

Whole House Ultrafiltration For Municipal Water Systems



Stage 1

Stage 1 uses a multi faceted filter to filter out large particles greater than 5 micron and to condition the incoming water so it can no longer form calcium carbonate. This filtration process extends the life and reduces maintenance of the MicronGuard™ element in the next stage.

- Filters out sediment
- Conditions water so glasses and faucets remain spotless

Stage 2

Stage 2 uses our proprietary MicronGuard™ filter to filter out bacteria, viruses, cysts, spores, and other pathogens. It is engineered with an activated carbon high surface area paper to reduce pathogens, pesticides, pharmaceuticals, forever chemicals (PFOA/PFOS), and heavy metals (including lead). Incorporates Agion silver particles to keep filter from biofouling.

Stage 3

Stage 3 Final polishing of PFOA/PFOS, lead, chlorine, pesticides, and other contaminants with a high-capacity carbon filter. Improves taste and smell of water. This carbon will outperform similar carbons due to the purity of water at this step of the process.

Whole House Ultrafiltration For Well Water Systems



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- Filters out sediment
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Stage 2

Stage 2 uses our proprietary Hi Flow/Hi Capacity mechanical filters to remove some bacteria/viruses as well as further removing particulate to enhance Stage 3 filtration performance.

Stage 3

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**Passed NSF
Standard 42**

(Class I Particulate, Cysts, Extraction Testing)



**Passed NSF
Standard 53**

(PFOA/PFOS) less than 20 Parts Per Trillion (10PPT PFOA/10PPT PFOS) Chlorine Reduction, Extraction Testing Selection colors



**Passed NSF
Standard 61**

(Extraction Testing, Pressure Testing)



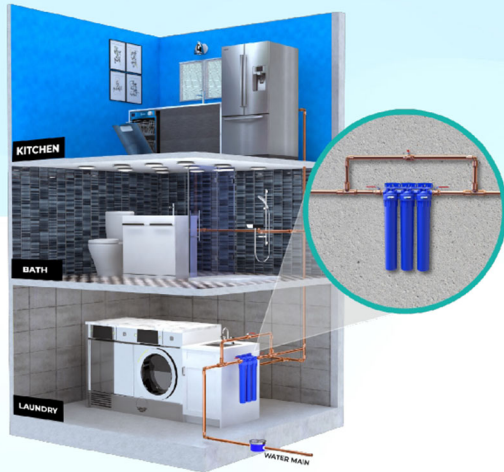
**Passed NSF
Standard 372**

(Meets requirements below Lead levels)

1

Whole House

Point Of Entry (POE)



- 99.9999999% bacteria removal (>9 LRV*)
- 99% reduction of heavy metals
- 95% reduction of PFAS (forever chemicals, PFOA/PFOS)
- Anti-scale filter to treat hard water
- No water softener needed
- No heavy bags of salt
- No salinized wastewater
- Reduces the scale buildup on faucets, cookware, appliances; leave good minerals in water
- Particulate reduction

2

Inline Tap

Point Of Use (POU)



- 99.99999% bacteria removal (>7 LRV*)
- 97.2% lead reduction
- 99% reduction of other VOCs and heavy metals
- Particulate reduction
- Additional Benefits
- No storage tank required
- No additional faucet
- Easy to install

3

On the Go



- 99.9999999% bacteria removal (>7 LRV*)
- 99.9999999% lead reduction
- 99.9999999% reduction of other VOCs and heavy metals
- Provides safe, clean drinking water away from home
- Safe water for international travel
- Great for hiking, camping
- Reduces the need for disposable plastic bottles
- Good for the environment (200-300 refills/filter)
- Save money
- Reduce Landfill and plastic bottles



