

Manufacturer Statement: Eliminating Coronavirus on Smartphones with UV Light

March 20th, 2020

UV-C Light Effectiveness Against Coronavirus Pathogens

Valued partners and clients:

[CleanSlate UV](#) has received a flood of inquiries re: the novel Coronavirus (SARS-CoV-2 and COVID-19) and its susceptibility to ultraviolet germicidal irradiance (UVGI).

As this is a novel pathogenic strain, commercial lab tests are not yet available. Timelines for conducting surface veridical testing is still unknown.

That being said, the COVID-19 virus belongs to a family of positive-strand RNA viruses which include SARS-CoV and MERS-CoV. The microbiological characteristics and epidemiology of these viruses have been well studied and provide a baseline for analysis.

While CleanSlate UV cannot yet claim specific efficacy rates against the novel Coronavirus, there exists compelling documentary evidence regarding the effectiveness of UVGI against the *Coronaviridae* viruses, including effective kill rates using UVGI that is far below CleanSlate UV's standard cycle output. This evidence includes:

Surfacide UV Benchmark

- Surfacide UV study on effectiveness of UVGI against MERS-CoV ⁱ (*Bedell et al*) demonstrated a **6.11 log₁₀ reduction (>99.9999%) within a 10 minute cycle.**
- Another independent study by *Ali et. al* ⁱⁱ showed Surfacide achieved a **4-5 log₁₀ reduction (99.99-99.999%) of meticillin-resistant Staphylococcus aureus (MRSA) within a 10 minute cycle.**
- The same study showed that Surfacide achieved a 1.2-2.5 log₁₀ reduction (95-99.6%) of C. Difficile Spores, with a 40 minute cycle being needed to achieve a 3 log₁₀ reduction,
- CleanSlate UV's solution is proven to achieve >5.71 log₁₀ reduction (>99.99981%) of MRSA and a 3.51 log₁₀ reduction (99.97%) of C. Difficile in just 20 seconds. This testing was done with soiling and bio-matter present, according to ASTM E1153 standards.

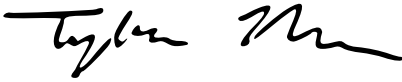
Analysis of Inactivating Viruses on Surfaces Using UVGI

- A 2007 study by *Chun-Chieh Tseng and Chih-Shan Li* ⁱⁱⁱ analyzed the effect of UVGI on single-stranded RNA (ssRNA) viruses, single-stranded DNA (ssDNA) viruses, double-stranded RNA (dsRNA) viruses, and double-stranded DNA (dsDNA) viruses.
- It concluded that each category of virus was susceptible to UV light, with varying dosages required (5-22mJ/cm²)
- It also concluded that "These findings revealed that **virus susceptibility to UVGI was similar to that of non-sporulating species, such as fragile bacteria and yeasts, but is higher than that for endospore-forming bacteria and fungal spores.**"
- This study confirms that the Coronavirus family is susceptible to UVGI, that viruses are as susceptible as typical strands of E. Coli, and that viruses require a lower UV-C dosage than C. Difficile.
- CleanSlate UV has been proven to achieve a >5.03 log₁₀ reduction (>99.9991%) of E. Coli and a 3.51 log₁₀ reduction (99.97%) of C. Difficile in just 20 seconds. It provides a dose of >150mj/cm².

While CleanSlate UV cannot yet claim a specific kill rate against the COVID-19 virus, we hope this provides useful insight into the effectiveness of UV-C light against the virus.

Should you require anything any additional information, please reach out to our team at info@cleanslateuv.com.

Sincerely,



Taylor Mann
Co-founder & CEO
CleanSlate UV

ⁱ Bedell, K., Buchaklian, A., & Perlman, S. (2016). Efficacy of an Automated Multiple Emitter Whole-Room Ultraviolet-C Disinfection System Against Coronaviruses MHV and MERS-CoV. *Infection Control & Hospital Epidemiology*, 37(5), 598-599. doi:10.1017/ice.2015.348

ⁱⁱ Ali, S. et al. Comparison of two whole-room ultraviolet irradiation systems for enhanced disinfection of contaminated hospital patient rooms. *Journal of Hospital Infection*, Volume 97, Issue 2, 180 - 184

ⁱⁱⁱ Chun-Chieh Tseng and Chih-Shan Li. *Inactivation of Viruses on Surfaces by Ultraviolet Germicidal Irradiation*. National Taiwan University, Taipei, Taiwan. 2007, *Journal of Occupational and Environmental Hygiene*, 4: 400–405