



UVC DISINFECTING CABINET

PUREWORKS

User Manual



Proudly Made in the USA
of US and imported parts

Patent Pending

U.S. Pat. App. S/N 62/706,059

SAFETY

- CAUTION – Read all warnings and instructions before using this product.
- WARNING – Risk of fire or electric shock.
- Do not modify this product. Do not attempt to bypass safety systems.
- WARNING – UV light is dangerous to eyes and skin. Do not modify the cabinet as this can cause UV leakage.
- CAUTION – UV light can cause early degradation of some materials. Do not put in any items that can be damaged by UV light.
- KEEP AWAY FROM CHILDREN AND ANIMALS.
- Do not touch the LEDs as this can cause damage or contamination.
- Do not connect product to an electrical system that does not provide means for equipment grounding.
- Operation Temperature: Operate cabinet between 50°F and 80°F (10°C and 23.8°C)

CONTENTS OF KIT

- (1) UVC Disinfecting Cabinet
- (1) Wire Rack
- (4) Self-Adhesive Hooks
- (55) UVC Sensitive Test Stickers



Setup

1. Plug the disinfecting cabinet into a 120V outlet.
2. Install included cabinet hardware.
 - a. **Wire rack accessory**—There are two sets of brackets installed along the right and left inside surfaces of the cabinet. Depending on the size of the items being placed inside, determine the best position for the rack to ensure all surfaces will receive direct light. The rack position can be moved between uses for different items.
 - b. **Self-Adhesive Hooks**—Several hooks are included with your cabinet for customization for your typical use cases. The standard position for a hook will be on the top center of the inside surface, for example, allowing items to hang from the ceiling during disinfection. No matter what location you choose to place the hooks, any items utilizing the hooks will need to be away from the walls and hang as center as possible to ensure all surfaces of the items have direct access to the light during the cycle time of the cabinet. Once you have determined the best location for the hooks, peel the plastic covering from the adhesive, place the adhesive side of the hook base to the surface of the inside wall/ceiling in the cabinet firmly to remove any bubbles. Clip the metal hook onto the white base. We recommend leaving the hooks to fully adhere for 12 hours before using the hooks. To remove hooks, use a hairdryer to warm up the adhesive and peel away from the surface. Note: once the hook has been placed and removed, the adhesive will be damaged and should not be used again.
3. **Test Stickers** – Store the test stickers within the black envelope provided in a safe place for future use. Instructions for use is found in the Maintenance section of this manual under Verifying Operation.
4. **Leveling Feet** – adjust the leveling feet if needed. Uneveled feet may cause the door to swing open or closed when not latched.

Using the Disinfecting Cabinet

1. Power on the unit using the power switch located on the top back of the cabinet.
2. To open the cabinet, fold the latch up, then turn the latch counterclockwise, and pull open. Place item to be disinfected on the wire rack or hang from the hooks ensuring all surfaces are exposed to the UV light once the cabinet is in use.
3. Close the cabinet by turning the door latch clockwise, then folding down towards the cabinet. Verify the green light is illuminated.
4. Set the timer to the desired runtime. The initial default disinfection time is 1 minute. Runtime can be changed using the four buttons on the timer. The smaller set of numbers on the bottom of the timer screen is the time to be disinfected. The picture below shows 1 minute. To change the disinfection time, press the button corresponding to the digit that needs to change. For example, if you want to disinfect for 1 minute 30 seconds, press the first button on the left until “0” displays, then press the second button from the left until the “1” displays, then press the third button until the “3” displays, and then press the fourth button until the “0” displays. Note: the timer will default to the last time entered for the next disinfection time. Please reference the chart in the information section or on the side of the cabinet for recommended disinfection times for each germ. The large numbers on the timer screen will count down the time remaining once the disinfection begins.



1191 Venture Drive Ste A, Forest, VA 24551
434-446-1460
www.pureworks.us

5. Press the blue Start button. Red indicator light will indicate the UVC LEDs are operating. Unit will actively disinfect items for the set time.
 - a. UVC LEDs and timer will automatically shut off if the door is opened. If the door is opened before the sequence finishes, then the sequence must be restarted to ensure proper disinfection.
6. When the Green light illuminates and the timer displays “0m00s”, disinfection is complete. It is recommended that the cabinet handle be cleaned, and your hands be sanitized and/or gloved to prevent recontamination of the item after it has been disinfected. Open the disinfecting cabinet and remove the items.
7. Close the cabinet door. The green indicator light will illuminate on indicating that the cabinet is ready for the next use.