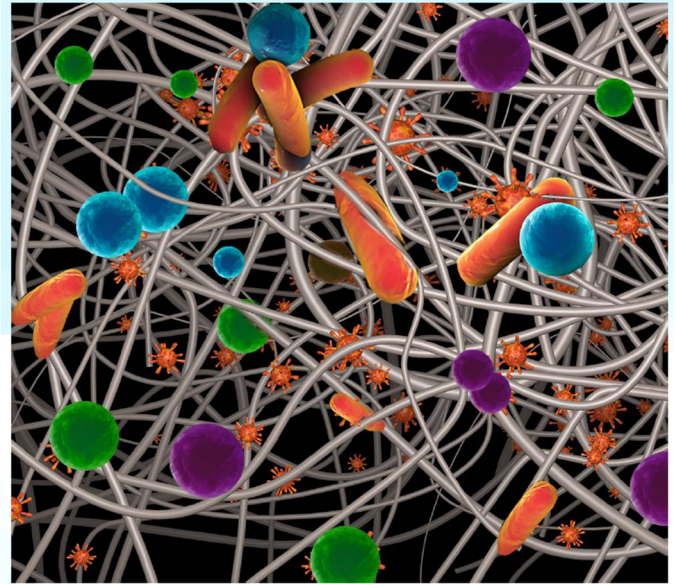
- Filtered water anywhere.
- Our Straw fits your favorite designer water bottle!
- Great for hikers and campers.
- Drink water from lakes, rivers and puddles.



POU Installation Requirements

- (2) Bushings
- Teflon Tape

MicronGuard™ Breakthrough Technology

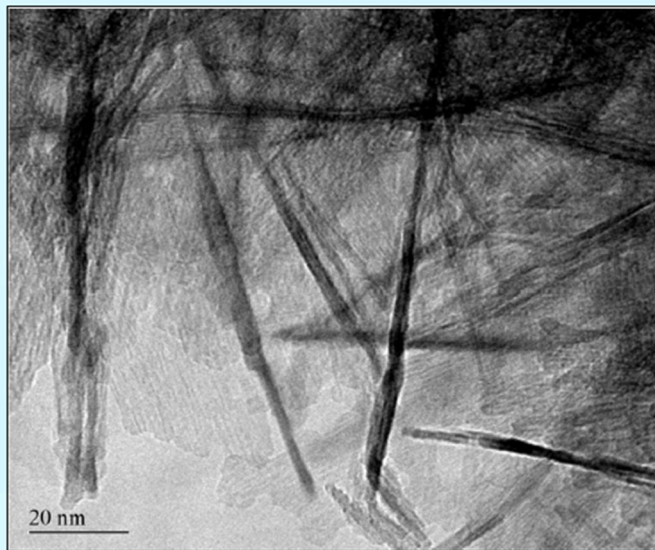


- Exceeds nanofiltration results at low pressure
- 99.9999999% bacteria removal (>9 LRV*)
- 3rd party testing conducted at two different laboratories**
- 1.36 psi over 3-filter whole house system
- 99% reduction of heavy metals (includes 97.2% lead reduction)
- 95% reduction of PFAS (forever chemicals, PFOA/PFOS)
- No water loss (no back flushing or wastewater generated), unlike RO systems
- Does not need to be plumbed to septic or municipal wastewater outlet
- Extremely low pressure drop versus 30-40 PSI drop with other whole house systems
- 10x dirt holding capacity than mechanical filters (spiral wound, polypropylene, etc.)
- Affordable, low maintenance, installs easily, all parts included, no electrical or waste connections

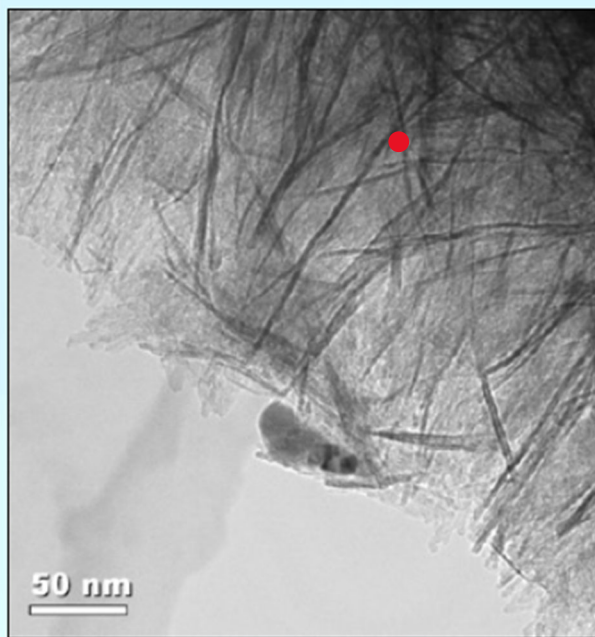
MicronGuard filter requires less than 2 psi

MicronGuard™ -

Operating at the Molecular Level



Electron microscopy of media (20 nm)



Electron microscopy of media (50 nm)

To produce a filter that can be used to replace membranes using no electricity and used virtually no pressure required thinking at the molecular level.

