

Aeramen

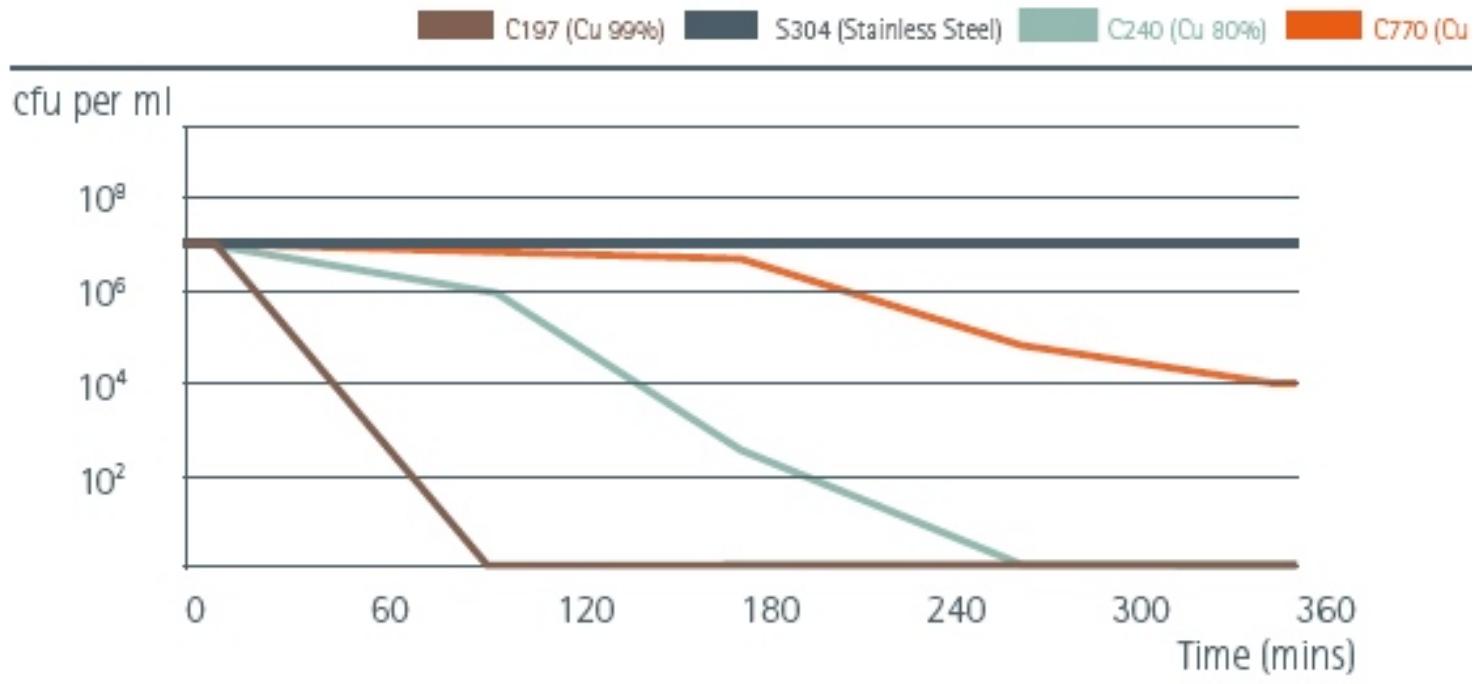
For Stainless Steel



What's the Need?

- To investigate the transmission of influenza viruses via hands and environmental surfaces, the survival of laboratory-grown influenza A and influenza B viruses on various surfaces was studied. Both influenza A and B viruses survived for 24–48 hr on hard, nonporous surfaces such as stainless steel and plastic but survived for <8–12 hr on cloth, paper, and tissues. Measurable quantities of influenza A virus were transferred from stainless steel surfaces to hands for 24 hr and from tissues to hands for up to 15 min. Virus survived on hands for up to 5 min after transfer from the environmental surfaces. These observations suggest that the transmission of virus from donors who are shedding large amounts could occur for 2–8 hr via stainless steel surfaces and for a few minutes via paper tissues. Thus, under conditions of heavy environmental contamination, the transmission of influenza virus via fomites may be possible.
- Source: **Survival of Influenza Viruses on Environmental Surfaces** | B. Bean, B. M. Moore, B. Sterner, L. R. Peterson, D. N. Gerding, H. H. Balfour, Jr. | *The Journal of Infectious Diseases*, Volume 146, Issue 1, July 1982, Pages 47–51, Published: 01 July 1982
- <https://doi.org/10.1093/infdis/146.1.47>

MRSA viability on copper alloys and stainless steel at 20°C



Healthcare-associated Infections

- A healthcare-associated infection (HCAI) is an infection that a patient develops in a hospital either as a direct result of medical or surgical treatment, or from simply being in that setting. The important criterion for defining an infection as an HCAI is that the patient did not have the infection when they were admitted to the hospital.

