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Did You Know?
You can use your SteriPEN® Defender with pre-filled water bottles up to 32 oz. (1 liter) in size. SteriPEN Defender also mates with canteens.

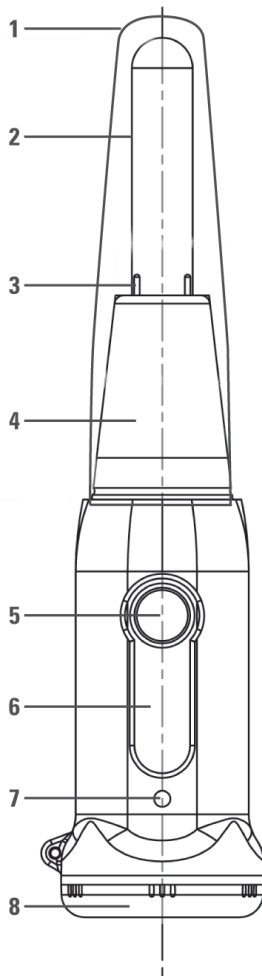
SteriPEN® Defender

SteriPEN® Defender User's Guide

Instructions for Using SteriPEN® Defender

Guide to SteriPEN® Defender Parts

- 1) UV Lamp Cover
- 2) UV Lamp Assembly
- 3) Water Sensors (2)
- 4) Rubberized neck
- 5) Activation Button
- 6) Thumb Grip (finger grips on opposite side of device)
- 7) Indicator LED (Light Emitting Diode): shows activation status
- 8) Battery Compartment End Cap
- 9) Warning label



Thank you for selecting SteriPEN® Defender. Years of careful research, development and testing have gone into this unique UV water purification product.

Directions for Use 40 C.F.R. §156.10(i)(2)

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. 40 C.F.R. §156.10(i)(2)(ii)

SteriPEN® purifiers meet or exceed U.S. EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers, destroying over 99.9999% of bacteria, 99.99% of viruses, and 99.9% of protozoa (giardia & cryptosporidium) when used as directed. SteriPEN® Defender is not a sterilizer.

Operating the SteriPEN® Defender

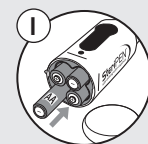
Quick Start Guide

Use SteriPEN® Defender with clear water. Discolored or dirty water should be pre-filtered until clear prior to SteriPEN® Defender treatment. See also "Treating Turbid, Murky, or Cloudy Water."

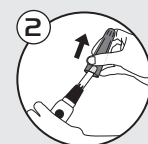
SteriPEN® Defender treats two ranges of water volume:

A—between 16 – 32 fl. oz. (0.5 – 1 L)

B—up to 16 fl. oz. (0 – 0.5 L)



1 Insert 4 AA batteries correctly. Use Lithium or NiMH Batteries.



2 Remove lamp cover. *Note: sensors must be dry.*



3A Push activation button **once** for 16 – 32 fl. oz. (0.5 – 1L) – green LED will flash for up to 15 seconds indicating SteriPEN® Defender is ready to use. **Note: SteriPEN® Defender will not function unless this step is completed before immersing lamp in water.**



3B Push Operating button **twice** for up to 16 fl. oz. (0.5 L) – green LED (Light Emitting Diode) will flash for up to 15 seconds indicating SteriPEN® Defender is ready to use. **Note: SteriPEN® Defender will not function unless this step is completed before immersing lamp in water.**



4 While green LED flashes the ready signal, dip the ultraviolet (UV) lamp into the water to be treated such that lamp and water sensors are completely immersed. When water is detected, lamp turns on automatically, emitting both UV and visible light. *Note: If visible light is not evident, SteriPEN® Defender's lamp is not on, and water should not be consumed.*



5 Agitate the water throughout the dose by stirring with the SteriPEN® Defender until the lamp automatically turns off. Once lamp turns off, green indicator LED will turn on to show that the UV dose is complete. *Note: If red LED turns on after lamp shuts off, the dose was not complete. Restart the process.*



6 Remove SteriPEN® Defender from water. Dry off lamp and water sensors with clean cloth. Replace lamp cover.

Lamp Life

Lamp Life = 8,000 Treatments, lamps must be replaced by manufacturer or SteriPEN® technician.