Maintenance

1. Disconnect power cord before performing any maintenance.
2. FOR CLEANING AND SANITIZING CABINET: Use a cloth and 70% isopropyl-based alcohol to wipe down and sanitize the interior and exterior surfaces. DO NOT use sprays on controls or directly onto LEDs. Clean and sanitize as needed.
3. REPLACING FUSE: If cabinet has no power, one possible problem (other problem could be at the outlet) is the fuse. Twist to disconnect the fuse holder on the back of the disinfecting cabinet. Replace a blown fuse with 120V 2A fast blow fuse.
4. VERIFYING OPERATION: The UVC cabinet should be tested annually to verify it is within calibration. Place UVC test stickers on the center of each face inside the box (top, bottom, and the 4 walls). Set the timer for 4 minutes. After the process is finished, remove the stickers. The stickers should be about the same color compared to each other and similar in green color to the chart provided on the next page at the 4-minute mark. If some or all of the stickers are yellow after a 4-minute cycle, please contact technical support at 434-446-1460. Additional stickers can be purchased.

NOTE: UV test stickers are sensitive to all forms of UV. Do not leave out of the packaging when not in use as they can become discolored.

UVC Test Sticker Color Chart

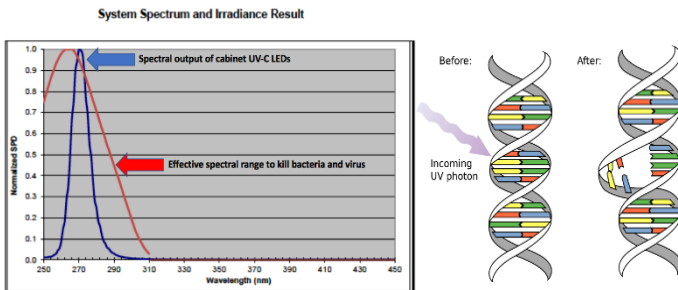


Information

By optimally positioning germ and virus killing UV-C LED modules inside the cabinet to eliminate blind spots, contents are disinfected within 1 minute. UV light has three wavelength categories: UV-A, UV-B, and UV-C. UV-C light wavelengths are between 200 and 300 nanometers. UV-C is germicidal and effective in breaking apart microorganisms, such as bacteria, molds, and viruses.

Microorganisms such as bacteria, viruses, cysts and mold are simple lifeforms that reproduce by subdivision, budding or by producing spores.

When exposing microorganisms to UV-C light, the light penetrates through their cell walls and disrupts the structure of their DNA molecules, prohibiting reproduction. Reproduction of these organisms is vital to their lifecycles and loss of their ability to grow and multiply is classified as cellular death and renders them harmless and no longer pathogenic.



1191 Venture Drive Ste A, Forest, VA 24551

434-446-1460

www.pureworks.us

UVC Irradiation Time to Achieve 99.99% Kill Rate for Specific Pathogen				
BACTERIA	30 Seconds	1 Minute	2 Minutes	4 Minutes
Acinetobacter baumannii	x	✓	✓	✓
Bacillus anthracis (Anthrax)	x	✓	✓	✓
Bacillus anthracis spores (Anthrax Spores)	x	x	x	✓
Bacillus megaterium	✓	✓	✓	✓
Bacillus megaterium spores	✓	✓	✓	✓
Bacillus paratyphosus	✓	✓	✓	✓
Bacillus subtilis	x	✓	✓	✓
Bacillus subtilis spores	x	x	✓	✓
Clostridium tetani	x	x	✓	✓
Clostridium difficile (C. Diff) **	x	x	91%**	>91%**
Corynebacterium diphtheriae	✓	✓	✓	✓
Ebertelia typhosa	✓	✓	✓	✓
Escherichia coli (E. Coli)	✓	✓	✓	✓
Leptospiranicola (Infectious Jaundice)	✓	✓	✓	✓
Micrococcus candidus	x	✓	✓	✓
Micrococcus sphaeroides	✓	✓	✓	✓
Mycobacterium tuberculosis	x	✓	✓	✓
Neisseria catarrhalis	x	✓	✓	✓
Phytomonas tumefaciens	x	✓	✓	✓
Proteus vulgaris	x	✓	✓	✓
Pseudomonas aeruginosa	x	✓	✓	✓
Pseudomonas fluorescens	✓	✓	✓	✓
Salmonella enteritidis	x	✓	✓	✓
Salmonello paratyphi (Enteric Fever)	✓	✓	✓	✓
Salmonella typhosa (Typhoid Fever)	✓	✓	✓	✓
Salmonella typhimurium	x	x	x	✓
Sarcina lutea	x	x	x	✓
Serratia marcescens	✓	✓	✓	✓
Shigella dysenteria (Dysentery)	✓	✓	✓	✓
Shigella flexneri (Dysentery)	✓	✓	✓	✓
Shigella paradysenteriae	✓	✓	✓	✓
Spirillum rubrum	x	✓	✓	✓
Staphylococcus albus	✓	✓	✓	✓
Staphylococcus aureus	✓	✓	✓	✓
Methicillin-resistant Staphylococcus aureus (MRSA)	x	✓	✓	✓
Staphylococcus hemolyticus	✓	✓	✓	✓
Staphylococcus lactis	x	✓	✓	✓
Streptococcus viridans	✓	✓	✓	✓
Vancomycin-resistant Enterococci (VRE)	x	✓	✓	✓
Vibrio comma (Cholera)	✓	✓	✓	✓
VIRUS	30 Seconds	1 Minute	2 Minutes	4 Minutes
Bacteriophage	✓	✓	✓	✓
Infectious Hepatitis	x	✓	✓	✓
H1N1 (Influenza)	x	✓	✓	✓
Poliovirus - Poliomyelitis	✓	✓	✓	✓
HCoV-229E (Common Cold)	x	✓	✓	✓
SARS-CoV-2 (COVID-19)	x	✓	✓	✓

