

Water Filter Comparisons

October 2012

Updated January 4, 2014

Clean, potable, safe drinking and cooking water is such an important thing for our health and wellbeing that we all should have sort of water filtration and purification when we are in the outdoors, traveling or when there is a chance that our home water supply is contaminated.

As a service to my clients, visitors to my website and the Internet as a whole I decided to do some research on the many options for portable water filtration and purification methods available from as many manufacturers as I could find. I'm sure there are manufacturers that I missed, so do not consider this a complete list.

This comparison will deal with portable water filters and not whole house or point of use systems that must be plumbed into your sink and water lines. I am defining portable as free standing and complete units that can be picked up and moved as needed. Some will be more portable than others. I will also include information on water treatment additives (tablets, bleach, etc), a few hints and tips and some links to additional info.

The most basic way to make water safe to drink is to boil it for 1 minute to 3 minutes once it has reached a rolling boil. Boiling water will not remove chemicals.

Information on NSF certifications	http://www.nsf.org/business/drinking_water_treatment/standards.asp
To check on NSF certification	http://www.nsf.org/Certified/DWTU/

NSF Confirmed certification:	
Aquamira	No
Fairey	Yes
Just Water	No
Katadyn	No
Lifesaver	No
MSR	No
New Millennium Concepts	No
Sawyer	No
Vestergaard Frandsen	No

A note about NSF certification

NSF certification is very expensive and many manufactures do not seek formal NSF certification. Independent lab tests will indicate if the level of NSF certification has been met or not.

Checked at: <http://www.nsf.org/Certified/Common/Company.asp?submit4=All+Manufacturers&Program=DWTU>

I use and recommend Just Water ceramic filters in my Big Berkey.

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Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Aquamira www.aquamira.com			
Model	CR-100	Frontier Sport	Frontier	Frontier Pro
EFFECTIVE / FILTERS				
Protozoa	Yes	Yes	Yes	Yes
Bacteria	No	No	No	No
Viruses	No	No	No	No
Particulate	Yes	Yes	Yes	Yes
Chemicals / Toxins	Yes	Yes	No	No
Capacity*	378.5 L / 100 USG	378.5 L / 100 USG	75.7 L / 20 USG	151.4 L / 40 USG
Filter Pore Size	Not Provided	Not provided	not provided	not provided
Filter media / composition	Activated Carbon	Activated Carbon	Activated Carbon	Activated Carbon
Filter Rate	Not Provided	Not provided	not provided	not provided
Weight	Not Provided	Not provided	not provided	2oz
MSRP – US dollars	\$14.95	\$14.95	\$11.95	\$24.95
Cost per liter / US gallon**	\$0.04 / \$ 0.15	\$0.04 / \$ 0.15	\$0.16 / \$0.60	\$0.16 / \$0.62
Gravity, pump, squeeze	Squeeze / Suction	Squeeze / Suction	Suction	Suction / Gravity
Notes	NSF/ANSI 42 & 53			
Independently tested	Yes	Yes	Yes	No
Lab Reports Available	Yes	No	No	No

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Aquamira was contacted by email October 8, 2012 to request PDF copies of independent lab tests. No response was received.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Fairey Industrial Ceramics (Doulton / British Berkfeld) www.faireyceramics.com		
Model	Sterasyt	Super Sterasyt	ATC Super Sterasyt
EFFECTIVE / FILTERS			
Protozoa	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes
Viruses	No	No	No
Particulate	Yes		
Chemicals / Toxins	No	No	No
Capacity*	10,000 L / 2600 USG	2000 L / 535 USG	1500 L / 400 USG
Filter Pore Size	0.9 micron	0.9 micron	0.9micron
Filter media / composition	Ceramic	Ceramic & Carbon	Ceramic & Carbon
Filter Rate		1.5 L / 0.4 USG	1.2 L / 0.3 USG
Weight			
MSRP – US dollars		\$31.00 / \$37.00	\$40.00
Cost per liter / US gallon**		\$0.01 / \$ 0.05	\$0.03 / \$0.10
Gravity, pump, squeeze	Gravity	Gravity	Gravity
Notes	7 & 10 inch models	7 & 10 inch models	10 inch model
Independently tested	Yes	Yes	Yes
Lab Reports Available	No	No	No

* L = liters / USG = US Gallons

** rounded up (7 inch model used for calculations)

*** While not available on the website, it is available.

The Super Sterasyt adds carbon to the Sterasyt. The reduced capacity is based on the carbon life, the ceramic outer shell will perform much longer, which is why the Sterasyt has a much higher capacity. Sterasyt are difficult to find online.