- Source: Copper Alliance UK Copper, Pathogens, and Disease

<https://copperalliance.org.uk/knowledge-base/education/education-resources/copper-pathogens-disease/>

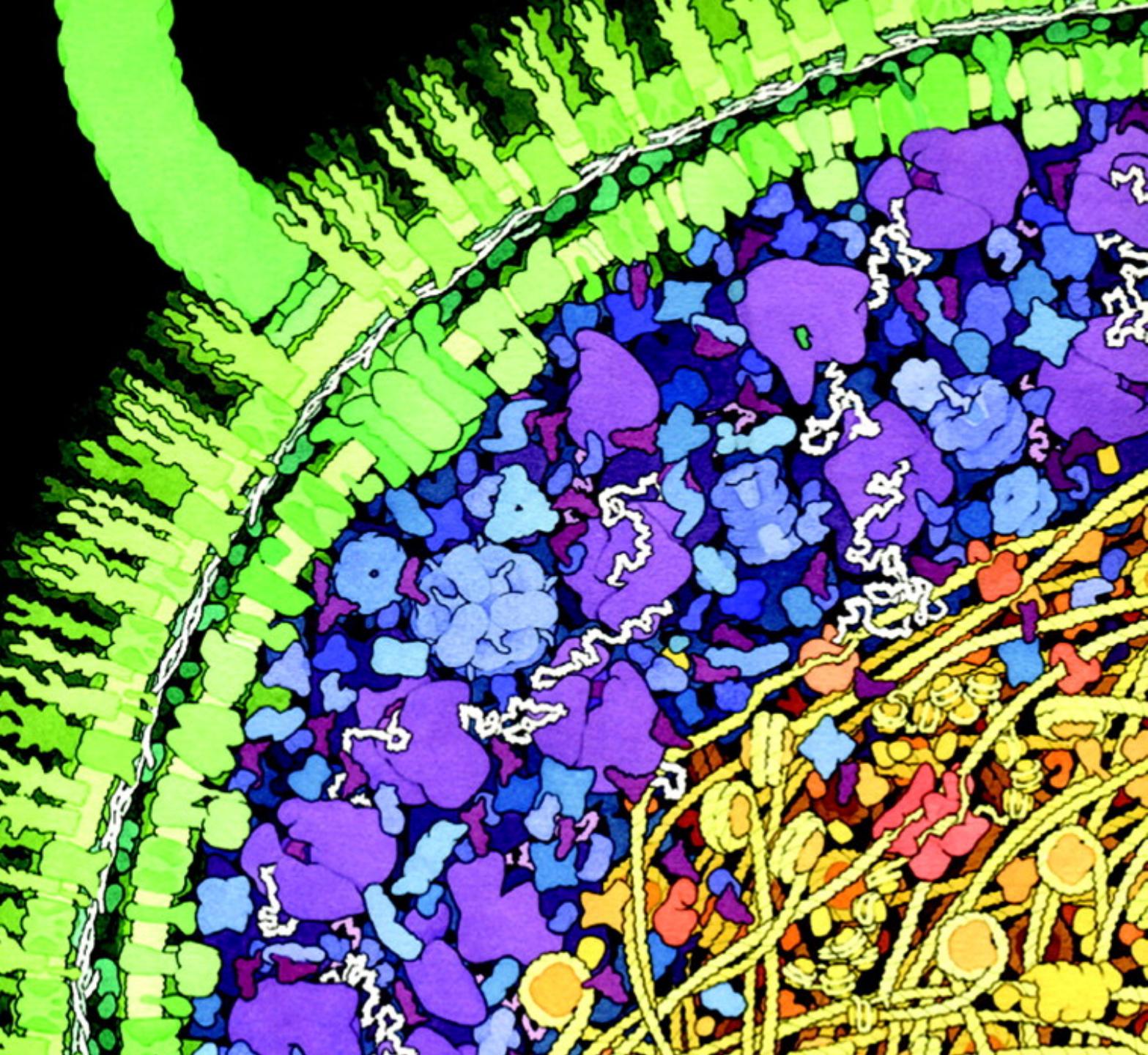
Why it works



A model of intracellular organization

Source:

