

Ceramic Water Filters

Technical Specifications



History: Ceramic water filtration is a technique used around the world as an inexpensive way to produce safe drinking water. Traditional ceramic filters, and their common variants, are made in the form of a large ceramic pot that is filled with contaminated water, which drips through into a container below.

Caminos de Agua Design: The filter was originally designed by Dr. Robert Marquez, an expert in clays and engineering, and proven by the Caminos de Agua Team. The column shape is more compact and robust than traditional ceramic pot filters, allowing for easier shipping and adaptability. The walls of the filter are 40% wider than most ceramic pot filters (0.5" vs. 0.725"). The filters are formed in a simple mold, with materials easily and inexpensively available worldwide, instead of a large mechanized press like traditional pot filters.

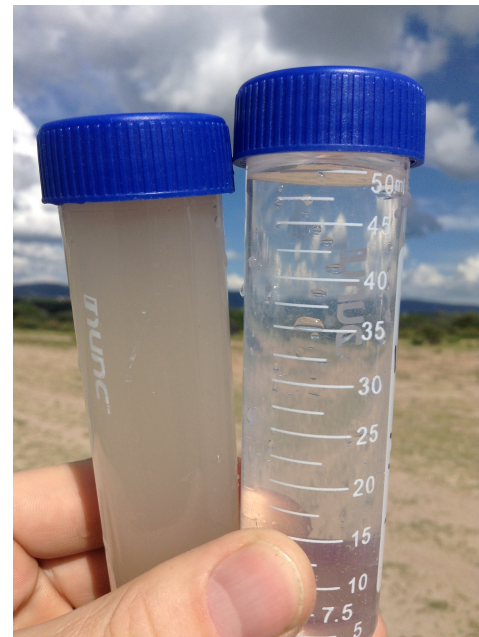
Technical Information: The filters are made from a mixture of clay and sawdust and then "fired" in our ecological kilns, creating a solid ceramic structure. The sawdust is destroyed in the firing process, which produces the porous form. The sawdust is screened to ensure that the pore size is small enough to trap turbidity and bacteria, between 0.6 - 3.0 microns, while also providing a flow-rate that is sufficient for practical use. To better ensure the filter's effectiveness, an anti-bacterial agent is also applied – colloidal silver - which is impregnated into the entire matrix of the filter. Caminos de Agua recommends changing the filter every three years as an extra measure of protection as well as regular maintenance and cleaning (each filter comes with instructions).

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Water Quality and Performance

The ceramic water filters have continually achieved a **99.9999% removal rating for bacteria and pathogens**, in testing performed both internally and by independent laboratories, including:

- COEFPRIS (official Mexican Certification Body),
- The National Water Commission (CONAGUA),
- The State Water Commission of Querétaro (CEAQ),
- University College of London, London, England,
- EcoLaboratorios, S.A. de C.V., Certified Mexican Laboratory in Salamanca, Gto, México,
- Columbia University, Engineering Department, New York, NY, USA,
- Northern Illinois University, Department of Hydrogeology, Dekalb, IL, USA, and
- Caminos de Agua Laboratory, following protocol and procedure, Atotonilco, Gto, Mexico.



Before and after: river water after passing through the filter system just once.

Flow: The filter is capable of producing 1 liter/hour minimum of safe drinking water. The water filter can be used for 3-5 years and produce roughly 26,280 liters of filtered water free of bacteria, pathogens, and turbidity achieving and surpassing Mexican, US-EPA, and International water quality standards.

Value: The average cost of buying water is 20 pesos/bottle or roughly 2 pesos per liter (2 pesos/L). By contrast, a ceramic filter can provide 24 L of drinking water/day for 3-5 years, making the cost per liter **100 times cheaper**.

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Laboratory Testing and Certifications