Safety

SteriPEN® Defender may be used in glass, plastic, ceramic or metal containers. These containers absorb and reflect UV light, thereby shielding the user from UV exposure. SteriPEN® purifiers should not be used in quartz containers. The air/water interface at the top of any drinking container is highly reflective to UV and reflects UV back into the container, thereby protecting the user from UV exposure.

Water Sense Circuitry

SteriPEN® Defender's water sense circuitry is intended to prevent the UV lamp from illuminating unless it is completely immersed in water. If SteriPEN® Defender is not immersed in water within 15 seconds of being activated, it will deactivate.

Agitation of Water

Agitation of the water throughout the dose is essential for proper operation as this ensures uniform exposure of all the water to germicidal UV light. Agitation of the water is accomplished by stirring with the SteriPEN® Defender or by rocking the container.

SteriPEN® Defender LED (Light Emitting Diode) Signals

LED Color and Pattern Display	Indication
Operating Signals	
Green, fast flashing (after button push)	Unit is armed and ready to treat water
Green, slow flashing: 1 second on, 1 second off (after dose completion)	32 fl. oz. (1 L) dose completed
Green, steady (after dose completion)	16 fl. oz. (0.5 L) dose completed
Green blinks for 15 seconds followed by a quick Red flash	Time expired, try again. The user has 15 seconds to put the SteriPEN® purifier in water after activation.
Green flash followed by Red flash	(1) Dry water sensing pins before use. (2) Press Activation Button for 1 second to activate for 32 fl. oz. (1 L) timer; again for 16 fl. oz. (0.5 L) (3) Clean water sensing pins.
Red, steady	Dose incomplete. Repeat treatment.
Battery Warnings	
Red, fast flashing	Low battery warning; replace or recharge batteries
Green slow blinking with Red flashes	32 fl. oz. (1 L) dose completed; low battery
Green, steady with Red flashes	16 fl. oz. (0.5 L) dose completed; low battery
LED will not come on	(1) Check battery orientation (2) Charge or replace batteries (3) Clean battery contacts (4) Return SteriPEN® purifier for repair
Lamp Warnings	
Red 2 flashes, Green 2 flashes (repeating)	Over 7,900 treatments completed; lamp replacement needed in under 100 doses
Red 3 flashes, Green 1 flash (repeating)	Lamp failure; replace lamp
Normal indicator LED function, yet UV lamp emits no visible light	Lamp failure. Do not consume water. Follow warranty procedure.
No LED indicator & UV lamp emits no visible light	Battery issue or Lamp failure; Try fresh batteries, then contact support

Cold Weather Considerations

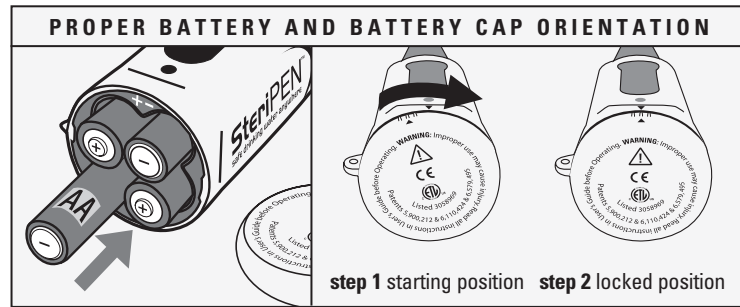
Bring SteriPEN® Defender up to a temperature above 32°F/0°C before using. Battery performance may be adversely affected by cold weather. NiMH rechargeable batteries are the best choice for economical use as well as for cold weather. Store your batteries in your pocket or warm place when in cold weather conditions.

Battery Selection & Installation

SteriPEN® Defender uses 4 AA cell batteries. While any AA cell batteries work, our tests show that Lithium batteries average 100 32 oz. (1 L) treatments, NiMH average 90-105 32 oz. treatments, and Alkaline offer 0-30 32 oz. treatments. Double number of expected treatments for 16 oz. (0.5 L) volumes. Colder ambient temperatures may negatively affect the number of doses per battery charge. Hydro-Photon recommends Energizer Lithium e2 or similar



high quality Lithium disposable AA batteries. Alkaline batteries not recommended due to inconsistency. When using rechargeable batteries, use Nickel Metal Hydride (NiMH) with 2300 mAh capacity or greater for best results. For more battery information, visit www.steripen.com.



