

UV-C Room Sterilizer SS

| Catalog # | Description | Content |
|-----------|--|---|
| E500UVST | SteriZAP® UV-C Room Sterilizer Stainless Steel, 110V | Sterilizer Unit x 1 Remote Control x 1 |
| E520UVST | SteriZAP® UV-C Room Sterilizer Stainless Steel, 220V | Sterilizer Unit x 1 Remote Control x 1 |

| Related Products | Catalog # |
|--|-----------|
| FirstResponder® Sterilizer, 110V (Ozone) | E4110FRS |
| SteriZAP® Handheld UV-C Sterilizer, 110V | E500UVCH |
| SteriZAP® Portable UV-C Sterilizer | E500UVCP |
| SteriZAP® Electrostatic Backpack Sprayer | E700EBS |
| SteriZAP® Germicidal Sprayer | E800GSP |
| FirstResponder® O ³ Nest Sterilizer, 110V | E400110 |
| FirstResponder® O ³ Nest Sterilizer, 220V | E400220 |

INTRODUCTION

UV light is electromagnetic radiation with wavelengths shorter than visible light. UV can be separated into various wavelength ranges, with the short-wavelength UV, or UV-C considered to be germicidal. Furthermore, and at the specific wavelength range of 260 to 270 nm, UV-C is found to be mutagenic to bacteria, viruses and other microorganisms. Germicidal UV-C kills or inactivates microorganisms by destroying their nucleic acids and disrupting their DNA, leaving them unable to perform vital cellular functions.

The SteriZAP® UV-C Room Sterilizer SS harnesses the germicidal power of UV-C light, in particular in the 254 nm wavelength. This unit uses shortwave UV lamps that emit ultraviolet light with the major peak output (~90%) band at 253.7 nm. The doped fused quartz glass tubes of the SteriZAP® lamps pass the 254 nm radiation (which produces very low ozone levels) but blocks the 185 nm wavelength (which produce higher ozone levels). The SteriZAP® UV-C Room Sterilizer SS is intended for use in disinfection of surfaces in laboratories, hospital rooms, food-processing areas, or any other places where disinfecting and sterilizing are desired.



| Specifications | |
|-----------------------------|--|
| Electrical Specifications | 110 volts AC, 60 Hz (±10%) for E500UVCT; 220 volts AC, 50 Hz (±10%) for E520UVCT |
| Unit Dimensions (W x D x H) | 16 x 13.5 x 46.75 inches (40.6 x 34.3 x 118.75 cm) |
| Lamp Power and Life | 55 W per lamp (4 lamps total) / 9,000 hours average life |
| UV Output / Dosage | ≥ 428 µWs/cm ² at 1 foot; ~90 µWs/cm ² at 6 feet, ~32 µWs/cm ² at 12 feet |
| Weight | 44 lbs (20 kg) |
| Operating Modes | 2 or 4 lamps at a time, 15-minute increments up to 23 hours 45 minutes. |
| Safety Feature | Motion sensor shut-off. |
| Warranty | 1 year |

PRECAUTIONS AND WARNINGS

- Read all instructions before using the devices. Use of these devices is only for intended purposes as described in this manual.
- DO NOT ATTEMPT TO OPERATE THE DEVICE IN THE PRESENCE OF PEOPLE OR ANIMALS.**
- FOR SAFE AND PROPER OPERATIONS, DO NOT TAMPER WITH THE UNITS IN ANY WAY.**
- The SteriZAP® UV-C Sterilizer SS emits a small amount of ozone gas when operating, which may give off an odor. This is normal; to eliminate this, briefly aerate the area.
- Do not operate the device if the cord or plug is damaged, if it is not working properly, or if the unit has been damaged or dropped.
- Do not store the device outdoors, or use it near open water— for example near filled sinks or water baths.
- Do not attempt to repair or open the unit unless you are a qualified repair technician.
- To avoid injury, handle broken lamps carefully by using protective hand, body, face, and eyewear. Dispose of broken glass in specialized sharps containers and obey all applicable country and city laws.



SAFETY NOTIFICATION:

UV-C radiation can damage the superficial tissues of the eye, and care must be taken to avoid excessive exposures to eyes. Glass or plexiglass eyewear or face mask can provide protection in case the motion sensor safety shut off malfunctions. Also, extended exposure of exposed skin to UV-C make cause damage to cellular or tissue DNA and should be avoided by wearing protective clothing while near operating UV-C lamps.