1191 Venture Drive Ste A, Forest, VA 24551

434-446-1460

www.pureworks.us

MOLD	1 Minute	3 Minutes	10 Minutes	20 Minutes
Aspergillus flavus	x	x	✓	✓
Aspergillus glaucus	x	x	✓	✓
Aspergillus niger	x	x	x	✓
Mucor racemosus A	x	✓	✓	✓
Mucor racemosus B	x	✓	✓	✓
Oospora lactis	✓	✓	✓	✓
Penicillium expansum	x	✓	✓	✓
Penicillium roqueforti	x	✓	✓	✓
Penicillium digitatum	x	x	✓	✓
Rhizopus nigricans	x	x	x	✓
YEAST	1 Minute	3 Minutes	10 Minutes	20 Minutes
Brewers yeast	✓	✓	✓	✓
Candida albicans	✓	✓	✓	✓
Common yeast cake	✓	✓	✓	✓
Saccharomyces carevisiae	✓	✓	✓	✓
Saccharomyces ellipsoideus	✓	✓	✓	✓
Saccharomyces spores	x	✓	✓	✓
PROTOZOA	1 Minute	3 Minutes	10 Minutes	20 Minutes
Chlorella Vulgaris	x	✓	✓	✓
Nematode Eggs	x	x	✓	✓
Paramecium	x	✓	✓	✓

** Clostridium difficile (C. Diff) 2 min for 91%

NOTE: Refer to chart when determining runtime for killing specific microorganisms. For pathogens not listed, contact PureWorks for more information.

Sources

These are the sources referenced in our test validation:

- [https://www.ledsmagazine.com/lighting-health-wellbeing/article/14177977/boston-university-validates-signify-uv-for-](https://www.ledsmagazine.com/lighting-health-wellbeing/article/14177977/boston-university-validates-signify-uv-for-coronavirus-deactivation)
- <https://www.americanairandwater.com/uv-facts/uv-dosage.htm>
- <https://www.tandfonline.com/doi/pdf/10.1080/15459620701329012>
- <https://www.tandfonline.com/doi/pdf/10.1080/15459620701329012>
- <https://iuva.org/resources/covid-19/SARS%20CoV2%20Dose%20Response%20White%20Paper.pdf>
- <https://www.medrxiv.org/content/10.1101/2020.06.05.20123463v2.full.pdf>

These are other resources used to establish effectiveness of UV-C for disinfection:

- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>
- <https://www.n95decon.org/publications>
- https://www.nrcresearchpress.com/doi/10.1139/w04-002#_XtazbS2Z0qA
- https://www.researchgate.net/publication/339887436_2020_COVID-19_Coronavirus_Ultraviolet_Susceptibility
- <https://www.americanairandwater.com/uv-facts/uv-dosage.htm>
- <https://www.frontiersin.org/articles/10.3389/fmicb.2019.02718/full>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3048910/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2910020/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3463377/#:~:text=multidrug%2Dresistant%20A-,baumanni%20cells%20were%20inactivated%20at%20UV-C%20exposures%20much%20lower%20than,similar%20effect%20on%20mammalian%20cells,&text=UV-C%2Dinduced%20DNA%20lesions%20in,prevent%20combat%2Drelated%20wound%20infections>
- <https://www.medrxiv.org/content/10.1101/2020.06.05.20123463v2.full-text>

1191 Venture Drive Ste A, Forest, VA 24551

434-446-1460

www.pureworks.us