To replace batteries, remove the battery end cap. Install new batteries in the end cap with polarities as shown. Re-install end cap.

Treating Turbid, Murky or Cloudy Water

SteriPEN® Defender is intended for use, and is most effective, in clear water. However, SteriPEN® purifiers have been shown to reduce microbial contamination in turbid water. If clear water is not available, first try to filter the water to clarify it – use a SteriPEN Pre-Filter, FitsAll Filter, bandana, clean cloth or coffee filter. If it is necessary to treat turbid, murky or cloudy water in an emergency situation, use SteriPEN® Defender as follows:

- To treat 32 oz. (1 L) of turbid water, use two 32 oz.- treatments. To accomplish this, push the operating button one time and complete the first treatment. Remove unit from water, wipe or shake water off sensors. Then push the button one time again and complete the second treatment.
- To treat up to 16 oz. (0.5 L) of turbid water, use a single 32 oz. dose. To accomplish this, push the operating button once and complete the treatment.

Turbidity is a measure of water clarity as affected by the presence of suspended solids. As turbidity increases, the suspended solids and murkiness of the water also increase. It is difficult to communicate a particular level of turbidity with just a written description. Accordingly, please take into account the following when considering the use of SteriPEN® purifiers in water that is not clear: Laboratory testing has shown that a SteriPEN® purifier is effective in water with a turbidity of not less than 30 ntu (Nephelometric Turbidity Units) as described in the US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers, section 3.3.4. SteriPEN® has been successfully tested in water with a turbidity measurement of 33 ntu.

If viewing 33ntu water in a clear 1 liter bottle, one might characterize the water as follows: *As cloudy as weak lemonade, Much closer to clear than opaque, Obviously not clear, Obviously cloudy, Objects viewed through the water are visible but blurry.*

Care and Cleaning

When not in use, SteriPEN® Defender should be kept in a clean, dry, non-abrasive area or container. SteriPEN® Defender should not be exposed to ambient temperatures above 140°F/60°C or below -4°F/-20°C.

To clean a SteriPEN® purifier, wash with a soft cloth and a mild soap solution. Rinse soap from device and dry with a clean, soft cloth. Note that while the battery compartment of the SteriPEN Defender is designed to be water resistant, it is not guaranteed to be impermeable and should therefore never be submerged.

When storing SteriPEN® purifiers for long periods, remove batteries.

As with all high-tech devices, the batteries must be removed when storing the unit. This will reduce/prevent battery terminal corrosion, spring fatigue and batteries from draining.

Troubleshooting

If flashing green LED (Light Emitting Diode) shows that SteriPEN® Defender is armed, but the lamp does not light when immersed in water, check to be sure lamp is completely immersed and that water is contacting both sensors.

If immediately after completing a treatment another treatment is attempted, but fast flashing green LED will not activate, check to see that the SteriPEN purifier's water sensors are not immersed in water or wet. Remove

SteriPEN® purifier from water, dry sensors and press Activation button again.

If fresh batteries have been installed, but SteriPEN® Defender will not complete a dose, low temperature may be the cause. Warm batteries up to a temperature above 32°F/0°C by inserting batteries into a pocket, etc. NiMH rechargeable batteries are a better choice for cold weather applications.

Technical Support

For technical support, please contact Hydro-Photon, Inc. via phone: (+1) 207-374-5800; USA: 1-888-SteriPEN or email: support@steripen.com.

Repair Information

Any repairs to your Defender should be done by a SteriPEN technician. For repairs, contact Hydro-Photon directly at info@steripen.com or 1-888-SteriPEN; (+1) 207-374-5800. For additional troubleshooting and repair information, visit www.steripen.com

Product Registration & Warranty Information

Hydro-Photon, Inc. provides a limited warranty such that the enclosed SteriPEN Defender is under warranty for any manufacturing defect for whichever situation occurs first: (1) the life (8,000 treatments) of the UV lamp or (2) three years from date of purchase. Warranty will be voided if SteriPEN Defender is (a) altered in any way, (b) used for purposes inconsistent with product's intended function, or (c) if product instructions and warnings are not followed.