The ATC Super Sterasyt adds lead removal media.

7 & 10 inch models have the same capacity. 10 inch models filter slightly faster than 7 inch models, 10 inch models often listed as 9 inch.

Fairey was contacted October 18, 2012 via web contact form. No response received.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Just Water - Used and recommended by Consult4Prep. www.justwater.me			
Model	4x4 Ceramic Filter	2x3 Ceramic Filter	4x10 Ceramic Filter	2x10 Ceramic Filter
EFFECTIVE / FILTERS				
Protozoa	Yes	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes	Yes
Viruses	No	No	No	No
Particulate	Yes	Yes	Yes	Yes
Chemicals / Toxins	Yes	Yes	Yes	Yes
Capacity*	18927 L / 5000 USG	18927 L / 5000 USG	18927 L / 5000 USG	18927 L / 5000 USG
Filter Pore Size	0.2 micron	0.2 micron	0.2 micron	0.2 micron
Filter media / composition	Ceramic & Carbon	Ceramic & Carbon	Ceramic & Carbon	Ceramic & Carbon
Filter Rate	1 gallon per hour	1 gallon per hour	1 gallon per hour	1 gallon per hour
Weight				
MSRP – US dollars	\$23.99	\$10.00	unable to find for sale	\$34.99
Cost per liter / US gallon**				
Gravity, pump, squeeze	Gravity	Gravity / suction	Water pressure	Gravity
Notes				
Independently tested	Yes	Yes	Yes	Yes
Lab Reports Available	Yes	Yes	Yes	Yes

January 2014
UPDATE:
Just Water had some of their filters tested for virus removal by Ceutical Lab, a FDA registered laboratory. The filters are now 0.2 micron in size and are rated for 1 year of use. The filters are now made in the USA.
Just Water filters are the ONLY filters that have been tested for, and are rated for, virus removal.
2x9 inch ceramic filters can be custom ordered, I use them in my Big Berkey.

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

All filters are the same composition, different sizes for different applications. Additional capabilities, such as arsenic removal are available and must be special ordered, no details provided on website.

Just Water offers a number of products based around their filters:

Model	Price	Notes
Water Bottle	\$11.97	
Hydration Pack	\$39.97	
Gravity Filter Bag	\$49.97	
Gravity Filter Bucket Kit	\$29.97	Includes filter, sock, spigot and instructions. You add two buckets to complete system.

Prices from www.cheaperthandirt.com which also sells replacement filters.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Katadyn (1 of 3) www.katadyn.com				
Model	Pocket	Combi	Expedition	Siphon	Drip Ceradyn
EFFECTIVE / FILTERS					
Protozoa	Yes	Yes	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes	Yes	Yes
Viruses	Yes	Yes	Yes	Yes	Yes
Particulate	Yes	Yes	Yes	Yes	Yes
Chemicals / Toxins	No	Yes	No	No	No
Capacity*	50000 / 13000	50000 / 13000	100000 / 26000	20000 / 5300	150000 / 40000
Filter Pore Size	0.2 microns	0.2 microns	0.2 Microns	0.2 microns	0.2 Microns
Filter media / composition	Ceramic	Ceramic & Carbon	Ceramic & Carbon	Ceramic	Ceramic
Filter Rate	1 L per minute	1 L per minute	4 L per minute	5 L per hour	4 L per hour
Weight	550 grams / 20 oz	580 grams / 21 oz	5200 grams / 183.4 oz	440 grams / 16 oz	3300 grams / 116.4 oz
MSRP – US dollars	\$369.95	\$219.95	\$1,199.95	\$79.95	\$249.95
Cost per liter / US gallon**	\$0.007 / \$0.3	\$0.004 / \$0.02	\$0.01 / \$0.05	\$0.004 / \$0.02	\$0.002 / \$0.006
Gravity, pump, squeeze	Pump	Pump	Pump	Gravity	Gravity
Notes	20 year Guarantee	Capacity listed is for ceramic filter, carbon capacity is 400 / 105	2 year guarantee	Use to make your own gravity filter.	
Independently tested	Yes	Yes	Yes	Yes	Yes
Lab Reports Available	No	No	No	No	No