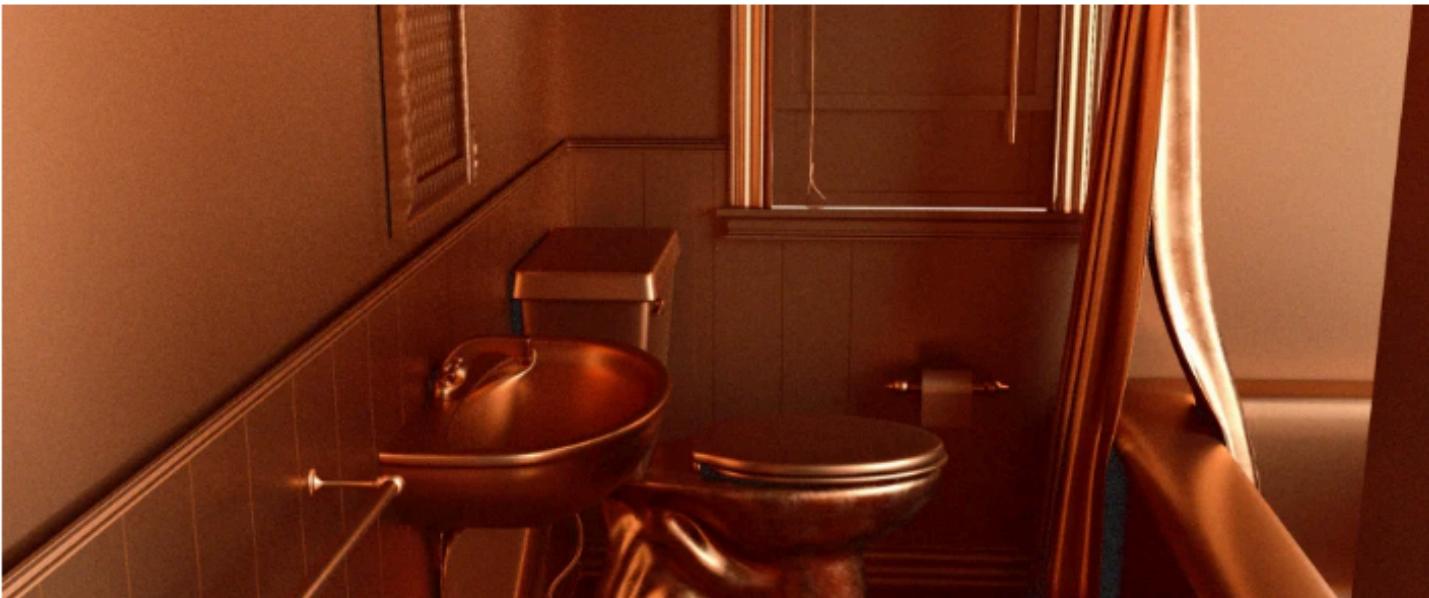
<https://www.pnas.org/content/102/17/5901>



03-16-20 | EVIDENCE

Copper kills coronavirus. Why aren't our surfaces covered in it?

Civilizations have recognized copper's antimicrobial properties for centuries. It's time to bring the material back.