Note and Disclaimer

*The SteriZAP® UV-C Sterilizer SS is not a replacement or substitute for good cleaning practices. Areas to be sterilized must be free of excess contaminants, especially any visible liquids or solids (for example bodily fluids, debris or dirt). The SteriZAP® Sterilizer SS can eliminate or reduce residual surface contaminants, especially bacterial and fungal, but only if the UV-C light is able to directly impact the contaminated surfaces. **Any surfaces or items that are covered or are behind curtains, glass panels or plastic sheeting will not be sterilized by the SteriZAP® UV-C unit.** Genlantis makes no claims and offers no guarantees of any kind that the SteriZAP® UV-C Sterilizer SS will eliminate or reduce all contaminants and under all possible circumstances. For best results, users should closely follow the recommended instructions below.

DOSAGE RECOMMENDATIONS

Different germs and contaminants are susceptible to UV-C radiation at different rates. To determine the amount of time needed for sterilization, consult Table 1 on Page 4, and follow these recommendations:

Area coverage is typically determined by the UV lamp wattage. A 15-watt lamp will cover approximately 100 square feet; the SteriZAP's 220-total lamp watts can theoretically cover an area of about 1,466 square feet, but we recommend only covering an area of about 700 square feet, which translates into a radius of about 15 feet from the SteriZAP® UV-C Sterilizer device (see below for further explanation).

For sterilization time, it is recommended to use the minimum time needed to kill the most difficult organisms at the farthest distance from the device. For example, Table 1 (page 4) shows that *Aspergillus niger* requires 330,000 $\mu\text{Ws}/\text{cm}^2$ for a 99% kill rate.

The SteriZAP UV-C Room Sterilizer has the following measured outputs: $\geq 428 \mu\text{Ws}/\text{cm}^2$ at 1 foot; $90 \mu\text{Ws}/\text{cm}^2$ at 6 feet, $32 \mu\text{Ws}/\text{cm}^2$ at 12 feet; $18 \mu\text{Ws}/\text{cm}^2$ at 15 feet; and $2 \mu\text{Ws}/\text{cm}^2$ at 16.5 feet.

To eradicate *Aspergillus niger* 15 feet away from the device, 5 hours or run time are needed ($330,000/18$); at 12 feet it becomes 2.9 hours ($330,000/32$). This extreme example is used to demonstrate how to calculate distance and time requirements.

Special Note On Covid-19 Sterilization: Because the COVID-19 virus (SARS-CoV-2) is so new, the scientific community doesn't yet have a specific deactivation dosage. However, we know the dosage values for comparable viruses in the same SARS virus family are 10-20 $\mu\text{Ws}/\text{cm}^2$ using direct UVC light at a wavelength of 254nm; this dosage will achieve 99.9% disinfection (i.e., inactivation) under controlled lab conditions. In real-life, the virus is often hidden or shaded from direct UVC light, reducing UVC's effectiveness. To compensate, researchers are applying dosages of 1,000 - 3,000 $\mu\text{Ws}/\text{cm}^2$ to ensure 99.9% deactivation, the current CDC disinfection goal.







OPERATION

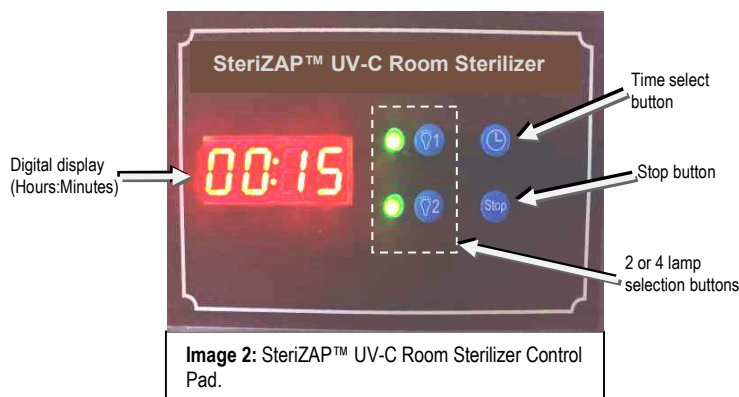
1. Select area to be sterilized and place the SteriZAP® UV-C Room Sterilizer SS in the most central area, or nearest to the most contaminated area. Pre-clean the area if excessive contamination is present.
2. Unlatch the two side compartments and pull the lamps out using the built-in arm handles. Lift the arms up to position them at the desired angles. For low or ground level sterilization, keep arms near the horizontal position. For standard bench surfaces, a 45° angle from vertical would be the most effective.

NOTE: Avoid using lamp arms to move the SteriZAP unit. This will cause the arms to brake at the top pivot point and cause unit failure and expensive repairs.

3. Plug power cord into wall outlet; the digital display will undergo a brief count up and the digital display will show a colon (:) only.