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Katadyn was contacted October 18 via a web contact form. No response received.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Katadyn (2 of 3) www.katadyn.com				
Model	Drip Gravidyn	Vario	Hiker Pro	Hiker	Base Camp
EFFECTIVE / FILTERS					
Protozoa	Yes	Yes	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes	Yes	Yes
Viruses	Yes	No	No	No	No
Particulate	Yes	Yes	Yes	Yes	Yes
Chemicals / Toxins	Yes	Yes	Yes	Yes	Yes
Capacity*	6 months (carbon)	2000 L / 530 USG	750 L / 200 USG	750 L / 200 USG	750 L / 200 USG
Filter Pore Size	0.2 microns	0.3 microns	0.3 microns	0.3 microns	0.3 microns
Filter media / composition	Ceramic & Carbon	Glassfiber, Carbon	Glassfiber, Carbon	Glassfiber, Carbon	Glassfiber, Carbon
Filter Rate	4 L per hour	2 L per minute	1 L per minute	1 L per minute	0.5 L per minute
Weight	3000 grams / 105.8 oz	425 grams / 15 oz	310 grams / 11 oz	310 grams / 11 oz	oz
MSRP – US dollars	\$219.95	\$94.95	\$84.95	\$74.95	\$79.95
Cost per liter / US gallon**	\$0.001 / \$0.005	\$0.05 / \$0.18	\$0.11 / \$0.42	\$0.10 / \$0.37	\$0.10 / \$0.40
Gravity, pump, squeeze	Gravity	Pump	Pump	Pump	Gravity
Notes	This is the Ceradyn with the addition of carbon for chemical removal. Capacity other than chemicals should be the same as the Ceradyn	Capacity listed is for glassfiber filter, carbon capacity is 400 / 106			
Independently tested	Yes	Yes	Yes	Yes	Yes
Lab Reports Available	No	No	No	No	No

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Katadyn (3 of 3) www.katadyn.com		
Model	Mini	MyBottle Purifier	MyBottle Microfilter
EFFECTIVE / FILTERS			
Protozoa	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes
Viruses	Yes	Yes	Yes
Particulate	Yes	Yes	Yes
Chemicals / Toxins	No	Yes	Yes
Capacity*	7000 L / 2000 USG	100 L / 26 USG	100 L / 26 USG
Filter Pore Size	0.2 microns	0.3 microns	0.3 microns
Filter media / composition	Ceramic	Glassfiber, Carbon	Glassfiber, Carbon
Filter Rate	0.5 L per minute		
Weight	210 grams / 8 oz	260 grams / 8 oz	260 grams / 8 oz
MSRP – US dollars	\$109.95	\$59.95	\$49.95
Cost per liter / US gallon**	\$0.16 / \$0.05	\$0.60 / \$2.30	\$0.50 / \$1.92
Gravity, pump, squeeze	Pump	Suction	Suction
Notes		Has ViruStat purification technology. EPA registered.	
Independently tested	Yes	Yes	Yes
Lab Reports Available	No	No	No

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Lifesaver www.lifesaverusa.com			
Model	Bottle 4000	Bottle 6000	Jerrycan 10000	Jerrycan 20000
EFFECTIVE / FILTERS				
Protozoa	Yes	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes	Yes
Viruses	Yes	Yes	Yes	Yes
Particulate	Yes	Yes	Yes	Yes
Chemicals / Toxins	Yes	Yes	Yes	Yes
Capacity*	4000 L / 1056 USG	6000 L / 1585 USG	10000 L / 2650 USG	20000 L / 5300 USG
Filter Pore Size				
Filter media / composition	Various	Various	Various	Various
Filter Rate	2.5 L per minute	2.5 L per minute	2 L per minute	2 L per minute
Weight	635 grams / 22 oz	635 grams / 22 oz		
MSRP – US dollars	\$229.95	\$259.95	\$349.95	\$449.95
Cost per liter / US gallon**	\$0.06 / \$0.22	\$0.04 / \$ 0.16	\$0.03 / \$0.13	\$0.02 / \$0.08
Gravity, pump, squeeze	Pump to prime.	Pump to prime.	Pump to prime	Pump to prime
Notes	Allowing sand or other abrasive materials into the bottle can damage it.	Allowing sand or other abrasive materials into the bottle can damage it.	Allowing sand or other abrasive materials into the container can damage it.	Allowing sand or other abrasive materials into the container can damage it.
Independently tested	Yes	Yes	Yes	Yes
Lab Reports Available	Yes	Yes	Yes	Yes