For product registration and complete warranty information, please visit www.steripen.com/support or contact Hydro-Photon Inc. at (+1) 207.374.5800 or info@steripen.com.



Warnings for Safe Use


- Improper operation of SteriPEN® Defender may cause injury. Read and understand all warnings prior to operating SteriPEN® Defender.
- Do not allow water to enter SteriPEN® Defender through the battery compartment.
- Do not submerge the battery compartment end of the device.
- Do not operate SteriPEN® Defender in quartz containers such as quartz laboratory beakers.
- SteriPEN® Defender should not be used by children.
- SteriPEN® Defender is a high voltage device. Removal or tampering with the electronic circuit board or lamp assembly may cause injury, or damage SteriPEN® Defender.
- Do not open, expose, modify or touch internal circuitry; this can lead to high voltage shock.
- Do not attempt to bypass water sensor; this is an important safety feature.
- As with any water treatment system, you should always have a backup method available.
- SteriPEN® Defender is not intended to disinfect surfaces of a drinking container, i.e. those that typically contact the mouth when drinking. Be certain that your drinking container has been properly cleaned/washed prior to using SteriPEN® Defender.
- SteriPEN® Defender is not intended to disinfect water above the surface of the water in the container, i.e., droplets of water suspended on the side of the glass. Remove/dry these droplets prior to drinking.
- SteriPEN® Defender is intended for use with clear water but in emergencies may be used in moderately turbid water. See "Treating Turbid, Murky or Cloudy Water" section above before deciding to use a SteriPEN® purifier on turbid water.
- SteriPEN® Defender is designed to treat 16 or 32 fl. oz. (0.5 or 1.0 liter) of clear water. If in doubt about volume of water to be treated, confirm volume with a measuring device such as a measuring cup.
- Do not store SteriPEN® Defender for long periods with batteries installed.
- When operating properly, SteriPEN Defender's lamp will emit visible light as well as UV. If lamp is not emitting visible light, it is not functioning properly, and should not be used until repaired.
- SteriPEN® Defender's lamp assembly must be clean prior to use.
- If SteriPEN® Defender is below 32°F/0°C it should be warmed above 32°F/0°C before operating.
- Do not allow impact to the lamp end. If lamp assembly (lamp or quartz sleeve) is cracked, chipped or damaged, do not operate. Return to your local distributor/importer for repair.
- Do not use as a light source.

- Do not use in liquids other than clear water.
- Do not use in water with ice. (Ice may be used to cool water and then removed prior to purification.)
- Do not use in water above 140°F/60°C.
- UV light can be harmful to eyes and skin. Never look at an unshielded UV lamp during operation. When used properly, according to instructions, the user is well shielded from SteriPEN Defender's UV light.
- Do not operate near skin.
- Do not operate near eyes.
- Do not insert into bodily orifices.
- While carefully controlled microbiological testing of SteriPEN® Defender has been conducted, use of SteriPEN® Defender in the field may produce results that vary from our laboratory test data.
- Do not use in any manner other than instructed in this User's Guide.
- Like most fluorescent-type lamps, SteriPEN Defender's lamp contains a small amount of mercury. Please return your SteriPEN® purifier at the end of its productive life to your distributor/importer to permit correct recycling or safe disposal.

Certifications & Patents

 Conforms to EN61010-1:1993 + A1 + A2 and EN 61326 Listed 3058969. Conforms to Standard UL 61010A-1 Certified to CAN/CSA Standard C22.2, No. 1010.1-92 U.S.E.P.A. Company #73679, U.S. EPA Establishment #07369-ME-001 U.S. Patent Numbers 5,900,212 & 6,110,424 & 6,579,495 Patents and patents pending in U.S. and worldwide.

  This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

 Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



SteriPEN® is tested and certified by the Water Quality Association against the US EPA Microbiological Water Purifier Standard.

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