



Kleen-Slate Antimicrobial Film
Reducing microbial survival time on high-contact surfaces

Who is Verdegen?

Motto: *Doing Good is Good Business™.*

Vision Statement: *Build a good business by doing good in the world.*

Mission Statement: *Make a difference through innovation to find simple and easy-to-implement solutions to public health issues. Help business and organizations demonstrate commitment to customers, employees, and the community, including the vulnerable and the disadvantaged.*

● **Verdegen History**

- The company was founded in 2016 by Dean Crockett and Jacob Hargrave to promote healthcare products and strategies directed at emerging needs such as the Zika virus. The simple goal was:
 - *How can we get more people to use Mosquito repellent when using such a product can save lives?*
- Our answer was to develop a new delivery method for personal-use mosquito repellents. That product is in the final stages of EPA registration.
- Verdegen redirected its resources to help save lives in the current public health crisis. Verdegen's current focus is manufacturing **Kleen-Slate Antimicrobial Film** to protect frequently touched surfaces in public places to help control the spread of the SARS-CoV-2 coronavirus.

KLEEN-SLATE Antimicrobial Film

Kleen-Slate Antimicrobial Film is an adhesive product like transparent packing tape. The tape contains natural occurring mineral ions that destroy microorganism on the top surface of the tape. *

Kleen-Slate Antimicrobial Film can be applied to frequently touched hard surfaces such as railings, door handles, faucets, buttons, etc. The product can be sized in sheets for larger surfaces such as trays and tables. Custom configuration for elevator buttons, knobs, handles, keyboards, and switches are possible.

Application is initially intended for high risk areas such as hospitals, assisted living facilities, first responder vehicles, schools, public transportation, retail, and entertainment venues.

Kleen-Slate Antimicrobial Film remains effective for 6 to 12 months depending upon frequency of contact. **

*The active agent in **Kleen-Slate Antimicrobial Film** is backed by university-generated efficacy data.

<https://link.springer.com/article/10.1007/s12560-008-9006-1>

** Lab data available on request

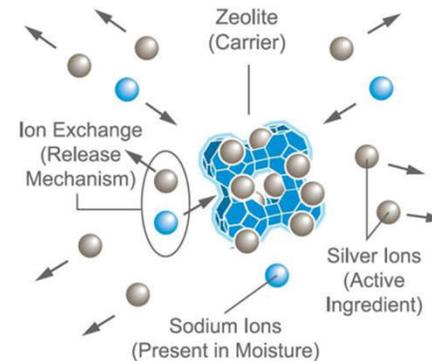


How it works

- Verdegen's antimicrobial strips inhibit the growth and colonization of microorganisms on hard surfaces by adding a physical barrier infused with Agion® Antimicrobial* that contains silver and copper molecules.
 - "Prolonged activity is ... characteristic of biocidal metals such as silver and copper that slowly release their cations, trace amounts of which are toxic to bacteria. Considerable experimental evidence has been accumulated on the prolonged effectiveness of antimicrobial metals through the slow-release of their cations, preventing contamination of wounds, biomedical devices and textiles."
<https://www.nature.com/articles/srep09555>
 - "The use of silver in medicine dates back thousands of years, and scientists have long known that the metal is a potent antibacterial agent. Silver ions perform their deadly work by punching holes in bacterial membranes and wreaking havoc once inside. They bind to essential cell components like DNA, preventing the bacteria from performing even their most basic functions."
<https://www.sciencemag.org/news/2015/05/silver-turns-bacteria-deadly-zombies>
- ★ The Agion® Antimicrobial is presently registered by the United States Environmental Protection Agency as a preservative and bacteriostatic agent for use in treated articles under 40 CFR 152.25a. The information presented herein is not intended to support or endorse public health claims for treated articles.

How Agion® Antimicrobial Works

When moisture or other fluids are present, the conditions for microbial growth become ideal. This is when the Agion Antimicrobial goes to work.



The silver ions exchange with ions in the moisture or fluid, typically sodium and potassium, resulting in controlled delivery of silver ions.