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	MSR www.cascadedesigns.com/msr/water-treatment-and-hydration/category				
Model	MiniWorks EX	Hyperflow	Sweetwater Microfilter	Sweetwater Solution	AutoFlow
EFFECTIVE / FILTERS					
Protozoa	Yes	Yes	Yes	No	Yes
Bacteria	Yes	Yes	Yes	No	Yes
Viruses	No	No	No	No	No
Particulate	Yes	Yes	Yes	Yes	Yes
Chemicals / Toxins	Yes	No	Yes	No	No
Capacity*	2000 L / 528 USG	1000 L / 264 USG	750 L / 198 USG	250 L / 66 USG	1500 L / 396.25 USG
Filter Pore Size	0.2 microns	0.2 microns	0.2 Microns	NA	0.2 Microns
Filter media / composition	Ceramic Plus Carbon	Hollow Fiber	Silica Depth	NA	Hollow Fiber
Filter Rate	1 L per minute	3 L per minute	1 L per minute	NA	1.75 L per minute
Weight	1 pound / 456 grams	7.8 oz / 221 grams	11 oz / 320 grams	2.7 oz / 76 grams	13.8 oz / 392 grams
MSRP – US dollars	\$89.95	\$99.95	\$89.95	\$14.95	\$99.95
Cost per liter / US gallon**	\$0.05 / \$0.17	\$0.10 / \$0.38	\$0.12 / \$0.45	\$0.06 / \$0.23	\$0.07 / \$0.25
Gravity, pump, squeeze	Pump	Pump	Pump	additive	Gravity
Notes				Add to water to inactivate / kill viruses.	
Independently tested	?	?	?	?	?
Lab Reports Available	?	?	?	?	?

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

MSR was contacted by email October 7, 2012 to request if their filters were independently test and if PDFs of those tests were available.

No response was received.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	New Millennium Concepts (Berkey) All but PF4: www.berkeywater.com / PF4: www.biggerberkey.com			
Model	Black Berkey	Berkey Sport	PF2	PF4
EFFECTIVE / FILTERS				
Protozoa	Yes	Yes	No	No
Bacteria	Yes	Yes	No	No
Viruses	Yes	Yes	No	No
Particulate	Yes	Yes	No	No
Chemicals / Toxins	Yes	Yes	Yes	Yes
Capacity*	11356 L / 3000USG	160 refills	1893 L / 500 USG	6 months
Filter Pore Size	Not provided	not provided	not provided	not provided
Filter media / composition	Not provided	Ionic Absorption	not provided	not provided
Filter Rate	0.11 L per minute	Not provided	not provided	not provided
Weight	Based on housing	Not provided	not provided	not provided
MSRP – US dollars	\$54.50	\$31.00	\$30.50	\$28.00
Cost per liter / US gallon**	\$0.005 / \$0.018	\$0.19 per refill	\$0.016 / \$0.06	Unknown
Gravity, pump, squeeze	Gravity	Squeeze	Gravity	Gravity
Notes	Sold in sets of 2 at \$109.00. Data based on one filter. Filters are added to various housings.	Capacity of bottle not provided.	Sold in sets of 2. Data based on one filter. Use in conjunction with Black Berkey, reduces rate by 15% to 20%.	Sold in sets of 4 at \$112.00. Data based on one filter. Use in conjunction with Super Sterasyl ceramic filters.
Independently tested	Yes	?	?	?
Lab Reports Available	Not on website***	?	?	?