I-Control Pad Operation

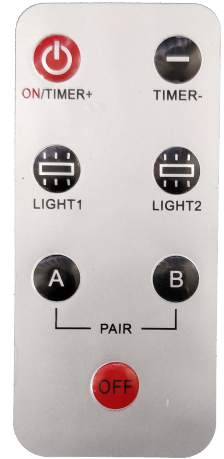
4. Press the Time Select Button  repeatedly to set the correct time. The Time Select Button moves in 15-minute increments, so for a 1-hour sterilization period, press the Time Select Button four times.
5. The unit will start to beep as it counts down to lamp activation (20 beeps, or ~20 seconds); during this time, select one of these options:
 - a. to activate **both the left and right arms** (4 lamps), press both the  and  buttons simultaneously;
 - b. To activate the **right arm only** (2 lamps), press the  button;
 - c. To activate the **left arm only** (2 lamps), press the  button.
6. Exit the room/area. The unit will turn the UVC lamps on after about 20 seconds from the time the motion detector stops detecting movement. If the unit detects movement during this countdown period, the timer will automatically reset to 20 seconds before turning the UV lamps on.
7. Use copies of page 5 of this manual and affix to the entries or exits of the area being sterilized.
8. During the UV sterilization period, the unit will immediately turn the UV lamps off if motion is detected; the unit will automatically turn the UV lamps back on 20 seconds after movement stops. To prematurely end sterilization cycles, press the Stop  button.



- Once the sterilization cycle is finished, the SteriZAP® UV-C Room Sterilizer SS will beep for about 10 seconds and the digital display will show a colon only.

II-Remote Control Operation

- Press the **[ON/TIMER+]** button to turn the unit display on; the screen will show a default of 15 minutes (00:15) and the unit will start beeping to indicate countdown. Press the **[ON/TIMER+]** button repeatedly to add time (in 15-minute increments) or the **[TIMER-]** button to decrease time (in 15-minute increments).
 - to activate **both the left and right arms** (4 lamps), press either the **[A]** or the **[B]** button;
 - To activate the **right arm only** (2 lamps), press the **[LIGHT1]** button;
 - To activate the **left arm only** (2 lamps), press the **[LIGHT2]** button.
- Exit the room/area. The unit will turn the UVC lamps on after about 20 seconds from the time the motion detector stops detecting movement. If the unit detects movement during this countdown period, the timer will automatically reset to 20 seconds before turning the UV lamps on.
- Use copies of page 5 of this manual and affix to the entries or exits of the area being sterilized.
- During the UV sterilization period, the unit will immediately turn the UV lamps off if motion is detected; the unit will automatically turn the UV lamps back on 20 seconds after movement stops. To prematurely end sterilization cycles, press the **[OFF]** button.
- Once the sterilization cycle is finished, the SteriZAP® UV-C Room Sterilizer SS will beep for about 10 seconds and the digital display will show a colon only.



MAINTENANCE

The SteriZAP® UV-C Room Sterilizer SS is very low maintenance unit and does not require any scheduled or regular cleaning.

- Keep unit clean by wiping exterior surfaces with a water dampened towel. To avoid damage, do not use any detergents or solvents.
- Do not touch UV-C lamps with bare hands, they will heat up during operation and cause oil or dirt from fingers to leave burn marks and may cause unpleasant smells. Handle UV-C lamps with gloved hands only.
- For optimal performance, keep lamps clean by wiping them occasionally with a dry soft or microfiber cloth.
- Unplug the units from the power outlet when the units are in storage or not in use.

