



UV Sanitization  
Model UVC-1000 SERIES  
Frequently Asked Questions

**1. What is UV disinfection?**

UV disinfection is the use of ultraviolet light to kill infectious bacteria, viruses, and fungi. While modern techniques have not always been in use, the effect of UV light on infectious microbes has been known and studied for more than 100 years.

**2. How does UV disinfection work?**

UV light operates at a shorter wavelength than all visible light. The UV wavelength can penetrate viruses, bacteria, and other infectious particles and cause physical destruction. The destruction of these particles renders them unable to infect and therefore disinfects the surface, liquid, or air where they were living.

UV-C wavelengths (200 to 280 nm) are readily absorbed by the DNA and RNA of microorganisms. When absorbed, UVGI damages the structure of the DNA by forming thymine dimers, which prevent the microorganism from replicating. In simpler terms, microorganisms replicate by copying their DNA, and UVGI damage to the DNA makes it so the microorganism can no longer replicate, nor perform vital cellular functions. The magnitude of reduction of microorganisms is directly related to their resistance to UVGI and the quantity of UVGI energy delivered.

UV-B wavelengths (280 to 315 nm) have also been shown to have a germicidal effect on nucleic acids (DNA and RNA), just to a lesser extent than the UV-C wavelengths from 200 to 280 nm. The collective UV-C and UV-B spectrum (200 to 315 nm) is considered actinic, meaning these wavelengths produce a photochemical reaction.

**3. How effective is it as an UV disinfectant?**

A UV disinfectant takes less than five minutes to clean and sanitize most items. During this time, they can damage 99.99% of microbes on the surface of an object. These devices are up to 1000 times more effective than existing forms of sanitization.

UV disinfectants have been used as sanitizers for years. While earlier their use was limited to hospitals and spas, they are now becoming popular as home appliances too. They are quickly becoming the fastest and most efficient way of disinfecting your home. That said, always remember to follow usage guidelines and take appropriate precautions while using these devices.

**4. Why Use UV Sterilization?**

UV sterilization is not a new technology, having been discovered in 1879. Discovered to be a useful technology for cleaning infectious spaces, more studies were done to determine the exact beneficial nature of UV for sterilization purposes. Since the 20th century, UV sterilization has been used to disinfect things like water and work surfaces. UV light is a shorter wavelength than visible light, and is able to penetrate and destroy the bodies of viruses and bacteria.

The use of UV sterilization, or ultraviolet germicidal irradiation, has been found to be extremely effective. Sources of UV sterilization can kill over 99% of viruses, bacteria, and fungi in an extremely short amount of time. Due to this effectiveness, various types of UV treatments and specialized UV devices for sterilization have been developed. This can make it difficult to determine what kind of UV device provides the best results for your facility.





5. Can I use UVC sanitization in my hotel?

Yes - ultraviolet sanitization systems have been safely used in hotels, hospitals, laboratories, clean rooms, doctors' offices, commercial buildings, factories and many other commercial and residential environments internationally and any place where concern for clean air exists.

6. Do UVC germicidal lamps kill viruses?

Yes -germicidal UVC lamps kill up to 99.9% of most viruses, airborne bacteria and mold spores.

7. Will germicidal UV take care of mold?

Yes. Germicidal UVC lamps will kill up to 99.9% of mold and help prevent future mold growth

8. How often do the lamps need to be replaced?

GermClean™ Germicidal UVC is good for two years of continuous use, with only 20% decrease in output over the two years.

9. Should UVC lamps be cleaned?

Yes - depending on the surrounding environment, UVC lamps should be checked periodically (approximately every three months), and can be cleaned with a dry cotton cloth or paper towel. Wear rubber gloves and clean with alcohol only. This will also help maximize lamp life.

10. How much intensity do I need to kill certain organisms?

The exposure of germicidal ultraviolet is the product of time and intensity. High intensities for a short period and low intensities for a long period are fundamentally equal in lethal action on bacteria. The inverse square law applies to germicidal ultraviolet as it does to light: the killing power decreases as the distance from the lamps increases.

11. How do germicidal lamps kill?

Ultraviolet light in the germicidal wavelength - 185-254 nanometers - renders the organisms sterile. When organisms can no longer reproduce, they die.

12. Do I need ozone-producing lamps?

Some Germicidal UVC lamps produce ozone. Whether or not you need ozone-producing lamps depends on your particular application. Most of the time you do not need ozone, unless there are shaded areas that the UVC light cannot reach, and the space will not be occupied by people. Ozone can travel in the air to where UVC cannot reach directly, but should not be used in spaces where people will be present, without proper PPE. American Ultraviolet only uses ozone-producing germicidal UVC lamps when specifically required by unique applications, or customer requirements. American Ultraviolet standard UVC lamps do not produce any ozone. Our lamps only emit from 240NM and up.



**13. When do I need to use ozone-producing lamps?**

Certain germicidal UVC lamps can generate energy at 185 nanometers, as well as 254nm. The 185nm wavelength produces abundant amounts of ozone in air. Ozone is an extremely active oxidizer and destroys microorganisms on contact. Ozone also acts as a deodorizer. Another advantage is that it can be carried by air into places that UVC radiation cannot reach directly. American Ultraviolet standard UVC lamps do not produce any ozone. Our lamps only emit from 240NM and up.

**14. Can germicidal lamps be turned on and off continuously?**

There are three common types of germicidal UVC lamps:

"Cold Cathode" lamps are instant-start, using a large cylindrical cathode instead of a coil filament, so lamps have a long life that is unaffected by frequency of starting.

