

Safezone222-RC Specification Sheet

Safezone222-RC Filtered Far UVC Excimer Lamp Surface Mount

UVC Cleaning Systems Inc. is introducing the Safezone222-RC UV device. The Safezone222-RC is our in ceiling mounted filtered 222nm Far UVC solution for microbial pathogen reduction applications. With optimal mounting flexibility the Safezone222-RC product is highly effective at pathogen reduction in numerous areas and applications.

Featuring Care222® Krypton-Chloride excimer UV modules that can safely be used in occupied spaces without posing health risks to humans, the Safezone222-RC system needs to be part of your disinfection process. The 222nm Far field UVC revolution is setting a new standard in microbial virus and bacterial reduction that you never dreamed of before!

FEATURES & BENEFITS

- iOS App Store Compliant
- Meets ACGIH® UV Exposure Limits.
- Flexible Mounting on Vertical Surfaces
- Simple Lamp Mounting Options
- Care222® Patented Safety Filter Technology Included to Ensure Narrowband 222nm Emission
- Mercury Free - Environmentally Friendly
- Effective Germicidal Wavelength to Eliminate Dangerous Pathogens
- Effective Reduction of Viruses, Bacteria, and Spores
- Instantaneous On/Off at Full Output Power, No Lamp Degradation
- No Lifetime Instantaneous On/Off at Full Output Power

APPLICATIONS

- Surfaces • Air



Safezone222-RC

UVC Output/Beam Angle:


14 uw/cm2 @ 1meter/ 60 Degree

Effective Against: Bacteria, Mold, Yeast, and Virus

Electrical: 120-277 VAC, .5 AMPS, 50/60 Hz

Dimensions: 12 1/2"H x 7 3/4"W x 8"D

Weight: 3 lbs. 2 oz.

 **Complies with**
ANSI / UL / CSA 8802
E115876 UL 1598 / CSA C22.2#250.0



USHIO

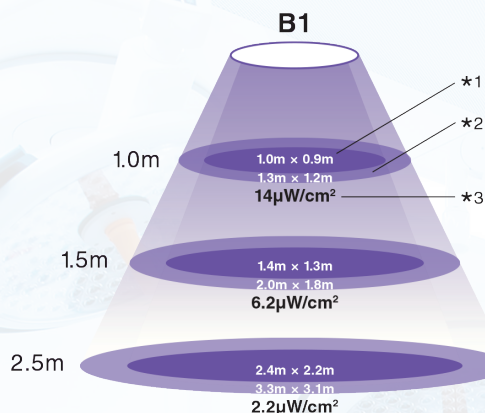
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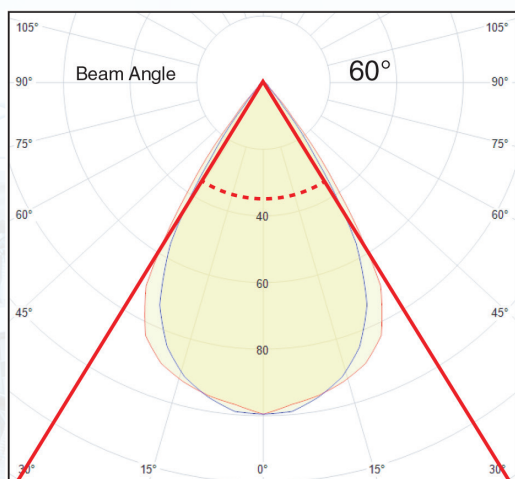
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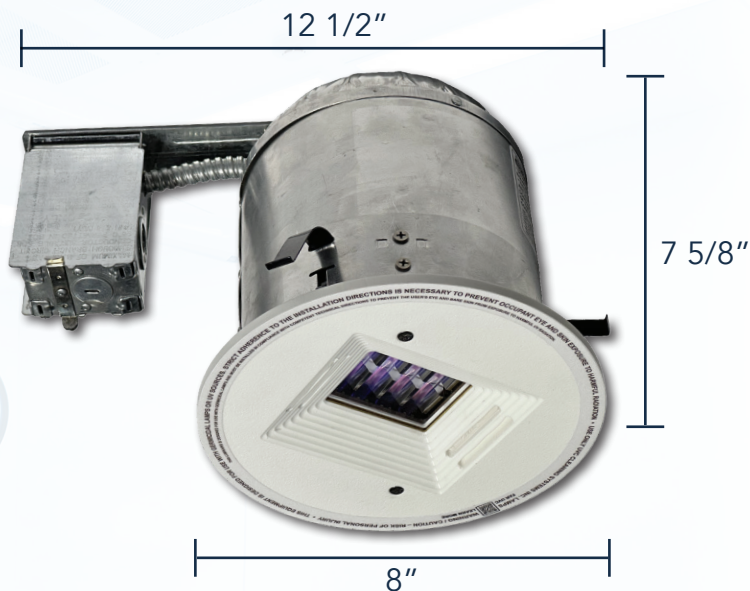
Irradiance Distribution