Virus Lifetimes on Hard Surfaces

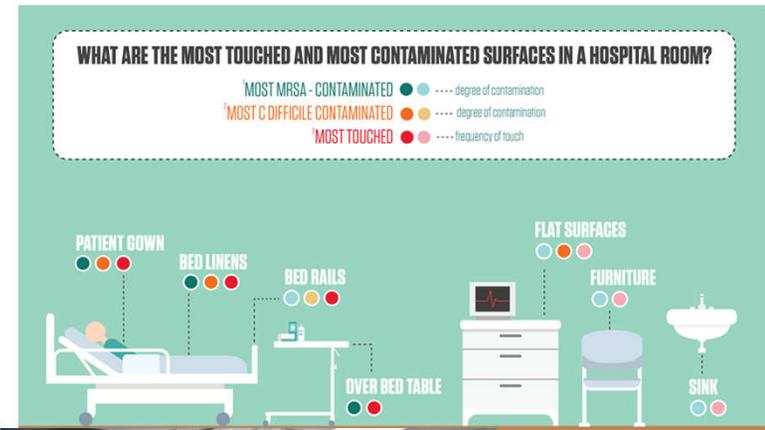
Viruses remain active for a full work day on hard surfaces

- “Cold and flu virus-laden droplets may remain infectious for several hours, depending on where they fall. Viruses generally **remain active longer on stainless steel, plastic and similar hard surfaces** than on fabric and other soft surfaces.” <https://www.mayoclinic.org/diseases-conditions/flu/expert-answers/infectious-disease/faq-20057907>
- “A **2011 study** took two strains of influenza A and analyzed how long they remained infectiousness on a variety of common surfaces. **After nine hours**, viable viruses were no longer found on most non-porous metal and plastic surfaces, such as aluminum and computer keyboards.” [Survival of Influenza A\(H1N1\) on Materials Found in Households: Implications for Infection Control](#)
- “It is not certain how long the virus that causes COVID-19 survives on surfaces, but it seems to behave like other coronaviruses. Studies suggest that coronaviruses (including preliminary information on the COVID-19 virus) may persist on surfaces for a **few hours or up to several days**.” <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>

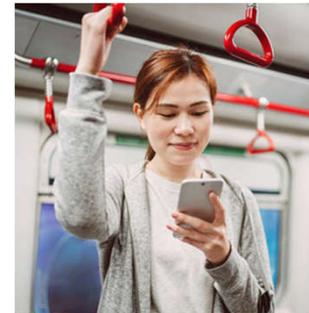
High Touch Surfaces: Hospitals

Patient spaces present challenges for containment around at-risk patients

- “A team of researchers from the Department of Hospital Epidemiology at UNC Health Care and the Division of Infectious Diseases at the University of North Carolina, Chapel Hill, ... demonstrated that, in the ICU and on the medical/surgical floor, high-touch and medium-touch surfaces were in the immediate vicinity of the patient.”
<https://www.infectioncontroltoday.com/environmental-hygiene/researchers-define-high-touch-surfaces-hospitals>
- “On any given day, about 1 in 31 hospital patients has at least one healthcare-associated infection. ... There were an estimated 687,000 HAIs in U.S. acute care hospitals in 2015. About 72,000 hospital patients with HAIs died during their hospitalizations.”
<https://www.cdc.gov/hai/data/portal/index.html>



High Touch Surfaces: Public Spaces



1. Door Handles
2. Handrails
3. Public Transit Handholds
4. Push Bars
5. Water Fountains
6. Countertops
7. Toilet Handles
8. Faucet handles

Frequent cleaning of surfaces cover by Kleen-Slate Antimicrobial Film is not needed. If cleaning is needed to remove surface soiling, a gentle wipe with a household cleaner is recommended

Kleen-Slate Antimicrobial Film - Applications



Appendix

1. Protective Barrier Film Label as of March 3, 2020
2. *White Paper: Agion Antimicrobial Efficacy Against Coronavirus is Tested and Published*
3. EPA Registration No. 71227-7-88165 Product Label
4. Agion® Antimicrobial Type AC Safety Data Sheet (SDS)
5. Agion® Medical Market Brochure
6. Antibacterial activity of silver-killed bacteria: the "zombies" effect
7. Survival of Influenza A(H1N1) on Materials Found in Households: Implications for Infection Control
8. Cold and flu viruses_ How long can they live outside the body_ - Mayo Clinic (Web article printout)