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Unit	Capacity	Filter Type	Number of Filters	Price	Notes
Go Berkey Kit	0.25 USG / 0.95 L	Black Berkey	1	\$155.00	
Travel Berkey	1.5 USG / 5.7 L	Black Berkey	1	\$233.00	
Berkey Light	2.75 USG / 10.4 L	Black Berkey	2 / 4	\$327.00 / \$427.00	
Big Berkey	2.25 USG / 8.5L	Black Berkey	2 / 4	\$263.00 / \$363.00	
Royal Berkey	3.25 USG / 12.3 L	Black Berkey	2 / 4	\$288.00 / \$388.00	
Imperial Berkey	4.5 USG / 17 L	Black Berkey	2 / 4	\$315.00 / \$415.00	Up to 6 filters at once
Crown Berkey	6 USG / 22.7 L	Black Berkey	2 / 4	\$330.00 / \$430.00	Up to 8 filters at once
Prices based on manufacturers website.					

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	ProPur www.propurusa.com		
Model	ProBlack-D	ProBlack+T	ProBlack-BR
EFFECTIVE / FILTERS			
Protozoa	Yes	No	Yes
Bacteria	Yes	No	Yes
Viruses	Yes	No	Yes
Particulate	Yes	No	Yes
Chemicals / Toxins	Yes	Yes	Yes
Capacity*	3000 USG	6 months	3000 USG
Filter Pore Size	0.3 microns		
Filter media / composition			
Filter Rate			
Weight	\$49.50	\$29.50	\$49.50
MSRP – US dollars			
Cost per liter / US gallon**			
Gravity, pump, squeeze			
Notes	Sold in pairs at \$99.00 per pair.	Sold in pairs at \$59.00 per pair. Secondary filter used in conjunction with other filters.	Sold pairs at \$99.00 per pair.
Independently tested			
Lab Reports Available			

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Sawyer www.sawyer.com/water.html	
Model	PointONE	Point ZeroTWO
EFFECTIVE / FILTERS		
Protozoa	Yes	Yes
Bacteria	Yes	Yes
Viruses	No	Yes
Particulate	Yes	Yes
Chemicals / Toxins	Not stated	
Capacity*	3,785,411 / 1,000,000	3785411 / 1000000
Filter Pore Size	0.1 micron	0.02 micron
Filter media / composition	Hollow Fiber	Hollow Fiber
Filter Rate		
Weight		
MSRP – US dollars	\$65.99	\$142.99
Cost per liter / US gallon**	\$0.00002 / \$0.00007	\$0.00004 / \$0.00002
Gravity, pump, squeeze	Varies by use	Varies by use
Notes	3 way filter	Bucket kit
Independently tested	Yes	Yes
Lab Reports Available	Yes	Yes

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Products			
PointONE	Price	Point ZeroTWO	Price
Squeeze Filter	\$59.99	4 Liter Complete	\$236.99
Complete 2 Liter System	\$131.99	Bucket Kit	\$142.99
All in One Filter	\$69.99	Bucket Kit + faucet	
Personal Water Bottle	\$59.99		
3 Way Filter	\$65.99		
4 Way Filter	\$70.94		
Complete 4 Liter System	\$164.99		
2 Liter System	\$98.99		
4 Liter System	\$139.13		

Water Filter Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Vestergaard Frandsen (LifeStraw) www.vestergaard-frandsen.com	
Model	LifeStraw Personal	LifeStraw Family
EFFECTIVE / FILTERS		
Protozoa	Yes	Yes
Bacteria	Yes	Yes
Viruses	No	No
Particulate	Yes	Yes
Chemicals / Toxins	No	No
Capacity*	1000 L / 264 USG	18000 L / 4755 USG
Filter Pore Size	0.2 microns	0.2 microns
Filter media / composition	Hollow Fiber	Hollow Fiber
Filter Rate	1 L per 5 minutes	
Weight	57 grams / 2 oz	
MSRP – US dollars	\$25.00	Not currently for sale
Cost per liter / US gallon**	\$0.03 / \$0.09	
Gravity, pump, squeeze	Suction	
Notes		
Independently tested	Yes	Yes
Lab Reports Available	Yes	Yes