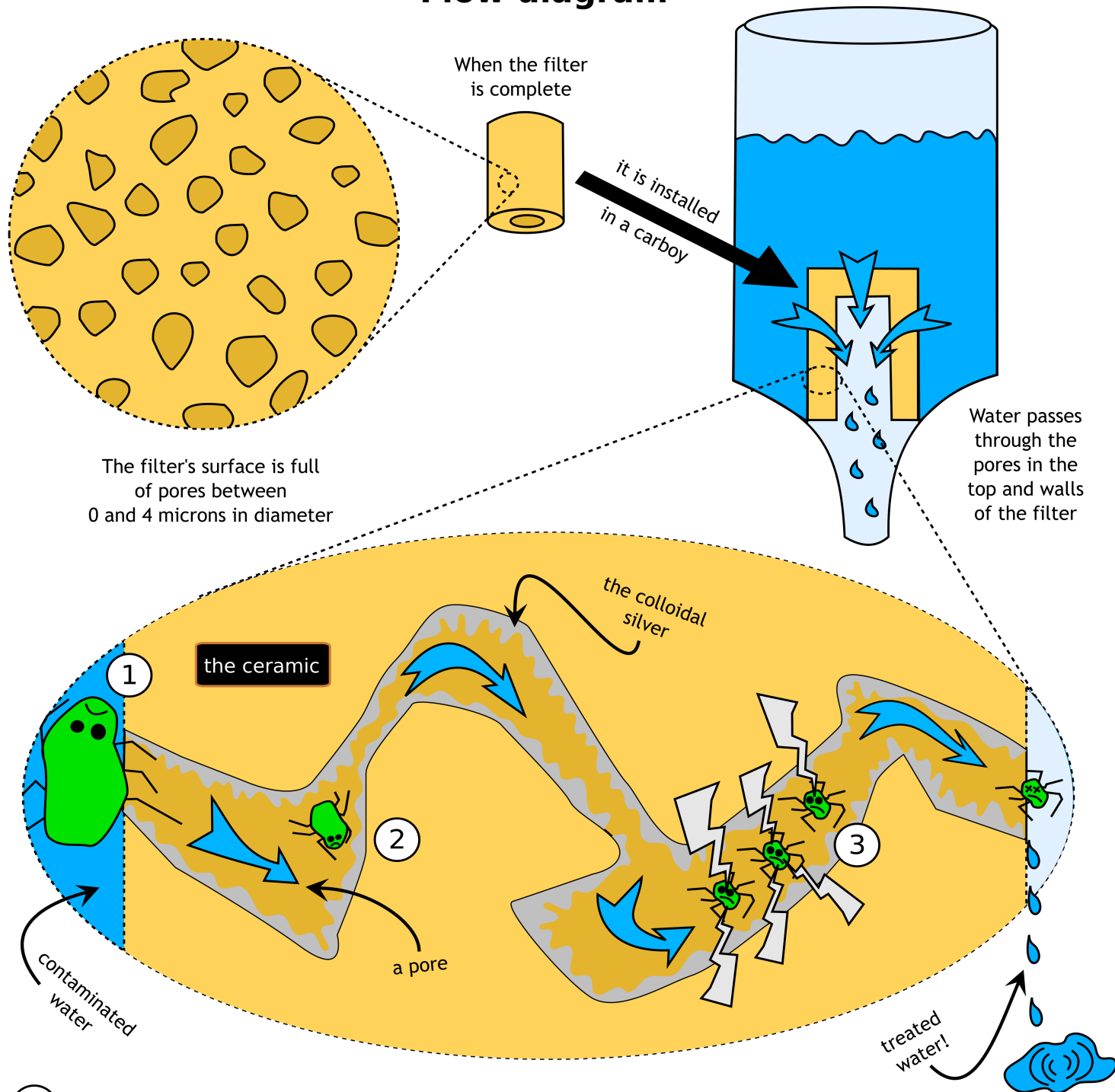
COFEPRIS Certification #173300EL531323: *(Mexican Equivalent to US-EPA Certification)*
 Received August 25, 2017 and states that Caminos de Agua's ceramic water filter meets all sanitary and water quality requirements for domestic water treatment systems and equipment. Official documentation provided as addendum.

INSTITUTION	PARAMETER	BEFORE FILTRATION	ACCEPTANCE CRITERIA	RESULTS AFTER FILTRATION	PASS?
CONAGUA (National Water Commission of Mexico)	Total Coliforms	46,000.00 MPN/100mL	≥ 99.99% Reduction	Absence or No Detect	√+
	Fecal Coliforms	24,000.00 MPN/100mL	≥ 99.99% Reduction	Absence or No Detect	√+
State Water Commission, Querétaro México	E.Coli	120,000 CFU/100mL	Reduction ≥ 99.99%	100.00% Removal	√+
	Total Fecal Coliforms	120,000 CFU/100mL	Reduction ≥ 99.99%	100.00% Removal	√+
	Aerobic Mesophilic Organisms	32,467 CFU/mL	Reduction ≥ 95.00%	99.98% Removal (8 CFU/mL)	√+
	Turbidity	615 NTU	5.0 NTU	1.0 NTU	√+
	Color	1,500 Pt/Co	20.0 Pt/Co	2.5 Pt/Co	√+
University College of London	E.Coli	3,110,000.00 CFU/100mL	≥ 99.99% Reduction	99.9999% Reduction (2 CFU/100mL)	√+
EcoLaboratorios, S.A. de C.V. Investigación Ambiental	Total Fecal Coliforms	> 1,100.00 MPN/100mL	Absence or No Detect	Absence or No Detect	√+
	Turbidity	483 NTU	5.0 UNT	0.71 UNT	√+
Columbia University Department of Engineering	E.Coli	131.4 MPN/100mL	< 1.0 MPN/100mL	< 1.0 MPN/100mL	√+
CATIS-México Laboratory	Total Fecal Coliforms	> 2,419.6 MPN/100mL	< 1.0 MPN/100mL	< 1.0 MPN/100mL	√+
	E.Coli	> 2,419.6 MPN/100mL	< 1.0 MPN/100mL	< 1.0 MPN/100mL	√+
Field Testing by CATIS-Mexico	Total Fecal Coliforms	> 2,419.6 MPN/100mL	< 1.0 MPN/100mL	< 1.0 MPN/100mL	√+
	E.Coli	> 2,419.6 MPN/100mL	< 1.0 MPN/100mL	< 1.0 MPN/100mL	√+

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How it Works

Model FCA01 Flow diagram



- 1 The largest pathogens cannot physically enter the pores.
- 2 Some medium-sized pathogens cannot pass through the variable-sized pores.
- 3 Pathogens small enough to pass through the pores are destroyed by the colloidal silver