

Summary of testing reports from Basic Water Needs ceramic water filters

Manufactured by Basic Water Needs India Pvt Ltd www.basicwaterneeds.com

1. Netherlands: Water Laboratory Noord (www.wln.nl)

“Removal efficiency of silver impregnated ceramic filters”



Test setup: The concentration of E.coli used as influent for the silver impregnated ceramic filters is approximately 10^6 CFU/liter.

Experiments carried out with two silver impregnated filters at a flow rate of 6 liter /hour and 3 liter/hour.

After the first dose of microorganism at the correct flow rate and after sampling, the maximum flow rate (with a pump, 50l/hour) is used to flush the filter with approximately 1000 liter of water.

After each 1000 liters, ceramic material has been removed by scrubbing the candle with a Scotchbrite pad, followed by measuring the diameter of the ceramic filter, the removal rate of E.coli and the concentration of silver in the effluent water.

After 7.000 liters the E.coli bacteria removal was log 4.5 (more than 99.99%)

Results:

		Filter 1	Filter 2
Start	Flow per hour in liters	6	3
	Diameter im cm.	5.6	5.6
	E-coli removal in log	> 4.5	> 4.5
	Silver leakage in microgram/liter	10.45	14.16
At 7000 liters	Flow per hour in liters	6	3
	Diameter im cm.	4.9	4.9
	E-coli removal in log	4.5	5.6
	Silver leakage in microgram/liter	1.3	5.5

2. India: Sargam laboratory at Chennai (www.sargamlabs.com)

“Test report Tulip water filter”

The Tulip water filter has been tested according to the norms of the Bureau of Indian Standards (BIS) 7402-1986.

Water with an E.coli bacteria concentration of 10^5 CFU/ml did pass the filter and no E.coli has been detected after filtration. Bacteria removal was according the BIS norms.

3. Ethiopia: Water Works Design and Supervision Enterprise.

“Efficacy Test of Tulip water filter for Fecal and Total Coliform bacteria and Turbidity”

During different days five samples from polluted rivers were taken.

All samples from polluted river water (2 ml): Coliforms colony counted: many

All samples from filtered water (10 ml.): Coliforms colony counted: zero.

Turbidity river water sample 1: 368 NTU	After filtration: 3 NTU
Turbidity river water sample 2: 39 NTU	After filtration: 2 NTU
Turbidity river water sample 3: 806 NTU	After filtration: 10 NTU
Turbidity river water sample 4: 146 NTU	After filtration: 20 NTU
Turbidity river water sample 5: 170 NTU	After filtration: 5 NTU

4. Tanzania: Water Laboratory Services Division, Ministry of Water
 “Report on the efficacy of Tulip water filter”

Two filters were tested with polluted water.

For bacteriological analysis Membrane Filtration Method using MFC agar and M-Endo agar media was used.

A total of 14 samples have been taken. From rivers 8 samples and from bore holes 6 samples

Polluted water:

Total Coliforms: concentration ranged from 2 to 39.000

Fecal Coliforms: concentration ranged from 8 to 14.000

Total turbidity: values ranged from 14 to 113 NTU

Filtered water:

Total Coliforms: zero in 13 samples and 1 in one sample.

Fecal Coliforms: zero in all samples.

Turbidity values: ranged from 0,02 to 1.16 NTU

5. India: Environmental Monitoring Services Laboratory (EMS) ems@auroville.org.in
 “Bactericidal effect of silver release from ceramic filters”

Measuring silver release from two ceramic filters during a continuous flow till 7.000 liters.

Date	Liters of water passed	Filter 1 & 2	Silver, ug	Flow l/h	Diameter filter in mm.
18/07	30	1 - 4.9 2 - 4.9		5.0 5.0	59
23/07	600	1 - 3.6 2 - x		5.0 5.0	59
7/08	2 150	1 - 3.0 2 - 6.5		4.0 4.0	58
18/08	3 150	1 - x 2 - 3.5		5.0 5.0	57
27/08.*	4 100	1 - 4.0 2 - 3.5		5.0 5.0	57
2/09*	4 700	mix of both filters - 5.6		4.0 3.0	56.8
11/09	5 700	1 - 4.0 2 - 3.2		5.0 4.0	56
1/10*	7 000	1 - 3.1 2 - 2.5		5.5 4.5	51

Adding bacteria to the filtered water to investigate bactericidal effect of the silver release.

One hour after adding bacteria to filtered effluent water, containing 3.3 ug of silver	T.C.	%	E. coli	%
Initial concentration bacteria added	500		770	
Surviving bacteria in tap water after one hour	350		620	
Effluent water from filter N 1 after one hour	0	100	10	98.7
Effluent water from filter N 2 after one hour	0	100	0	100

6. Haiti: Office Regional d'Eau Potable et d'Assainissement OEST

Five gallon of heavily polluted river water was filtered. After filtration, no E-coli, Total Coliforms or Faecal Coliforms could be detected.

In some countries as Ghana and Nigeria the Tulip filter is sold under the brand name CrystalPur.



7. Bangladesh: Environmental Microbiological Laboratory, Laboratory Sciences Division.

See: www.icddrb.org

Sl No.	Name of the sample	Experiment No.	Date of Experiment	<i>E. coli</i> / 100 ml
1	Tap water (Raw)	1	09.11.2008	4
2	Tap water passing through filter	1	09.11.2008	0
3	Artificially inoculated <i>E. coli</i> in tap water	1	09.11.2008	396000
4	After passing through filter-2	1	09.11.2008	0
5	Tap water (Raw)	2	10.11.2008	6
6	Tap water passing through filter	2	10.11.2008	0
7	Artificially inoculated <i>E. coli</i> in tap water	2	10.11.2008	300000
8	After passing through filter-2	2	10.11.2008	0
9	Tap water (Raw)	3	11.11.2008	5
10	Tap water passing through filter	3	11.11.2008	0
11	Artificially inoculated <i>E. coli</i> in tap water	3	11.11.2008	530000
12	After passing through filter-2	3	11.11.2008	2

8. Ghana: Council for scientific and industrial research: Water research institute.

Contact: wri@ghana.com

Sample Identification	Total Coliform (TC) (cfu/100ml) Method: APHA 9222A	<i>E. coli</i> (cfu/100ml) Method: APHA 9260F	<i>Pseudomonas spp.</i> (cfu/100ml) Method: APHA 9213E	<i>Salmonella spp</i> (CFU/100ml) Method: APHA 9260D	<i>Vibrio spp.</i> (cfu/ 100ml) Method: APHA 9260H	Total Heterotrophic Bacteria (cfu/1ml) Method: APHA 9215B
Crystal Pur Filter	0	0	0	0	0	105
Raw water	255	20	85	0	5	1220
Ghana Standards	0	0	0	0	0	1000
WHO Guidelines	0	0	0	0	0	-

Remarks: The CrystalPur filtered water sample is bacteriologically safe to be used as a drinking water source. The filtered water conforms to Ghana standards GS 175 and WHO guidelines of zero total and fecal coliform counts per 100 ml.

Further info:

All reports, except CrystalPur tests, can be downloaded from www.basicwaterneeds.com

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