

UV-C Disinfection Solution FAQs

1. Have any studies been conducted to ensure the safety of the new products?
All of our UV Disinfection products will be certified for safety by third party labs. Extensive research over the past 80 years has demonstrated the potential hazards of UV disinfection, enabling our engineers to design products that maximize both disinfection and safety.
2. Are there any safety concerns with Germicidal UV-C? Can people be in the room when the UV-C being used?
There are no safety concerns for either nUVo or abUV, as the UV-C is fully contained for air disinfection. For mUVe, there are numerous safety systems in place to ensure safe disinfection by trained operators.
3. Is there any maintenance required on nUVo or abUV?
The only maintenance required is the replacement of the UV lamp at 10,000 hours (there is an LED indicator light to let you know when the lamp needs to be replaced). The chambers are designed to prevent the dust build-up during operation.
4. Is all Ultraviolet (UV) considered Germicidal Ultraviolet (GUV)?
No. Only a portion of the UV spectrum is considered effective for germicidal or disinfection purposes. Wavelengths between 280 nm and 200 nm, which are not present naturally, are considered germicidal UV due to their ability to damage the DNA of pathogens.

5. Are there scientific studies on the effectiveness of UV disinfection?

UVGI: <https://journals.sagepub.com/doi/abs/10.1177/003335491012500105>

UVGI on viral aerosols: <https://pubs.acs.org/doi/10.1021/es070056u>

UVGI for SARS-CoV-1: <https://www.sciencedirect.com/science/article/pii/S016609340400179X>

UVGI for SARS-CoV-2: <https://www.medrxiv.org/content/10.1101/2020.06.05.20123463v2>

6. What are the differences between UV LEDs and UV germicidal bulbs?

UV-C LEDs are currently not cost effective for most applications, they eliminate hazardous substances, their useful life is between 1,000 and 20,000 hours and are only about 5% efficient. Low- and high-pressure mercury discharge lamps are similar in construction and operation to fluorescent lamps, but they have a quartz glass bulb to maximize UV transmission. They have a useful life of between 9,000 and 18,000 hours, a peak at 254 nm, and an output efficiency of around 30-40% making them highly effective for germicidal UV.

7. How much UV is required, and how long does the process take, to disinfect a volume of air or surface?

Every pathogen responds to UV exposure differently, as well as to different wavelengths, so determining the most effective wavelength and dose required for inactivation is crucial for calculating effectiveness. The most common dose response is based on 254 nm produced by mercury discharge lamps, since it is the long-accepted, most energy efficient, and well-proven wavelength for UV disinfection. Dosage is determined based on the intensity (the output wattage) of the UV-C at a certain distance and the exposure time (in seconds) at a particular wavelength. Since UV dose inactivation research has been studied extensively for numerous microbes, one can determine the level of effectiveness based solely on the output wattage, exposure time, and target microbe for disinfection. For example, an air disinfection product with a 35w output power at 254nm and a dwell time of between 0.09s and 0.18s, based on fan speed, we can determine that average UV-C exposure for a pathogen would be between 8.46 mJ/cm² and 18.6 mJ/cm², depending on the fan speed setting.