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Treatment Additive Comparisons

Compiled October 2012 from data / specifications found on manufacturers websites

Brand	Aquamira		MSR	Katadyn	WaterMaker
Model	Water Purifier Tablets	Water Treatment	Sweetwater Solution	Micropur	Chlor-Floc
EFFECTIVE / FILTERS					
Protozoa	Yes	Yes	Yes	Yes	Yes
Bacteria	Yes	Yes	Yes	Yes	Yes
Viruses	Yes	Yes	Yes	Yes	Yes
Capacity*	24L / 6.3 USG	227 L / 60 USG	250 L / 66 USG	20 L / 5 Gallons	30 L / 7.5 USG
Active Ingredient	Chlorine Dioxide	Chlorine Dioxide	Sodium hypochlorite	Chlorine Dioxide	Sodium dichloro-s-triazinetriene
Filter Time	4 hours	4 hours	NA	4 hours	25 minutes
MSRP – US dollars	\$14.95	\$16.95	\$14.95	\$9.95	\$10.99
Cost per liter / US gallon**	\$0.62 / \$0.42	\$0.75 / \$0.28	\$0.06 / \$0.23	\$0.50 / \$1.99	\$0.37 / \$1.47
Notes	24 tablets		Sodium hypochlorite 3.5% is bleach	20 tablets. EPA registered.	www.watermaker.co.za Also removes sediment
Independently tested	Yes	Yes	?	Yes	Yes
Lab Reports Available	Yes	Yes	?	No	No

Brand	Potable Aqua		www.potableaqua.com	RAEMS
Model	Potable Aqua	PA Plus	Chlorine Dioxide Tabs	Resublimated Iodine
EFFECTIVE / FILTERS				
Protozoa	Yes	NO	Yes	Yes
Bacteria	Yes	NO	Yes	Yes
Viruses	Yes	NO	Yes	Yes
Capacity*	25 L / 6.25 USG	25 L / 6.25 USG	20 L / 5 USG	18927 L / 5000 USG
Active Ingredient	Iodine / TGHP	Vitamin C – 45 mg	Chlorine Dioxide	Resublimated Iodine crystals.
Filter Time	30 Minutes	3 minutes	4 hours	15 to 60 minutes
MSRP – US dollars	\$5.99	\$9.99	\$10.65	\$14.10
Cost per liter / US gallon**	\$0.24 / \$0.96	\$0.40 / \$1.60	\$0.53 / \$2.13	\$0.0007 / \$0.003
Notes	2 tablets per liter	1 tablet per liter Includes Iodine tabs	1 tablet per liter	www.raems.com/web ad/USP.html
Independently tested	?	?	?	?
Lab Reports Available	?	?	?	?

* L = liters / USG = US Gallons

** rounded up

*** While not available on the website, it is available.

Water Treatment Notes

As we can see from the PA Plus from Potable Aqua, Vitamin C can be used to neutralize the taste of chemicals used to treat water. In the case of common household bleach or other chlorinating methods pouring the water from one container to another will help improve the taste. In some cases simply letting the water sit for 30 minutes will help. You can also use more than one of these methods.

Most of the filters listed above that remove chemicals use carbon. Carbon absorbs the chemicals and does have a limited life, it also improves the taste of water. You know that the carbon has reached the end of its life when the water no longer tastes good. Carbon, or activated carbon (they are the same thing), can be found in the fish supply section of many department stores. Another more common name for activated carbon is charcoal, keep in mind that charcoal that you buy in the store for your charcoal grill contains chemicals to make it easier to light, DO NOT USE this type of charcoal. You can make your own charcoal from burning wood in a fire, but you get less than other methods. There are many websites that can teach you how to make your own charcoal.

As mentioned at the start, boiling is the most basic way to make water safe to drink, it will not remove most chemicals though. There are ways to make your own filters and there are quite a few websites with instructions. Filtering through clean sand is one method. If your water source has high amounts of silt or sediment you can use a coffee filter to pre-filter the water.

There are a number of household chemicals that can be used to purify water, the CDC and EPA have instructions for their use.