SteriZAP® UV-C Room Sterilizer SS Manual

Table 1: UV-C dosage and SteriZAP® UV-C Room Sterilizer SS Kill Times

| Organism | Ultraviolet radiation (dose) in $\mu\text{Ws}/\text{cm}^2$ needed for kill factor: | | SteriZAP UV-C Room Sterilizer SS 99% Kill Times at 1 foot (in minutes) |
|--|--|-----------------------|---|
| | 90% (1 log reduction) | 99% (2 log reduction) | |
| Bacteria | | | |
| Bacillus anthracis - Anthrax | 4,520 | 8,700 | 0.3 |
| Bacillus anthracis spores - Anthrax spores | 24,320 | 46,200 | 1.8 |
| Bacillus magaterium sp. (spores) | 2,730 | 5,200 | 0.2 |
| Bacillus magaterium sp. (veg.) | 1,300 | 2,500 | 0.1 |
| Bacillus paratyphus | 3,200 | 6,100 | 0.2 |
| Bacillus subtilis spores | 11,600 | 22,000 | 0.9 |
| Bacillus subtilis | 5,800 | 11,000 | 0.4 |
| Clostridium tetani | 13,000 | 22,000 | 0.9 |
| Corynebacterium diphtheriae | 3,370 | 6,510 | 0.3 |
| Ebertelia typhosa | 2,140 | 4,100 | 0.2 |
| Escherichia coli | 3,000 | 6,600 | 0.3 |
| Leptospiracanicola - infectious Jaundice | 3,150 | 6,000 | 0.2 |
| Micrococcus candidus | 6,050 | 12,300 | 0.5 |
| Micrococcus sphaeroides | 1,000 | 15,400 | 0.6 |
| Mycobacterium tuberculosis | 6,200 | 10,000 | 0.4 |
| Neisseria catarrhalis | 4,400 | 8,500 | 0.3 |
| Phytomonas tumefaciens | 4,400 | 8,000 | 0.3 |
| Proteus vulgaris | 3,000 | 6,600 | 0.3 |
| Pseudomonas aeruginosa | 5,500 | 10,500 | 0.4 |
| Pseudomonas fluorescens | 3,500 | 6,600 | 0.3 |
| Salmonella enteritidis | 4,000 | 7,600 | 0.3 |
| Salmonella paratyphi - Enteric fever | 3,200 | 6,100 | 0.2 |
| Salmonella typhosa - Typhoid fever | 2,150 | 4,100 | 0.2 |
| Salmonella typhimurium | 8,000 | 15,200 | 0.6 |
| Sarcina lutea | 19,700 | 26,400 | 1.0 |
| Serratia marcescens | 2,420 | 6,160 | 0.2 |
| Shigella dysenteriae - Dysentery | 2,200 | 4,200 | 0.2 |
| Shigella flexneri - Dysentery | 1,700 | 3,400 | 0.1 |
| Shigella paradysenteriae | 1,680 | 3,400 | 0.1 |
| Spirillum rubrum | 4,400 | 6,160 | 0.2 |
| Staphylococcus albus | 1,840 | 5,720 | 0.2 |
| Staphylococcus aureus MRSA | 2,600 | 6,600 | 0.3 |
| Staphylococcus hemolyticus | 2,160 | 5,500 | 0.2 |
| Staphylococcus lactis | 6,150 | 8,800 | 0.3 |
| Streptococcus viridans | 2,000 | 3,800 | 0.1 |
| Vibrio comma - Cholera | 3,375 | 6,500 | 0.3 |
| Molds | 90% (1 log reduction) | 99% (2 log reduction) | 99% Kill Times (in minutes) |
| Aspergillus flavus | 60,000 | 99,000 | 3.9 |
| Aspergillus glaucus | 44,000 | 88,000 | 3.4 |
| Aspergillus niger | 132,000 | 330,000 | 12.9 |
| Mucor racemosus A | 17,000 | 35,200 | 1.4 |
| Mucor racemosus B | 17,000 | 35,200 | 1.4 |
| Oospora lactis | 5,000 | 11,000 | 0.4 |
| Penicillium expansum | 13,000 | 22,000 | 0.9 |
| Penicillium roqueforti | 13,000 | 26,400 | 1.0 |
| Penicillium digitatum | 44,000 | 88,000 | 3.4 |
| Rhizopus nigricans | 111,000 | 220,000 | 8.6 |
| Protozoa | 90% (1 log reduction) | 99% (2 log reduction) | 99% Kill Times (in minutes) |
| Chlorella Vulgaris | 13,000 | 22,000 | 0.9 |
| Nematode Eggs | 45,000 | 92,000 | 3.6 |
| Paramecium | 11,000 | 20,000 | 0.8 |
| Virus | 90% (1 log reduction) | 99% (2 log reduction) | 99% Kill Times (in minutes) |
| Bacteriophage - E. Coli | 2,600 | 6,600 | 0.3 |
| Infectious Hepatitis | 5,800 | 8,000 | 0.3 |
| Influenza | 3,400 | 6,600 | 0.3 |
| Poliovirus - Poliomyelitis | 3,150 | 6,600 | 0.3 |
| Tobacco mosaic | 240,000 | 440,000 | 17.1 |
| Yeast | 90% (1 log reduction) | 99% (2 log reduction) | 99% Kill Times (in minutes) |
| Brewers yeast | 3,300 | 6,600 | 0.3 |
| Common yeast cake | 6,000 | 13,200 | 0.5 |
| Saccharomyces carevisiae | 6,000 | 13,200 | 0.5 |
| Saccharomyces ellipsoideus | 6,000 | 13,200 | 0.5 |
| Saccharomyces spores | 8,000 | 17,600 | 0.7 |



CAUTION

UV sterilization in progress

Do NOT open door or enter area until this sign is removed

Name: _____

Date: _____

Time Sterilization Cycle Started: _____

Expected Cycle Completion: _____