Safezone222-WM Specification Sheet

Safezone222-WM FilteredFar UVC Excimer Lamp Surface Mount

Safezone FAR UVC 222 is introducing the Safezone222-WM wall mounted UV device. The Safezone222-WM is our vertical or horizontally mounted filtered 222nm Far UVC solution for microbial pathogen reduction applications. With optimal mounting flexibility the Safezone222-WM 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-WM 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-WM

UVC Output/Beam Angle:
1.9 uw/cm2 @ 1meter/ 110 Degree

Effective Against: Bacteria, Mold, Yeast, and Virus

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

Dimensions (w/Mount): 10 5/8"H x 6 3/8"W x 5 3/8"D

Weight: 3 lbs. 1 oz.

SCAN HERE

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

EPA Est. #91447-MI-2

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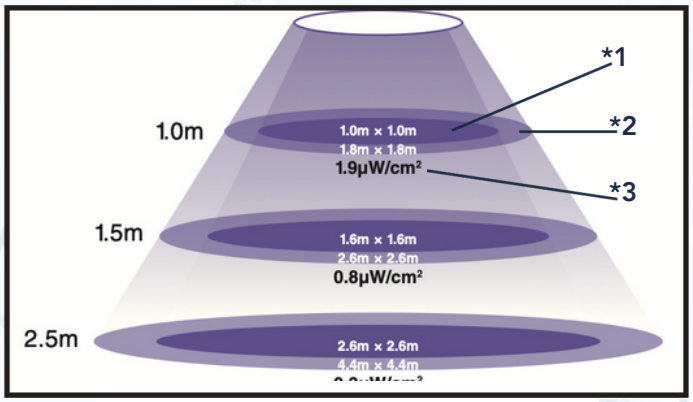
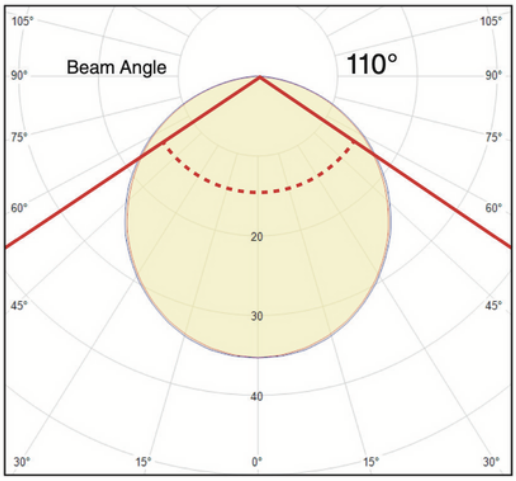
Irradiance Distribution



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



Safezone222 Front View

6 3/8”

10 5/8”

Safezone222 Side View

5 3/8”

10 5/8”

Product Name	Safezone222-WM Filtered
Wavelength	222nm 110° Yes Yes
Beam Angle	1.9uW/cm2 120-277 VAC,
Optical Filter	.5 AMPS 20W 4kV – 6kV
Optical Diffuser	10,000hr (80% Output)
Output (Center Irradiance @1m)	10 5/8”H x 6 3/8”W x 5
Electrical Input (Inverter)	3/8”D
Power Consumption	
Operating Voltage	
Average Rated Lamp Life	
Dimensions (in)	

Regulatory Approvals and Partnerships:

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

RoHS FC CE Care222 USHIO EPA Est. #91447-MI-2

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

1. CM Springorum et al., Conference: XIV international congress of the International Society for Animal Hygiene, At Vechta, Volume: 2, Page 740-742, 2009
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.
4. S. E. Beck, H. B. Wright, T. M. Hargy, T. C. Larason, and K. G. Linden, "Action spectra for validation of pathogen disinfection in medium-pressure ultraviolet (UV) systems," Water Res., vol. 70, pp. 27–37, 2015.
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

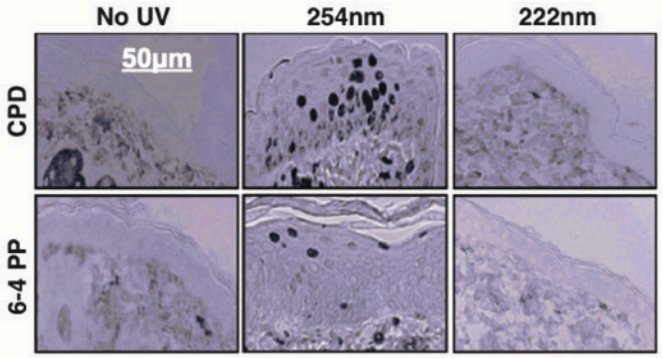


Fig. 1 Comparison of cross-sectional images of UVC-induced premutagenic skin lesions CPD (cyclobutane pyrimidine dimers) and 6-4PP (photoproducts) in the dorsal epidermis of mice. A UV dose of 157 mJ/cm2 was used for both 254 and 222 nm[1].

