

Protecting People and Product during a Pandemic: A Study on Various Institutional Disinfectants

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Abstract

Due to the impact of the Coronavirus, the sanitization of public spaces and high traffic areas has become of utmost importance to reduce the risk of infection. The use of disinfectants and cleaners on surfaces such as Len-Tex Vinyl Wallcoverings will increase as new disinfecting protocols are put in place. To test the impact of these cleaners on the vinyl wallcoverings, Len-Tex tested 13 different disinfectant and disinfectants/cleaners using a number of protocols including a Gardner Abrasion tester. The result across all samples was no damage, reflecting the durability and cleanability of the product.

Background

In recent months, COVID-19 has taken over our world and how it functions. The first case of the virus was reported in China, on December 31, 2019. By March 7th 2020, 100,000 cases were confirmed worldwide, and Coronavirus was characterized by the World Health Organization (WHO) as a pandemic 4 days later (World Health Organization, 2020). As of May 1st, at least 187 countries around the world are confirmed to have citizens that have tested positive for the virus, with over 3.2 million cases worldwide (Johns Hopkins Coronavirus Resource Center, 2020). Although some numbers reflect progress (such as a decrease in the number of daily new cases in the US, UK and China) (Johns Hopkins Coronavirus Resource Center, 2020), we are still far from being back to 'business as usual'. And when that time comes, what will it look like?

Since the beginning of 2020, we as a global society are considering cleanliness and sanitization much more than pre-pandemic times. Compared to the same time last year, January and February of 2020 saw a spike of over 800% for sales of "virus protection" products including masks, gloves and hand sanitizer (Wiener-Bronner, 2020). And with good reason. According to the CDC, Coronavirus can live on surfaces for up to several days (World Health Organization, 2020), which presents a new consideration across all industries for cleaning and disinfecting procedures and products in the future.

According to the CDC, cleaning *and* disinfecting frequently touched surfaces can help prevent the spread of the virus. This includes doorknobs, tables, countertops, walls, etc. (Centers for Disease Control and Prevention, 2020). The key here is the difference between cleaning and disinfecting, which are commonly used as synonyms. Cleaning a surface simply removes germs from any given surface, lowering the number of germs. Disinfecting a surface on the other hand, kills the germs and viruses that are present on a given surface. Both of these methods lower the number of germs and viruses on a surface and therefore the risk of spreading infection (Centers for Disease Control and Prevention, 2020), classifying both of these actions as sanitization practices.

It's important to note, however, which cleaners/disinfectants you use, and on what surfaces. According to NBC News, calls to poison centers have seen a recent 20% increase in response to the increased use of cleaning products in connection with Coronavirus compared to this time last year (Edwards, 2020). In order to be sure that the products you're using are safe for you and your family, the EPA has a list of common EPA-registered household disinfectants here: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>. You'll find that a number of them have the same active ingredient(s) as the cleaners that were tested in this study.

When the new normal presents itself, spaces including offices, hotels, classrooms, and retail spaces will open back up, and with that will come new requirements to ensure the health of those inhabiting them.

Keeping these spaces clean and safe will be a crucial part of life for the foreseeable future, to prevent the spread of COVID-19 or a novel virus like it in the future.

With so many people currently out of work, essential businesses are doing their best to help out where they can by either changing their production outputs, creating new methods of delivery, or doing research to answer some of the questions being presented in this unprecedented time.

We at Len-Tex are doing our part in producing this white paper that presents a study of disinfectants and/or cleaners that can be used on our wallcovering products. Our vinyl wallcoverings are already protecting our customers from potential interior environmental hazards with our Clean Vinyl Technology and the addition of Ultra-Fresh™ antimicrobial compound in the vinyl substrate.

Len-Tex's Clean Vinyl Technology™ (CVT) carries multiple advantages above others in the industry. As is shown with our product transparency documentation, we have removed chemicals of concern listed by the EPA as having potential negative effects on human health. These include phthalates (endocrine disruptors), heavy metals such as Antimony, Arsenic and Barium (carcinogens), formaldehyde (carcinogen) and phenol (skin irritant). The elimination or substitution of these chemicals makes our wall coverings inherently healthier for children, hospital patients, and employees around the world.

