

THE MADIDROP: PRODUCT INFORMATION

2017



MADIDROP

a simple solution for safe water

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WHAT IS THE MADIDROP?

The MadiDrop is an excellent tool for continued prevention of waterborne disease and illness at the household level. Use it to:

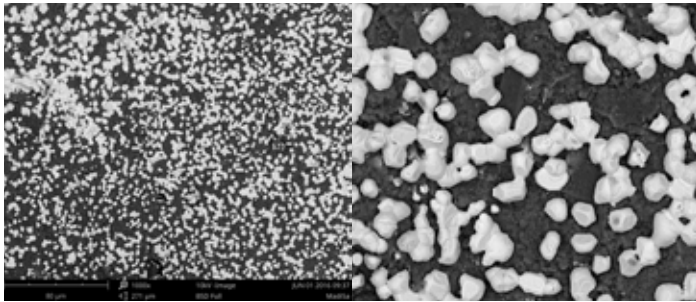
- Disinfect the household's daily water supply.
- Address residual contamination left behind by other treatments.
- Protect stored water from contamination.

Composition:

The MadiDrop is a micro porous, water permeable ceramic tablet infused with microscopic silver clusters.

Antimicrobial Technology:

The base antimicrobial is 99.9% pure mechanically bonded silver.



Micrographs of mechanically bonded silver (.1 - 10 micron) found throughout the M-Drop



Product Specification:



Weight: 52 g

Dimensions: 8x3x1.4 cm (3.1x1.2x0.6 in)

Volume of Water Treated: Up to 20 liters daily

Lifespan: 6+ months

Shelf Life: Perpetual shelf life

Intended Use: Point-of-use water disinfection and safe storage

Country of Origin: United States



Case of MadiDrops: 250 units

Weight: 31 lb (14.06 kg)

Dimensions: 39.4x31.8x10.2 cm (15.5x12.5x4 in)

Volume of Water Treated: 500,000 liters



No chemicals, fillers, or other related materials are used in the production process of the MadiDrop. It is made entirely of all-natural materials (clay and silver).



WHAT DOES THE MADIDROP DO?

Daily Disinfection

The MadiDrop empowers the user to control microbial contamination in their drinking water. At household point of use, this product eliminates contamination that may originate from the source, transportation, or storage. The MadiDrop is capable of destroying a wide range of waterborne pathogens and is highly effective against total coliform and bacteria.



Safe Water Storage

The MadiDrop provides a reliable barrier against secondary contamination and is an excellent solution for protecting stored water. Storing water in uncontrolled conditions (open or unsealed containers) can result in recontamination, which can undo the efforts of previous treatment and filtration techniques. One (1) MadiDrop placed and left in a water storage container of up to 20 liters will keep the water free of bacteria and other harmful organisms for weeks at a time.



The Advantage



Highly Effective

Helps prevent outbreaks of water-related diseases; kills 99.9999% of pathogens



Low Cost

Provides a family with 6+ months of safe water at the lowest possible cost



User Preferred

Multi-barrier approach technology; no taste or smell; preferred over chlorine



Unlimited Shelf Life

No expiration date; easy to store and stack until needed



Small and Portable

Easy to transport in difficult conditions, terrains, and environments



Non-Toxic

No toxic chemicals; does no harm to people or the planet



Works for 6+ Months

Provides ongoing disinfection at optimal performance



Easy to Use

Limited user interaction; does not require daily dosage treatments



No Electricity Required


Requires no electrical power, batteries, or replacement parts

Works great as a stand-alone disinfection method *and* as a companion product to other treatment approaches, such as micromembrane, ceramic and biosand filters, to address residual and revisiting contamination!



HOW TO USE THE MADIDROP

Designate a covered drinking water container with a spigot to limit contamination from hands and other external sources. Use the MadiDrop in a 10-20 liter water storage container and leave it there. Water added daily is continuously treated.



SAFE WATER STORAGE:
Place and leave the MadiDrop in up to 20 liters of water being stored. The MadiDrop protects stored water by preventing the growth of biofilm and waterborne pathogens.

Best Practice Recommendations:

- Turbidity does not affect the performance of the MadiDrop, but may affect taste. Remove dirt and turbidity using any filtration technique.
- Leaving some unconsumed water in the container will help disinfect the replacement water.
- Clean the drinking water container as needed to remove accumulated sediment. Remove and rinse the MadiDrop and rinse the container.

LONGER EXPOSURE TIME = BETTER DISINFECTION

Under circumstances where total bacterial levels are 'High' or 'Too Numerous to Count', the MadiDrop may require more time (24 - 48 hours in some cases) for total disinfection.

Important Observations:

- The MadiDrop does not remove turbidity, inorganic/organic material, arsenic, fluoride, nitrates, lead, sodium/saltwater, or other compounds and pollutants commonly found in water.
- Chlorinated drinking water will not damage the MadiDrop or affect disinfection capabilities, but discoloration may occur.
- The MadiDrop does not dissolve in water. The ceramic is engineered to withstand an aqueous environment.