Bleach (liquid bleach has a short lifespan – less than 6 months open)

Available Chlorine	Drops per quart / liter	Drops per US Gallon
1%	10	40
4% to 6% *	2	8 (or 1/8 teaspoon)
7% to 10%	1	4 Liter Complete

* Standard household bleach is 5.25%, use unscented ONLY

Calcium Hypochlorite (also know as HTH or pool shock, use brands with available chlorine above 70%.)

Add and dissolve one heaping teaspoon to two gallons of water (slightly more than a half teaspoon to a gallon of water). This creates your bleach / chlorine solution. To treat water add 1 part solution to 100 parts water, or 1 pint of solution to 12.5 gallons of water, or three tablespoons (9 teaspoons) of solution to 1 gallon of water. The benefit to using Calcium Hypochlorite or pool shock is that it comes in a granular form and can sit on the shelf for many years. If storing for a long time keep it in well ventilated and dry area, it will give off fumes that will corrode metal and are harmful if inhaled.

For bleach and Calcium Hypochlorite solution let stand for 30 minutes. The amount of bleach or solution listed is for clear water, for cloudy (or cold) water double the amount of bleach or solution. If the water does not have a slight chlorine smell after 30 minutes retreat the water and wait for 30 minutes. If it still does not have a slight chlorine smell discard the water and find another source. Once the water is safe to drink you can use vitamin C to neutralize the chlorine taste or pour from one clean container to another several times.

Common household iodine can be used to treat water as well. Topical Iodine solution (2%) use 8 drops per quart / liter, for 5% to 10% use 4 drops per quart / liter. Allow 15 minutes if clear and 30 minutes if cloudy, if the water is cold double the time.

SANITARY CONTROL AND SURVEILLANCE OF FIELD WATER SUPPLIES

(4) Chlorine dose calculations and measurements. Tables 2–7 and 2–8 provide volumes in drops (dp), milliliters (mL), teaspoons (tsp), tablespoons (tbls), cups (cp), and gallons (gal) of liquid bleach, dry HTH, and a concentrated calcium hypochlorite solution that, when added to the indicated volume of water, will provide the approximate chlorine dose (in mg/L) indicated. The chlorine residual achieved using these values will depend on the chlorine demand exerted by the water that is chlorinated. If there is no chlorine demand, the residual should equal the dose. The greater the chlorine demand, the lower the residual will be. Note that for all chlorine residual concentrations in water, values in ppm are equivalent to values in mg/L (for example, 10 ppm = 10 mg/L).

(5) Conversion factors. Table 2–9 is useful in converting from one unit of measurement to another. It shows equivalent values for common units of measurement. Unit volumes increase from left to right and top to bottom. All volumes on the same horizontal line (row) are equal. So, looking at the —ounce|| row in table 2–9, we can see that 1 oz, 444 dp, 30 mL, 6 tsp, and 2 tbls are all equal to each other. Continuing to the right on the same row indicates that 1 oz is also equal to 0.125 or 1/8th cp, 0.063 pints (pt), 0.031 quarts (qt), and so on across the table.

(a) If you need to add 7 mL of bleach to a container of water, but you only have an eyedropper, you can see that each mL contains 15 dp, so 7 mL would be equivalent to 7 x 15, or 105 dp.

Table 2–7

Volumes of 5-percent liquid (typical household) bleach that will provide approximately the indicated chlorine dose when added to the corresponding volume of water

Gallons to be chlorinated	1 mg/L	2 mg/L	5 mg/L	10 mg/L	100 mg/L
5	6 dp	0.75 mL	1.9 mL	3.8 mL	8 tsp
10	0.75 mL	1.5 mL	3.8 mL	1.5 tsp	16 tsp
25	2 mL	3.8 mL	2 tsp	4 tsp	1 cp
36	3 mL	5.5 mL	2.75 tsp	2 tbls	1.25 cp
50	4 mL	1.5 tsp	4 tsp	3 tbls	1.75 cp
100	7.7 mL	3 tsp	3 tbls	5 tbls	3.25 cp
400	2 tbls	4.25 tbls	0.75 cp	1.5 cp	3 qt
500	3 tbls	0.33 cp	1 cp	1.75 cp	1 gal
1000	0.33 cp	0.67 cp	1.75 cp	3.25 cp	2 gal
2000	.66 cp	1.34 cp	3.5 cp	6.5 cp	4 gal