Our socially responsible products have also been third party tested to meet the standards of California's Prop 65 and the Collaborative for High Performance Schools (CHPS). By incorporating CVT, our vinyl wallcoverings do not require labeling for toxic chemicals or reproductive harm, and they meet the low-emitting materials criteria for use within a typical classroom. In addition, our products are NSF/ANSI 342 Certified, which evaluates the sustainability of our products across their entire life cycle, and SCS Indoor Advantage Gold Certified, which is recognized by the EPA as a premier Indoor Air Quality certification with low VOC emissions. Indoor Advantage Gold certified products also contribute to LEED v4 credits.

In this discussion of interior hygiene and maintenance it is practical to note initially that Len-Tex wallcoverings are produced on Clean Vinyl Technology™ vinyl films containing *Ultra-Fresh*™ biocide. This antimicrobial additive inhibits bacterial and fungal growth for the life of the product (additional information can be found at www.lentexcorp.com).

The addition of Aqua-Clear protective coating offers a barrier protecting the decorative layer from many cleaners and cleaner/disinfectants. As stated earlier in this document, the use of virucidal agents is critical to preserving human health in interior environments. In light of the significant investment required for decorative interiors, we wanted to be certain that many of the institutional disinfectants available could be used without damaging our wallcoverings.

We believe this white paper will prove informative and instructive in maintaining interior hygiene and minimizing the presence of dangerous bacteria and viruses.

Test Protocol

Vinyl wallcovering comes in many forms, whether it has a woven or non-woven backing, a mylar layer, or a deeply embossed texture. However, it is the consistent quality of Len-Tex Wallcoverings that lasts throughout the wallcovering lifetime. The method used to test the impact of multiple disinfectants on these wallcoverings was as follows:

- Spray wallcovering sample until wet and let stand for a minimum of 20 minutes or the time period specified by the manufacturer's instructions
- Spray wallcovering again to soak and secure in Gardner Abrasion tester. Run 200 cycles with the Gardner sponge
- Once 200 cycles have occurred, allow sample to dry and inspect for damage to the print layer
- Twenty repeated applications of disinfectants and disinfectant/cleaner within 24 hours
- Wet thoroughly and place watch-glass over the liquid (preventing evaporation) for 24 hours
- Note any change

The Gardner Abrasion Tester allows evaluation of products such as wallcoverings and interior paints for damage from multiple cycles of wash (sponge) and scrub (brush). In this case, a sponge was used to wash the wet surface of the samples to determine potential discoloration or degradation of the samples from exposure to institutional disinfectants and cleaners.



Figure 1: Gardner Abrasion Machine

This procedure was followed to test the following common disinfectants/cleaners used within healthcare, retail and hospitality industries, with the active ingredient of each listed in parenthesis:

- Len-Tex (Chlorine Bleach and Water, 50:50 ratio)
- Oxivir (Hydrogen Peroxide)
- Virex (Ammonium Chloride Compounds)
- Nemesis (Ammonium Chloride Compounds)
- Neutral Q (Ammonium Chloride Compounds)

- Rely (Ammonium Chloride Compounds)
- Micro Q (Ammonium Chloride Compounds)
- Purell Professional Surface (Ethyl Alcohol)
- Avistat D (Ammonium Chloride Compounds)
- Spritz (Ammonium Chloride Compounds)
- 409 Multi Surface Cleaner (Ammonium Chloride Compounds)
- Spray 9 (Ammonium Chloride Compounds)
- Lysol Multi-surface Cleaner (Ammonium Chloride Compounds)



Figure 2: Tested Disinfectants

Results

The result across the board for the disinfectants and disinfectants/cleaners listed above was **no visible change or damage** to the wallcoverings. Len-Tex's Aqua-Clear top coat seals and protects the vinyl and inks from damage from cleaning and disinfecting.

Conclusions

Len-Tex Wallcovering with Clean Vinyl Technology and Aqua-Clear protective coating showed no visible damage to the ink layer or substrate after multiple applications of the disinfectants and disinfectant/cleaners listed above. Len-Tex vinyl wallcoverings withstand regular maintenance and

cleaning, while providing a healthier interior finish that is low-emitting, long lasting, and aesthetically pleasing.

References

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