MADIDROP EFFICACY

Lab and field tests have been conducted over the past six years by the University of Virginia's School of Engineering and Applied Science and School of Medicine. Research to develop the MadiDrop was supported by the National Science Foundation, the National Institutes of Health, the Bill and Melinda Gates Foundation, and the University of Venda in South Africa.



ORGANISM	ORGANISM INITIAL CONCENTRATION	CONTACT TIME	REDUCTION
<i>E. coli</i>	10 ⁷ cfu/100 mL	8 hr	4 log
Coliform bacteria	10 ⁴ cfu/100 mL	8 hr	4 log
<i>Cryptosporidium parvum</i>	10 ⁶ oocysts/100 mL	24 hr	90%
<i>Giardia lamblia</i>	10 ⁶ oocysts/100 mL	24 hr	90%
<i>Adenovirus</i>	10 ⁸ pfu/100 mL	8 hr	90%
<i>Aedes aegypti</i>	20 larvae/10 L	24 hr	50%
<i>Anopheles quadrimaculatus</i>	20 larvae/10 L	24 hr	100%

3rd Party Verified






HOW DOES THE MADIDROP WORK?

MadiDrop PBC uses a proprietary approach to deposit very small “patches” of silver on the internal surfaces of a porous ceramic tablet. Once in water, the MadiDrop continually releases low levels of silver ions.

Silver ions disinfect many different pathogenic waterborne bacteria, including *Escherichia coli*, *Vibrio cholera*, *Salmonella* and *Shigella*. Additionally, viruses such as poliovirus and norovirus, as well as the protozoa *Cryptosporidium parvum* and *Giardia lamblia*, are susceptible to inactivation by silver.



The mechanisms for disinfection of microorganisms by silver include: (1) the interaction of silver with various enzymes, disrupting crucial metabolic activity such as cell respiration; (2) the association of silver with thiol groups in surface proteins, negatively impacting enzymatic activity; (3) the binding of silver with DNA, preventing replication; and (4) the generation of reactive oxygen species, resulting in damage from oxidative stress.



The MadiDrop technology leverages the powerful antimicrobial properties of silver, an effective biocide for a range of waterborne pathogens.



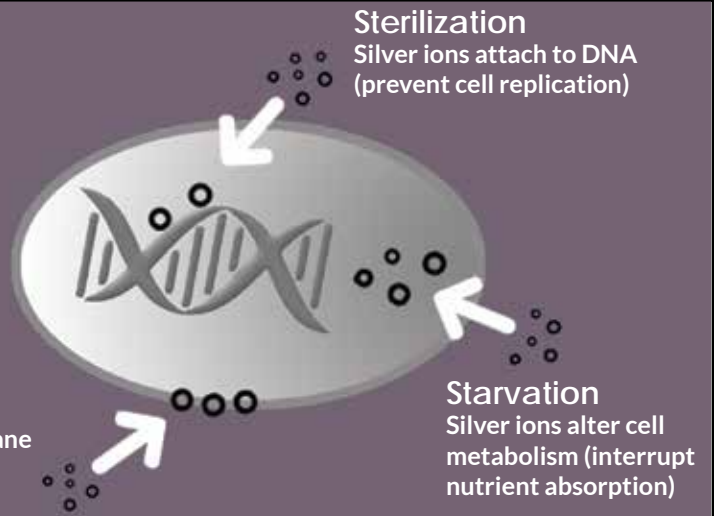
Unlike other metals such as lead and mercury, silver is not toxic to humans. It is not known to cause cancer, reproductive or neurological damage, or other chronic adverse effects. Both the World Health Organization (WHO) and the United States Environmental Protection Agency (USEPA) recommend a maximum concentration of 0.1 mg/L for silver in drinking water supplies. The MadiDrop produces ionic silver levels sufficient to disinfect or inactivate waterborne pathogens while remaining considerably below the daily maximum recommended concentration.

SILVER IONS & CELL LYSIS

Silver ions inhibit cell growth and cell division, causing cell lysis (breakdown of the cell) in microbial pathogens



Suffocation
Silver ions destabilize the cell wall (inhibit membrane transport)





HOW DOES THE MADIDROP COMPARE?

Compared to other common water treatment approaches and products, the MadiDrop delivers effective and exceptional safe water results. It's easy to use and does not break down. Additionally, when used with pre-filtered water, it's an outstanding solution to safe water storage.



Chlorine and Water Disinfection

Chlorine is one of the most commonly used water treatments worldwide. Although effective at reducing a number of waterborne pathogens, it has daily dosage requirements. Unlike chlorine, the MadiDrop does not alter the taste or smell of water and does not require sustained behavioral change. Its simplicity reduces interaction with the end user and the possibility of implementation errors. MadiDrop field deployments have shown the MadiDrop is preferred to chlorine and is effective when used with other treatment approaches, such as biosand filters, to protect against residual contamination.