Table 2–8

Volumes of 70-percent available HTH (or solution concentrate¹) that will provide the indicated chlorine dose when added to the corresponding gallons of water

Gallons to be chlorinated	1 mg/L	2 mg/L	5 mg/L	10 mg/L	100 mg/L
5	0.9 mL	1.7 mL	4.1 mL	8.3 mL	0.25 tsp
10	1.7 mL	3.3 mL	8.3 mL	16.6 mL	0.5 tsp
25	4.1 mL	8.3 mL	20.7 mL	41.4 mL	1.25 tsp
36	6 mL	11.9 mL	29.8 mL	0.9 mL	1.75 tsp
50	8.3 mL	16.6 mL	0.6 mL	0.25 tsp	2.5 tsp
100	16.6 mL	33 mL	0.25 tsp	0.5 tsp	5 tsp
400	0.92 mL	1.9 mL	1 tsp	2 tsp	19 tsp
500	1.3 mL	0.5 tsp	1.25 tsp	2.5 tsp	0.5 cp
1000	0.5 tsp	1 tsp	2.5 tsp	5 tsp	1 cp
2000	1 tsp	2 tsp	5 tsp	10 tsp	2 cp

Note:

¹The shaded area of the table indicates the volume of a concentrated solution made from dissolving 1 tsp of HTH in a half canteen cup (1½ cups) of water.

(b) The values moving down a single column represent how many of the units at the top of the column make up one of the units on the left of the table. For example, proceeding down the column with —drop|| at the top, there are 15 dp in a mL, 74 dp in a tsp, 3550 dp in a cp, and 56,775 dp in a gal. Similarly, looking at the —ounce|| column, there are only 0.002 oz in a dp, 0.5 oz in a tbls, and 32 oz in a qt.

(6) Fractions and decimals. Table 2–10 shows the equivalence between common fractions and decimals.

Table 2–9
Equivalent volumes

	drop	mL	tsp	tbls	ounce	cup	pint	quart	liter	gal
drop	1	0.067	0.013	0.004	0.002					
mL	15	1	0.200	0.067	0.033	0.0042	0.0021	0.0011	0.0010	
tsp	74	5	1	0.333	0.167	0.021	0.010	0.005	0.005	0.001
tbls	222	15	3	1	0.500	0.063	0.031	0.016	0.015	0.004
ounce	444	30	6	2	1	0.125	0.063	0.031	0.030	0.008
cup	3550	237	48	16	8	1	0.500	0.250	0.240	0.063
pint	7100	473	96	32	16	2	1	0.500	0.480	0.125
quart	14200	946	192	64	32	4	2	1	0.960	0.25
liter	15000	1000	203	68	34	4.2	2.1	1.06	1	0.26
gal	56775	3785	768	256	128	16	8	4	3.785	1

Table 2–10
Common fractions and their decimal equivalents

Fraction	Decimal
1/16	0.0625
1/8	0.125
3/16	0.1875
¼	0.25
5/16	0.3125
3/8	0.375
7/16	0.4375
½	0.500

Fraction	Decimal
9/16	0.5625
5/8	0.625
11/16	0.6875
¾	0.75
13/16	0.8125
7/8	0.875
15/16	0.9375
16/16	1.0000

A good link based on the US military manual above: www.tacticalintelligence.net/blog/how-to-make-chlorine.htm

Some other good links:

CDC Water Treatment Methods: wwwnc.cdc.gov/travel/page/water-treatment.htm

EPA Emergency Disinfection of water: <http://water.epa.gov/drink/emergprep/emergencydisinfection.cfm>

Water Filtration Methods I Use:

I use and recommend Just Water ceramic filters in my Big Berkey. The 2x10 candles can be ordered as 2x9 so that they will fit in the Big Berkey I use every day. I can honestly say that I would use any of their filter products without hesitation.

I also use a Katadyn Pocket along with Mircopur tablets and resublimated iodine crystals when camping. Of course I use standard household bleach for water storage. I also have several pounds of pool shock to make my own household bleach if needed. In the past I have used Potable Aqua and have at least one sealed bottle around.

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