A filter media was developed to provide a tortuous water path without establishing a physical barrier to the water. Pathways average 2.5-3.0 micron

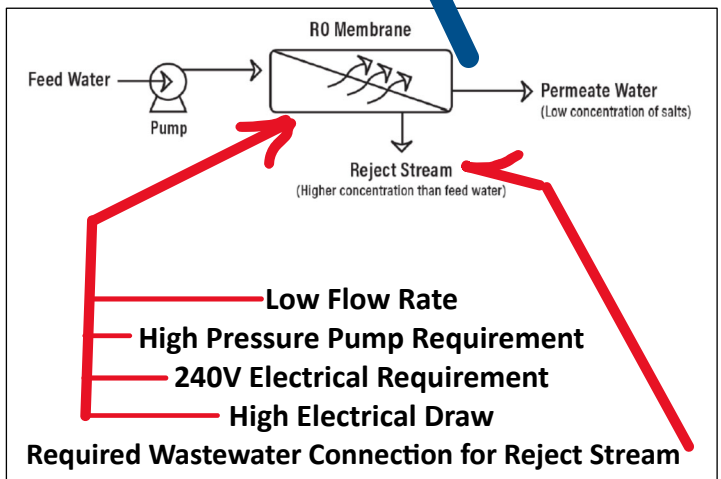
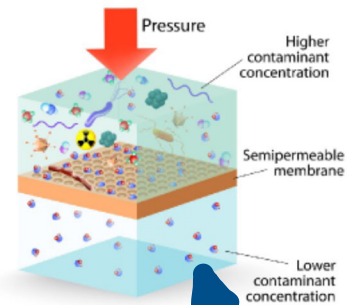
High Flow Rate

Low Pressure Requirement

No Electrical Connection

No Reject Stream Produced

REVERSE OSMOSIS



Technology Performance – Extensive Pathogen Removal

Ultrafiltration+ Test Data on Biologicals

Unit	Flow Rate, LPM	Flow Velocitya LPM/cm2	P, psi	Removal efficacy of RT, LRV	Removal efficacy of MS2, LRV
U1S 1	3.2	0.002b	2.0	>9	>7

Note: Influent CFU count = 15,000,000 CFU

Pesticide Contaminants

Contaminant	Influent Concentration in ug/l	Treated Concentration in ug/l	Reduction %
4,4 DDD	50.1	<0.1	99.9
4,4 DDE	50.2	<0.1	99.9
4,4 DDT	50.1	<0.1	99.9

Volatile Organic Contaminants

Contaminant	Influent Concentration in ug/l	Treated Concentration in ug/l	Reduction %
1,1,1,2Tetrachloroethane	79.8	<0.5	99.9
1,1,1-Trichloroethane	81.2	<0/5	99.9
1,1,2,2-Tetrachloroethane	81	0.81	99
1,1,2-Trichloroethane	150.3	<0.5	99.9
1,1-Dichloroethane	80.2	<0.5	99.9
1,1-Dichloroethane	81	<0.5	99.9
1,1-Dichloropropene	81.2	<0.5	99.9
1,2,3-Trichlorobenzene	80.1	0.7	99.1
1,2,3-Trichloropropane	80.2	<0.5	99.9
1,2,4-Trichlorobenzene	160.1	<0.5	99.9
1,2,4-Trimethylbenzene	80.5	<0.5	99.9

Metal and Chemical Element Contaminants

Water Contaminant	Influent Concentration in ug/l	Treated Concentration in ug/l	Reduction %
Antimony	6.1	<0.5	99.9
Arsenic	50.0	<0.5	99.9
Beryllium	50.0	<0.5	99.9
Bismuth	50.0	<0.5	99.9
Cadmium	50.0	<0.5	99.9
Chromium	50.0	2.6	99.1
Copper	50.0	5.2	99.8
Iron	50.0	101	96.7
Lead	50.0	4.14	97.2
Manganese	50.0	150	85.8
Mercury	50.0	<0.5	99.9
Nickel	50.0	<0.5	99.9
Selenium	50.0	<0.5	99.9
Zinc	50.0	21.1	80.8

Metal and Chemical Element Contaminants (continued)