- *1 Area of >60% Peak Irradiance
- *2 Area of >30% Peak Irradiance
- *3 Peak Irradiance



Safezone222 Front View



Product Name	Safezone222-RC
Wavelength	Filtered 222nm
Beam Angle	60°
Optical Filter	Yes
Optical Diffuser	No
Output (Center Irradiance @1m)	14uW/cm2
Electrical Input (Inverter)	120-277 VAC, .5 AMPS
Power Consumption	20W
Operating Voltage	4kV – 6kV
Average Rated Lamp Life	10,000hr (80% Output)
Dimensions (in)	12 1/2"H x 7 3/4"W x 8"D



Regulatory Approvals and Partnerships:



Complies with
ANSI / UL / CSA 8802
UL 1598 / CSA C22.2#250.0



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Domain	Species	Methods ¹⁻⁷				
		222nm	254nm	70% ethanol	405nm	
Bacteria	MRSA (<i>Methicillin-Resistant Staphylococcus aureus</i>)	+++	+++	+++	+	
	<i>Pseudomonas aeruginosa</i>	+++	+++	+++	+	
	<i>Escherichia coli</i> O157	+++	+++	+++	+	
	<i>Salmonella Typhimurium</i>	+++	+++	+++	+	
	<i>Campylobacter jejuni</i>	+++	+++	N.D.	+	
	<i>Bacillus cereus</i>	Vegetative cell	+++	+++	++	+
		Spore	+++	++	—	—
	<i>Bacillus subtilis</i>	Vegetative cell	+++	+++	N.D.	+
		Spore	+++	++	N.D.	—
	<i>Clostridium difficile</i>	Spore	+++	++	—	—
Molds and Yeasts	<i>Candida albicans</i>	+++	+++	+++	+	
	<i>Penicillium expansum</i>	+++	+++	N.D.	+	
	<i>Aspergillus niger</i>	Vegetative cell	+	+	+++	+
		Spore	+	+	N.D.	—
Virus	MS2	+++	+++	N.D.	—	
	<i>Feline Calicivirus</i>	+++	+++	—	—	
	<i>Influenza A</i>	+++	+++	N.D.	—	
	<i>SARS-CoV-2</i>	+++	+++	N.D.	—	

Table X, Inactivation effect of 222-nm, 254 nm UVC irradiation and 70% ethanol on the various species. Dose of UVC radiation to achieve 3-log reduction of the species is grouped as follows. <50 mJ/cm²: +++, ~100 mJ/cm²: ++, ~1000 mJ/cm²: +, >1000 mJ/cm²: -. Treatment time with 70% ethanol to achieve 3-log reduction of the species is grouped as follows. <10 sec: +++, ~20 sec: ++, ~30 sec: +, >30 sec: -. **N.D. means no data.** The data shown in green were studied and provided by Ushio Inc.

Reference

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2. D Wang, T Oppenländer, MG El-Din, and JR Bolton, "Comparison of the disinfection effects of vacuum-UV (VUV) and UV light on bacillus subtilis spores in aqueous suspensions at 172, 222 and 254 nm," Photochem. Photobiol., vol. 86, no. 1, pp. 176-181, 2010.
3. A. N. Edwards, S. T. Karim, R. A. Pascual, L. M. Jowhar, S. E. Anderson, and S. M. McBride, "Chemical and stress resistances of clostridium difficile spores and vegetative cells," Front. Microbiol., vol. 7, no. OCT, pp. 1-13, 2016.
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5. J. C. Doultree, J. D. Druce, C. J. Birch, D. S. Bowden, and J. A. Marshall, "Inactivation of feline calicivirus, a Norwalk virus surrogate," J. Hosp. Infect., vol. 41, no. 1, pp. 51-57, 1999.
6. Kitagawa, et al. (2020) DOI: <https://doi.org/10.1016/j.ajic.2020.08.022>.
7. Welch, et al., Sci. Rep. 8, 2752 (2018). Buonanno, et al., Sci. Rep. 10, 10285 (2020).

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UV-C COMPARISON STUDIES

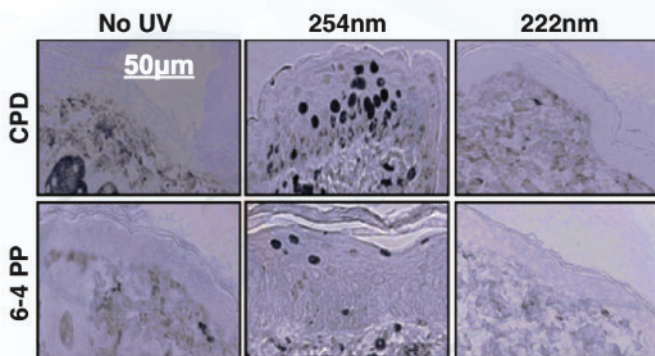


Fig. 1 Comparison of cross-sectional images of UVC-induced premutagenic skin lesions CPD (cyclobutane pyrimidine dimers) and 6-4PP (photoproducts) in the dorsal epidermis of mice. A UV dose of 157 mJ/cm² was used for both 254 and 222 nm¹.

