bangalore - 560 099, Karnataka

**1.0 EXECUTIVE SUMMARY:**

One cartridge each of Flex cartridges LS18.092.1& LS18.092.2 were tested for Lead reduction at pH 6.5 and 8.5 respectively using Gravity bag to supply feed water to the cartridges. Every batch of filtration was for 4 Lit with a rest period of 30 minutes. Overall 40 Liters were filtered in a day. Samples were collected at 4 Lit, 25Lit,50Lit,75Lit,100Lit,125Lit,150Lit,175Lit and 200Lit filtration intervals.


INFERENCE:

Tested Lifestraw Flex cartridges with gravity bag samples performed well for lead reduction requirement at both pH levels of 6.5 and 8.5 in accordance with NSF/ANSI 53 protocol for 200L of filtration at 400ml/min± 10% flow rate at the start of the testing. **STATUS: PASS.**

2.0 TEST WATER PREPARATION :

50 Liters (2 drums) of DM water with conductivity <2 µS/Cm is taken in a tank, added with Magnesium Sulphate, Calcium Chloride, Sodium Bicarbonate salts to adjust TDS to required level. This water was kept in a AC room to attain a temperature of 21-22°C. This water was taken into the flexible bag suspended at a height of 1.6 meters (distance between top of the flexible bag to the input port of the cartridge). This water was allowed to run through LS cartridges to drive away the air and attain a steady flow rate and conditioning. Once the conditioning was completed, the base test water was added with Lead as required and 4 liters of water was filled in bags and passed through the cartridges. Two products were setup as stated above.

2.1TEST WATER RUNNING: In one drum of 50 Lit Lead solutions(in Nitric Acid) viz. Soluble form was added to cater testing at pH 6.5. In the other drum both Soluble and insoluble Lead solutions were added to cater testing at pH 8.5. In general the Lead concentration was adjusted to 150µg/L ± 15µg/L. For the purpose Lead Nitrate solution was added to create Lead. Influent water concentration of Lead was confirmed by AAS – Graphite Furnace analysis. Feed water was allowed to pass through the test products for 4 Lit volume followed by 30 min OFF cycle. Process was repeated for a total filtration of 40 Lit per day. Samples were collected at 4 Lit, 25Lit, (day 1), 50Lit,75 Lit (Day 2),100 (Day 3), 125,150(Day4), 175 and 200 Lit(Day 5). During the filtration starting from 75 Liters onwards, the cartridges were BACKFLUSHED/ REMOVAL OF AIRLOCK was taken up after every 4 liters. Backwash was done with DM water.

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Dr S.MURALIDHARA RAO
Head - Laboratory

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Note:

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Mailing Address:**AQUADIAGNOSTICS WATER RESEARCH & TECHNOLOGY CENTRE LIMITED.**

No. No. 43, PMR Towers, 3rd Floor, Above State Bank of India, Beretena Agrahara, Near Hosa Road Junction, Hosur Main Road, Bangalore - 560 100.

Tel: 080-25743042, email: aquadiagnostics@gmail.com, website: www.aquadiagnostics.com

Registered Office : No. 143 C-4, Bommasandra Layout Area, Hosur Road, Anekal Taluk, Bangalore - 560 099, Karnataka

**2.2 Analysis:**

All the samples of Day 1 - 5 were subjected to AAS analysis. Test Data are presented in the table on the next page. Both the cartridges tested pass the criterion of NSF/ANSI 53 specification for Lead reduction at pH 6.5 & 8.5 up to tested volume of 200 Liters.

3.0 TEST DATA OF LEAD REDUCTION: at pH 6.5 & 8.5

Volume Liters & sampling point	AWRTCL/14209/18-19 LS cartridge with flexible bag used for pH 6.5			AWRTCL/14211/18-19 LS cartridge with flexible bag used for pH 8.5						
	Flow rate ml/min	Lead readings Input ppb	Lead readings Output ppb	Flow rate ml/min	Total Lead Ppb	1.2 micron filtered	0.1 micron filtered	%Particu- lates	%Fines	Lead readings Output ppb
4	390	160.41	<5	400	152.08	124.57	97.29	36.03	49.79	<5
25	400	159.49	<5	340	144.63	121.17	94.33	34.78	53.35	<5
50	300	155.89	<5	220	153.77	140.63	102.42	33.40	74.41	5.91
75	170	153.11	9.78	120	158.91	120.50	103.57	34.82	30.58	8.40
80	No flow Backflushed frequently at every 4 liters			No flow Backflushed frequently at every 4 liters						
100	210	149.23	9.96	180	152.44	131.84	104.23	31.62	57.26	8.67
125	260	161.39	8.42	400	149.37	120.68	104.10	30.30	36.63	8.04
150	390	151.02	8.69	400	150.11	125.02	103.43	31.10	46.25	9.03
175	390	153.42	8.43	410	158.41	126.62	104.05	34.31	41.52	8.81
200	400	143.27	8.54	400	160.49	126.88	105.93	31.87	42.28	8.44
Average Values	323.33	154.26	7.01	318.88	153.35	126.51	101.97	33.11	323.33	8.10

Maximum allowable Product water Lead concentration :10 µg/L

Averages of Lead was maintained at 150µg/L ± 10% level (135– 165µg/L). Single point Total Lead:120-180µg/L. Particulates : Average : 20-40% and 10-50% for single point.

