

UVSHIELD+



Independent Laboratory Testing

Testing Location | California, USA

intelliARMOR



ANALYTICAL REPORT

June 3, 2020

SUBMITTED TO:

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SUMMARY

Work detailed in this report was prompted by requests from IntelliARMOR to evaluate an ultraviolet light based disinfecting device. The UV Multifunctional Sterilizer unit was tested to determine its ability to inactivate microorganisms. Filtered suspensions of *E. coli*, *Staphylococcus aureus*, and *Candida albicans* were used to challenge the standard three-minute duration run-time. Filters were exposed directly to the U.V. light and then incubated. Microorganism concentrations were significantly reduced after exposure.

STATEMENT OF COMPLIANCE

This report has been generated, and all laboratory work performed, by Applied Microbiological Services (AMS). AMS is part of the California State Water Resources Control Board Environmental Laboratory Accreditation Program (ELAP #1257), and is certified as an ELITE lab by the U.S. Centers for Disease Control and Prevention. All work was performed using accepted and standard laboratory practices.

METHODS AND NOTES

Project results were accomplished by procedures outlined in the AMS Draft Protocol 612020 dated May 28, 2020. A serial dilution and subsequent plate count were performed on each of the three organisms. 3ml aliquots of each dilution were filtered through a 0.45µm multi cellulose ester membrane, 47mm in diameter. Verification of filter performance was performed, and the unit was cleaned in between filter treatments. After filtering the 3ml aliquot, the filter was propped up and positioned directly in front of the U.V. light at one end of the unit. One 3-minute treatment cycle was performed on each filter. Filters were removed after treatment, placed onto an appropriate agar plate, and incubated. Colony forming units present on filters after incubation were compared to the filtered concentration (based on plate counts) of cells to achieve both the percentage and log reduction results listed on the following page.

RESULTS

| Organism | Challenge Cells | Post exposure CFU | % decrease | Log ₁₀ reduction |
|--|-----------------------|-------------------|------------|-----------------------------|
| <i>Escherichia coli</i> (ATCC: 25922) | 3.9 x 10 ⁶ | 30 | >99.999 | >5.1 |
| <i>Staphylococcus aureus</i> (ATCC: 25923) | 1.8 x 10 ⁵ | 4 | >99.99 | >4.6 |
| <i>Candida albicans</i> (ATCC: 16231) | 1.5 x 10 ⁵ | 40 | >99.9 | >3.5 |

CONCLUSIONS

The U.V. treatment unit was challenged with high concentrations of microorganisms. This study has demonstrated that the unit's lights are able to kill bacteria and yeast effectively. It also shows that various types of organisms have different levels of susceptibility. All results indicate that the lights of the U.V. Multifunctional Sterilizer unit, by IntelliARMOR, are able to significantly reduce microorganism concentrations on surfaces.