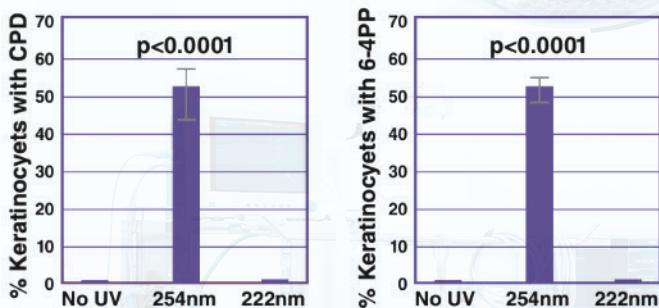


Fig. 2 & 3 Average percent of keratinocyte cells exhibiting dimers (Fig 2. - right CPD; Fig 3. - left 6-4PP) measured in UVC-induced premutagenic DNA lesions in nine randomly selected fields of view per mouse (n=3)¹.

Comparison (254nm VS 222nm) for Spore Inactivation²

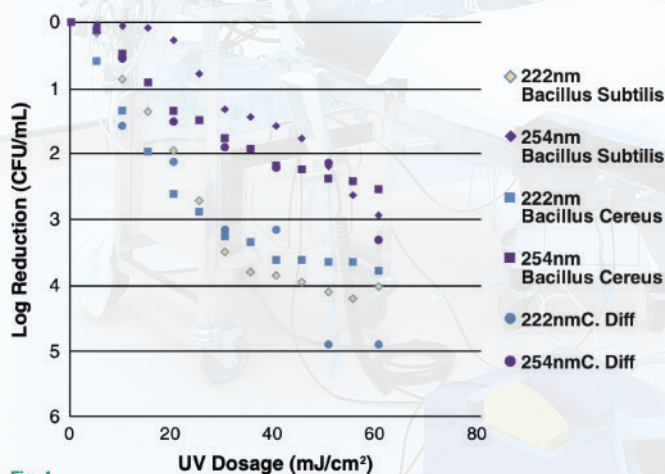
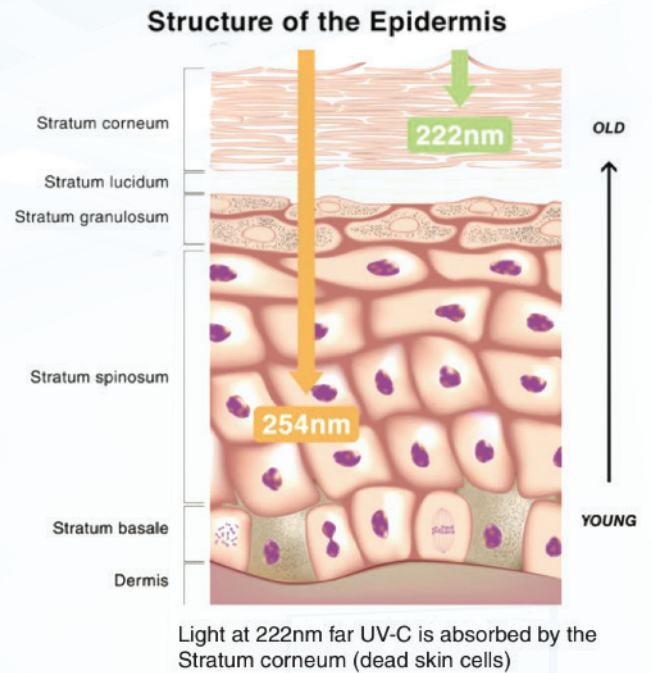


Fig. 4

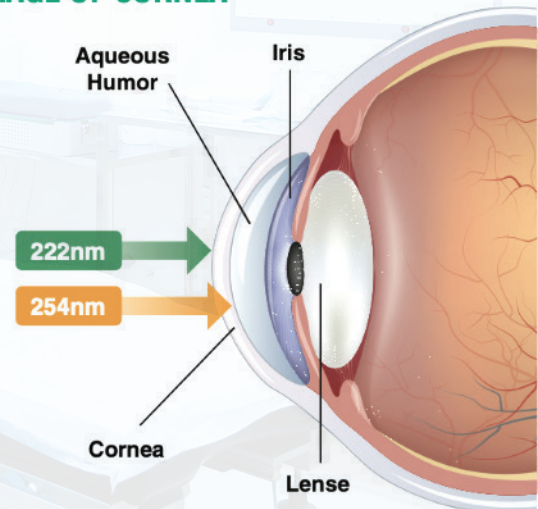
References:

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SKIN ABSORPTION SHOWING 222nm VS. 254nm



DAMAGE OF CORNEA



Unlike conventional UV light, 222nm far UV-C is absorbed in the tear layer of the cornea and is much less likely to cause eye damage.³

All safety testing was done with Ushio's proprietary filter technology to provide only narrowband 222nm light emission.