Methylene Chloride	81.2	1.04	98.8
MTBE	81.5	1.83	97.8
m-Xylene	70.1	<0.5	99.9
Naphthalene	80.4	1.4	98.3
n-Butylbenzene	80.2	<0.5	99.9
n-Propylbenzene	80.2	<0.5	99.9
o-Xylene	70.1	<0.5	99.9
sec-Butylbenzene	80.3	<0.5	99.9
Styrene	80	<0.5	99.9
tert-Butylbenzene	80.2	<0.5	99.9
Tetrachloroethene	80.1	<0.5	99.9
Toluene	80.2	<0.5	99.9
trans-1,2-Dichloroethene	80.5	<0.5	99.9
trans-1,3-Dichloropropene	81	<0.5	99.9
Trichloroethene	180.3	<0.5	99.9
Trichlorofluoromethane	80.1	<0.5	99.9
Vinyl chloride	80.3	<0.5	99.9

Metal and Chemical Element Contaminants (continued)

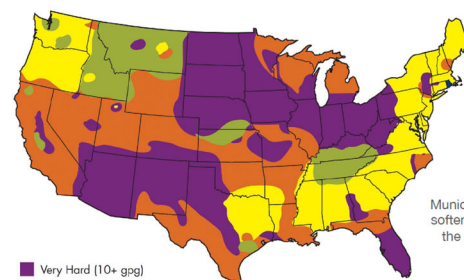
Fenarimol	50.2	<0.1	99.9
Fluoridone	50.4	<0.1	99.9
Gamma-BHC	2.0	<0.1	99.9
Glyphosate	800	<0.1	99.9
Heptachlor	80.0	<0.1	99.9
Heptachlor Epoxide	4	<0.1	99.9
Methoxychlor	120	<0.1	99.9
Molinate	50.4	<0.1	99.9
PCB'S	10.1	<0.1	99.9
Prometron	50.0	<0.1	99.9
Simazine	12.0	<0.1	99.9
Toxaphene	15.1	<0.1	99.9

Critical Claims: Bacteria (ignore boil orders), viruses, cysts, spores, lead, PFOS/PFOA, pharmaceuticals, pesticides, chlorine, suspended solids

Location of Filtration: POE = point of entry for whole house POU = point of use at a specific faucet	POE	POU (most typical)	POU (most typical)	POE
Contaminant	Ultrafiltration	Reverse Osmosis	Ultraviolet	Carbon
Bacteria	✓ >99.999999%	✓ ¹	✓ ²	✗
Viruses	✓ >99.99999%	✓ ¹	✓ ²	✗
Spores	✓ >99.99999%	✓ ¹	✓ ²	✗
Cysts	✓ >99.99%	✓ ¹	✓ ²	✗
PFAS (PFOS, PFOAS, Forever Chemicals)	✓ 95%	✓	✗	✓
Heavy Metals	✓ 99%	✓	✗	✓
Lead	✓ 97.2%	✓	✗	✓
Pesticides	✓	✓	✗	✓
Trace Pharmaceuticals	✓	✓	✗	✓
Microplastics	✓	✓	✗	✗
Scale	✓	✓ ³	✗	✗
Particulate	✓	✓	✗	✓
Features				
Removes Odor	✓	✗	✗	✓
Great Tasting Water	✓	✗	✗	✓
Maintains Flow Rate	✓ < 3% Reduction	✗	✓	✗ ⁴
Waste Water Generated	✓ None	✗ Yes	✓ None	✓ None
Installation Cost	\$200-\$300	\$500-\$750	\$500-\$750	\$300
Unit Cost	< \$2000 retail	\$5,000-\$20,000 (whole house)	\$550-\$1,000 (whole house)	\$1000 (whole house)
Maintenance	< \$1000 retail for all 3 filters	\$400-\$600	✗ \$300-\$400	✗ \$200 = \$1000-1300
			✗ \$100/year softener salt	

1. Water can be contaminated in the holding tank.
2. Reduces, however, not to the level UF+, cannot remove dead bacteria, viruses, spores, cysts.
3. Only if a scale prefilter is used.
4. Flow reduction increases as filtration increases.

CONCENTRATION OF WATER HARDNESS ACROSS THE UNITED STATES



Very Hard (10+ gpg)
 Hard (7-10.5 gpg)
 Moderately Hard (3.5-7 gpg)
 Slightly Hard (1-3.5 gpg)
 gpg = grains per gallon

Source: Water Quality Association

Municipalities starting to ban water softeners due to overload of salt at the sewage treatment facilities.



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