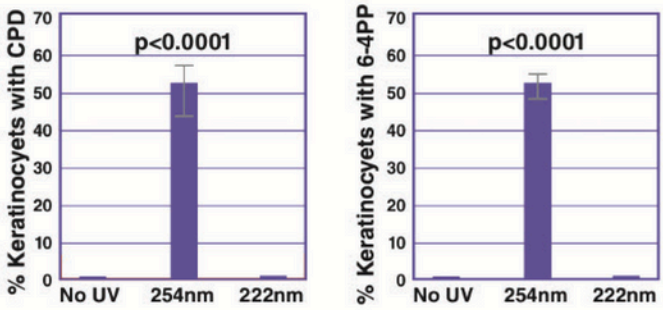


Fig. 2 & 3 Average percent of keratinocyte cells exhibiting dimers (Fig 2. - right CPD; Fig 3. - left 6-4PP) measured in UVC-induced premutagenic DNA lesions in nine randomly selected fields of view per mouse (n=3)[1].

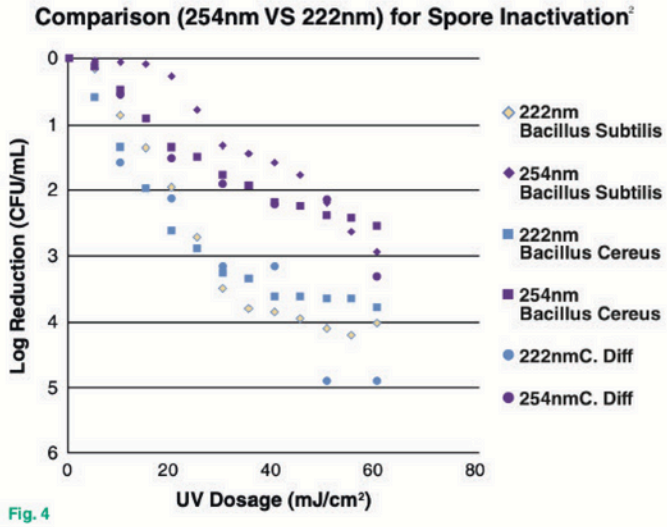
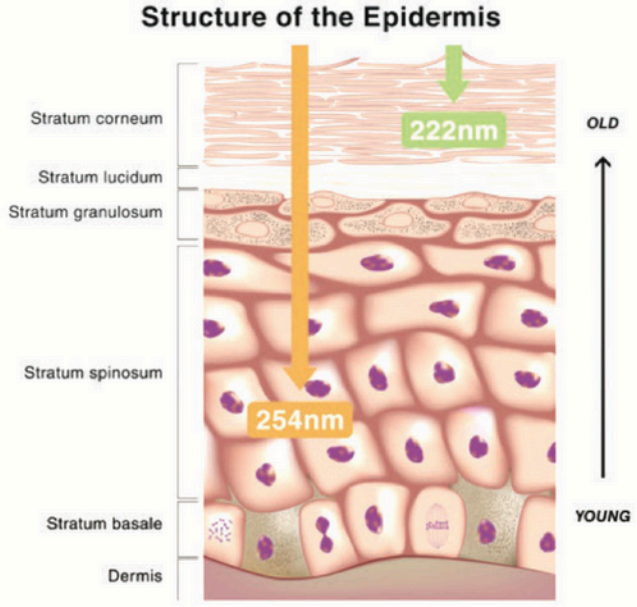


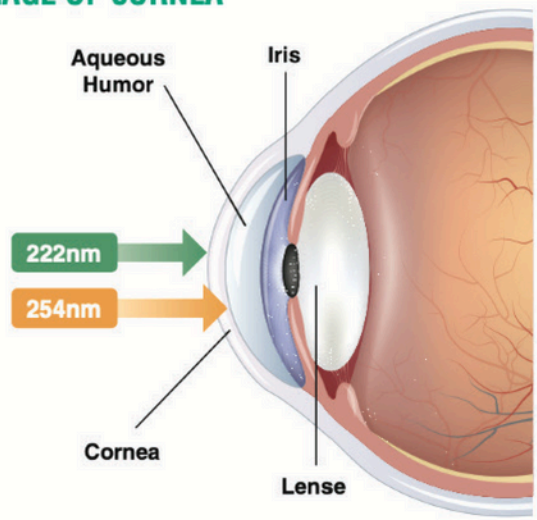
Fig. 4

SKIN ABSORPTION SHOWING 222nm VS. 254nm



Light at 222nm far UV-C is absorbed by the Stratum corneum (dead skin cells)

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.

References:

[1] Buonanno, Manuela; Ponnaiya, Brian; Welch, David; Stanislauskas, Milda; Randers-Pehrson, Gerhard; Smilenov, Lubomir; Lowy, Franklin D.; Owens, David M.; Brenner, David J.. Germicidal Efficacy and Mammalian Skin Safety of 222nm UV Light. Radiation Research. 2017 April; 187(4): 483-491.

[2] Ushio Inc. Internal Data

[3] Kolozsvári, Lajos; Nógrádi, Antal; Hopp, Béla; Bor, Zsolt. UV Absorbance of the Human Cornea in the 240- to 400-nm Range. Investigative Ophthalmology & Visual Science July 2002, Vol.43, 2165-2168.

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