The flush procedure as shown in the link was followed

(https://drive.google.com/file/d/1HRmrAwf4SRYy_6kBRbY0EA9LZ3hayQzi/view)


Dr S.MURALIDHARA RAO
Head - Laboratory

WE UNDER TAKE ANALYTICAL JOBS 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 GOLD SEAL CERTIFICATION FROM WQA - USA

Note:

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2. Samples will be disposed after 15 days from the issue of test certificate unless otherwise specified, Incase of bacteriological tests, the samples will be disposed after 7 days itself from the date of issuing the certificate.
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4. In case, any reconfirmation of contents of this certificate is required please contact our office.

Mailing Address:**AQUADIAGNOSTICS WATER RESEARCH & TECHNOLOGY CENTRE LIMITED.**

No. No. 43, PMR Towers, 3rd Floor, Above State Bank of India, Beretena Agrahara, Near Hosa Road Junction, Hosur Main Road, Bangalore - 560 100.

Tel: 080-25743042, email: aquadiagnostics@gmail.com, website: www.aquadiagnostics.com

Registered Office : No. 143 C-4, Bommasandra Layout Area, Hosur Road, Anekal Taluk, Bangalore - 560 099, Karnataka

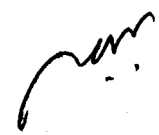
**4.0 TEST WATER PREPARATION WITH CHEMICALS:**

CHARACTERISTIC	REQUIREMENT	CHEMICAL SALT
pH	8.3 – 8.60	CaCl ₂ .2H ₂ O (38 gr /Liter solution) = 400ml / 150 Liters MgSO ₄ .7H ₂ O (32 gr/Liter solution)= 400ml/150 Liters NaHCO ₃ (63 gr/Liter solution) = 400ml/ 150 Liters pH was adjusted by 5% HCl solution/ 5% NaOH solution Soluble Lead: Lead Nitrate (0.925 gr in 250 ml of distilled water + 1 ml of HNO ₃ – total 100 ml) .Add 9 ml of the above solution to 150 Lit. Insoluble Lead: Lead Nitrate (0.4 gr in 250 ml of distilled water – total 100 ml) .Add 2.5 ml of the above solution to 150 Lit.
Hardness as CaCO ₃ mg/L	100 ± 10%	
Alkalinity as CaCO ₃ mg/L	100 ± 10%	
Total Chlorine as Cl mg/L	0.5 ± 0.25	
Temperature °C	20 ± 2.5	
Lead	150 µg/L ± 15 µg/L	

Base water: RO/DI water

5.0 TEST WATER COMPOSITION: pH 6.5

CHARACTERISTICS	RECOMMENDED BY NSF/ANSI 53	Test water tank : day 1	Test water tank: day 2	Test water tank: day 3	Test water tank: day 4	Test water tank: day 5
pH	6.25 ---- 6.75	6.47	6.30	6.42	6.54	6.58
Hardness as CaCO ₃ mg/L	10-30	21.29	21.29	21.29	21.29	21.29
Alkalinity as CaCO ₃ mg/L	10-30	20.8	20.8	20.8	20.8	20.8
Polyphosphate as P mg/L	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1
TDS mg/L	<100	59	76	47	59	72
Turbidity NTU	<1	<1	<1	<1	<1	<1
Temperature °C	20 ± 2.5	22	22	22	22	22



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**6.0 TEST WATER COMPOSITION: pH 8.5**

CHARACTERISTICS	RECOMMENDED BY NSF/ANSI 53	Test water tank : day 1	Test water tank: day 2	Test water tank: day 3	Test water tank: day 4	Test water tank: day 5
pH	8.25 ---- 8.75	8.58	8.51	8.54	8.42	8.45
Hardness as CaCO ₃ mg/L	100 ± 10%	116.48	117.13	106.08	117.13	117.13
Alkalinity as CaCO ₃ mg/L	100 ± 10%	104.0	114.4	105.0	114.4	114.4
Total Chlorine as Cl mg/L	0.5 ± 0.25	0.70	0.70	0.55	0.60	0.50
Temperature °C	20 ± 2.5	22	22	22	22	22

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