"Slimline" lamps, are also instant-start and are available in low-, high- and very high-ozone types. Their lamp life is governed by the electrode life and number of starts. Because of their high initial UVC emission, and good maintenance, Slimline UVC Germicidal Lamps are well adapted for applications such as air cooling and heating systems, conveyor lines, water sterilization and other applications that require "around-the-clock" use and therefore do not need to be turned off.

"Hot Cathode", or preheat/hot cathode, lamps generally use standard, off-the-shelf fluorescent ballasts, providing advantages in economy and space. Preheat lamps have four electrical connections per lamp and require more wiring than instant-start lamps. Frequent starts/stops will reduce the lamp life of Hot Cathode lamps.

**15. How hot do the lamps get?**

Germicidal UVC lamps do not produce much heat. The heat generated is about the same as fluorescent lamps.

**16. Are UV disinfectants safe for humans?**

UV light is considered dangerous but as long as UV disinfectants are used according to the specified guidelines, there is no danger to human health. For example, an upper air UV sanitizer should be used only when there is nobody else in the room. When it comes to smaller box disinfectants used to sanitize household groceries, the lid should be shut tightly before switching on the appliance.

Many experts actually consider a UV sanitizer to be safer than chemical cleaning solutions used in our homes. This is because, they are non-toxic and do not release any harmful residue into the environment.

**17. What damage will the lamps do to me?**

Prolonged, direct exposure to UVC light can cause temporary skin redness and eye irritation, but does not cause skin cancer or cataracts. American Ultraviolet systems are designed with safety in mind and, when properly installed by a professional contractor, do not allow exposure to ultraviolet irradiation and allow for safe operation and maintenance. If you are exposed to direct germicidal light, it can burn the top surface of your skin. If your eyes are exposed, it would be similar to a "welder's flash", and your eyes can feel dry or gritty. At no time do germicidal lamps cause any permanent damage.





**18. What effects does UV light have on surrounding materials?**

Long-term exposure of germicidal UVC light to plastics will shorten the shelf life of the plastic by approximately 10%. Example: If the plastic would normally last about ten years, and it's exposed to germicidal UVC light the entire time, it would probably need to be replaced in 9 years. Plant life may be damaged by direct, or reflected, germicidal ultraviolet rays. Transient dyes and colors may be faded from prolonged exposure to ultraviolet rays.

**19. Does UV lighting damage skin and other materials?**

UV rays, both artificial and naturally occurring, can harm skin. With proper safety measures, risk is mitigated.

It is proven that disinfection using UV lighting is the best option and won't damage the equipment as much as hard chemical cleaners.

**20. How do you determine the square footage that one germicidal UVC lamp will cover?**

This is determined by the wattage of the lamp. Example: A 15-watt lamp will cover approximately 100 square feet; a 30-watt lamp will cover approximately 200 square feet.

**21. How are UVC lamps used to disinfect the air?**

Germicidal UVC lamps can be used in ceiling fixtures suspended above the people in a room, or within air ducts of re-circulating systems. The first method is called Upper Air Irradiation. The fixtures are shielded on the bottom so that the radiation is directed only up toward the ceiling and out the sides. These upper-air germicidal fixtures are mounted at least 7ft. above the floor so that people will not bump into them or look directly at the lamps. The second method of air disinfection uses UVC lamps placed inside the ventilation system ducts. If a ceiling is too low for an upper-air irradiation fixture, this type of an in-duct germicidal fixture can be used. Also, because people are not exposed to the UVC radiation, very high levels can be used inside the ducts.

**22. Is UV disinfection safe?**

Ultraviolet light has been used for disinfection purposes for many years, so we know that with proper precautions in place, UV is safe to use for disinfection. As long as those operating the disinfection devices are trained in the use of UV light and are themselves protected, the process is safe. It is also a good idea to take precautions to keep personnel who are not protected out of rooms that are being disinfected with near UV light. Far-UVC light, however, is safe and can be used with humans present.

**23. What safety precautions should be taken when using germicidal UVC?**

In personal protection applications (the use of lamps for room irradiation in homes, schools, offices, etc.), indirect fixtures such as TB and Corner Mount fixtures are mounted above eye level. Only the upper air is irradiated and persons or animals occupying the area receive no direct exposure. Direct ultraviolet irradiations, such as American Ultraviolet's Utility Fixtures or Deluxe Surface Mounted Fixtures, irradiate the air in the entire room. In such installations, personnel should be protected by wearing either goggles or face shields, such as American Ultraviolet's Ultra-Spec 100 Safety Goggles and Ultra-Shield Face Shields designed for ultraviolet exposure, and by covering as much skin as possible with clothing or sun block.



**24. What happens if someone walks into the area being disinfected during the decontamination process?**

It's vital to follow instructions for safe use of UV lighting. If someone were to walk in, they could have damage to eyes or skin. It's unlikely that any permanent damage would be done, but it's certainly not recommended. Instead, try using controls and locks to ensure safety and clear signage to avoid someone entering when they're not supposed to.

**25. Do you need special training to use UV lighting?**

Yes, you'll need special equipment and training to use UV lighting professionally in public settings. Generally, the purchase of the special equipment will provide you with the instruction needed. There are some residential applications for UV lighting that don't require training, but any large-scale commercial usage will require instruction to ensure proper and safe use.



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