PRODUCT CATEGORIES	KEY STRENGTHS	KEY LIMITATIONS	COST PER LITER
MadiDrop	<ul style="list-style-type: none"> • Easy to use and highly effective • Very low cost • Residual disinfection • Perpetual shelf life 	<ul style="list-style-type: none"> • Does not remove turbidity (dirt and other solids) 	\$0.002
Traditional Boiling and Solar Disinfection, Fabric Filtration, Natural Plant Coagulants	<ul style="list-style-type: none"> • Socially acceptable • Some methods low cost • Can be effective at killing pathogens • Some methods don't alter taste or smell • No specialized equipment 	<ul style="list-style-type: none"> • Some methods high cost • Labor intensive • Potential health hazards • No residual disinfection • Certain methods may alter taste 	\$0.01 - \$0.02
Single Use Chlorine Liquids and Tablets, Powder and Metal Disinfectants	<ul style="list-style-type: none"> • Low cost • Residual disinfection • Effective at killing most pathogens 	<ul style="list-style-type: none"> • Socially unacceptable • Alters taste • Ineffective against protozoan • Dosage toxicity difficult to control • Limited shelf life 	\$0.005 - \$0.02
Long-Term Use Filters: Ceramic Pots and Candles, Rice Husk, Ash, Carbon Block, Bio-Sand	<ul style="list-style-type: none"> • Effective at removing most pathogens • Does not alter taste • Some offer residual disinfection 	<ul style="list-style-type: none"> • High initial cost • Many require maintenance • Large and cumbersome • Efficacy varies dramatically 	\$0.004 - \$0.07



GLOBAL FEEDBACK

MadiDrops are being used in a range of communities in over 40 countries, providing 65,000 people with a combined 30 million liters of safe water. Every day, those numbers increase!

The overwhelming feedback is families enjoy using the MadiDrop to ensure their safe drinking water, and most importantly – their health improves.

From day one, we have believed in the MadiDrop's potential to have an immense positive impact upon global communities. As the manufacturer, we rely on humanitarian and mission-based organizations, commercial distribution companies, and social entrepreneurs to bring this message to the end user. To get there, they had to believe in the product themselves.

"The villagers generally know that they should boil or chlorinate their water, but have stubbornly refused because of the taste, temperature and/or effort needed. After 1.5 months [of using the MadiDrop], the reports are that chronic diarrhea has stopped, and the latest report yesterday is that households are now sharing with their neighbors. It means that the 'taste, temperature and/or effort' obstacles are being broken down, and they are spreading the word." – Daniel Lian, Nepal

"The MadiDrop is easier to use than any other disinfection product." – Anne Chipeta, SoHIP (Kaloko, Zambia)

"The MadiDrop is a realistic option to disinfect drinking water among Zambian communities." – SoHIP Final Report

"Thank you for the results; it's amazing so far how the MadiDrop is doing wonders so far." – Joel Mukanga, Whave (Uganda)

"We used to have some diarrhea but since we started using the MadiDrop, there has been no diarrhea in my family." – MadiDrop User (Uganda)

"A unique thing about the MadiDrop is that it keeps the storage container clean which is a huge problem. This is a challenging obstacle to overcome and the MadiDrop does it with ease." – Kyle L., MadiDrop Implementer

"In Venkata Reddy Palli, we do not have good water to drink. We always fall sick from diarrhea. As soon as I received [a MadiDrop], my family started to feel better. Now we are all healthy." – Lakshmi D. (India)

"Thank you for this wonderful product." – Jim Reynolds, Ultimate Mission (India)

see more at www.madidrop.com/success-stories



"The MadiDrops are doing great. We used them for water quality testing and they were superb. MadiDrops have been distributed in the camp, where water contamination is high." – John J., Rhino Refugee Camp (Uganda)

"We have been providing the MadiDrop to rural families, who are very excited about its simplicity of use. Everyone is grateful to get clean drinking water everyday simply by placing the MadiDrop in their bucket." – Michael Lindsey, Waves of Love (Nicaragua)

"Thank you for saving my gut. Since I got my MadiDrop, I haven't gotten sick. I am very encouraged by this technology." – Dr. Koh Ming Wei, Ph.D., Pacific Resources for Education and Learning (Majuro, Marshall Islands)

"People love it. Despite not treating their drinking water due to lack of time and wood, they are willing to buy the drop because of its low cost." – Tula Ngasala, Michigan State University (Dar es Salaam, Tanzania)

"I am very impressed with the product. After using it, I believe it's the best and the most important product for India and the world. I am satisfied with the microbial reduction and, with the MadiDrop, I no longer get sick." – Chandan Jain (Tamil Nadu, India)

"The MadiDrop was well-received by the community and its price point is not a hurdle." – Dr. Barry Bialek, Doctors Without Borders (Ethiopia)



BUY & DISTRIBUTE

MadiDrop PBC sells wholesale directly to:

- Humanitarian Aid, Disaster Relief, and Nonprofit Organizations
- Faith-Based and Service Organizations
- Government Agencies
- Distribution Companies
- Entrepreneurs and Resellers

Interested in making a high impact on the safe water needs in your community or market? We want to hear from you.

EMAIL INFO@MADIDROP.COM TO BUY, SELL, OR DISTRIBUTE TODAY.



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