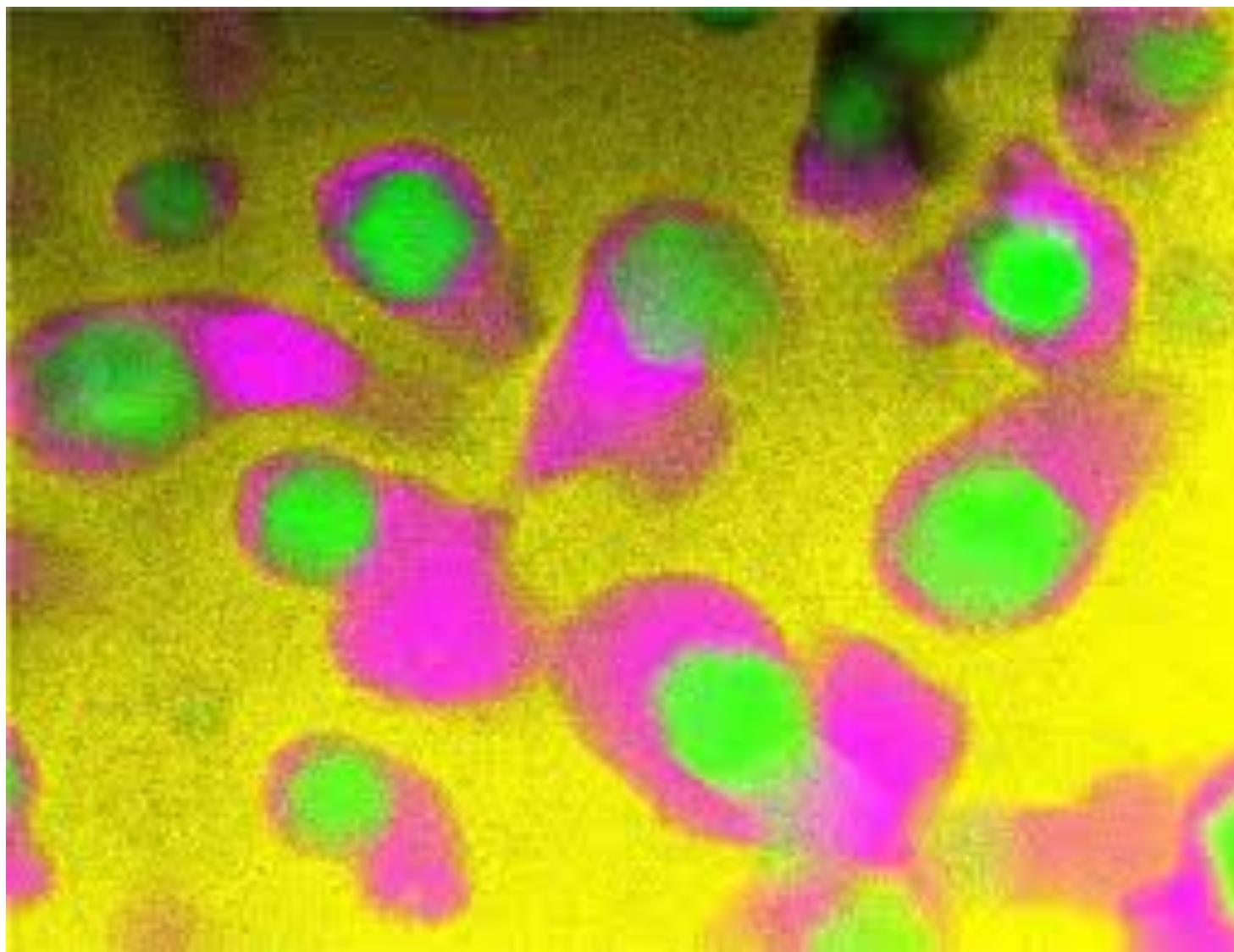
Fast
Company
Magazine

No time, no money to
replace... But...

- **Can we coat with it?**
- All metals have a property called nobility. It is a measure of a metal's resistance to corrosion when in contact with another metal. A greater relative difference in nobility between the two metals in contact indicates a greater corrosion potential. **Table 1.3A** ranks the most common metals used in construction in increasing nobility, called the galvanic number.
- Source: Copper Development Association Section *1.3 Architectural Considerations*

Table 1.3A. The Nobility of Common Metals

- 1.Aluminum
- 2.Zinc
- 3.Steel
- 4.Iron
- 5.Stainless Steel - Active
- 6.Tin
- 7.Lead
- 8.Copper
- 9.Stainless Steel - Passive



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ARTICLE

OPEN

Copper-containing glass ceramic with high antimicrobial efficacy

Timothy M. Gross¹, Joydeep Lahiri¹, Avantika Golas¹, Jian Luo¹, Florence Verrier¹, Jackie L. Kurzejewski¹, David E. Baker¹, Jie Wang², Paul F. Novak¹ & Michael J. Snyder¹

Hospital acquired infections (HAIs) and the emergence of antibiotic resistant strains are major threats to human health. Copper is well known for its high antimicrobial efficacy, including the ability to kill superbugs and the notorious ESKAPE group of pathogens. We sought a material that maintains the antimicrobial efficacy of copper while minimizing the downsides – cost, appearance and metallic properties – that limit application. Here we describe a copper-glass ceramic powder as an additive for antimicrobial surfaces; its mechanism is based on the controlled release of copper (I) ions (Cu^{+}) from cuprite nanocrystals that form in situ in the water labile phase of the biphasic glass ceramic. Latex paints containing copper-glass ceramic powder exhibit $\geq 99.9\%$ reduction in *S. aureus*, *P. aeruginosa*, *K. aerogenes* and *E. Coli* colony counts when evaluated by the US EPA test method for efficacy of copper-alloy surfaces as sanitizer, approaching that of benchmark metallic copper.

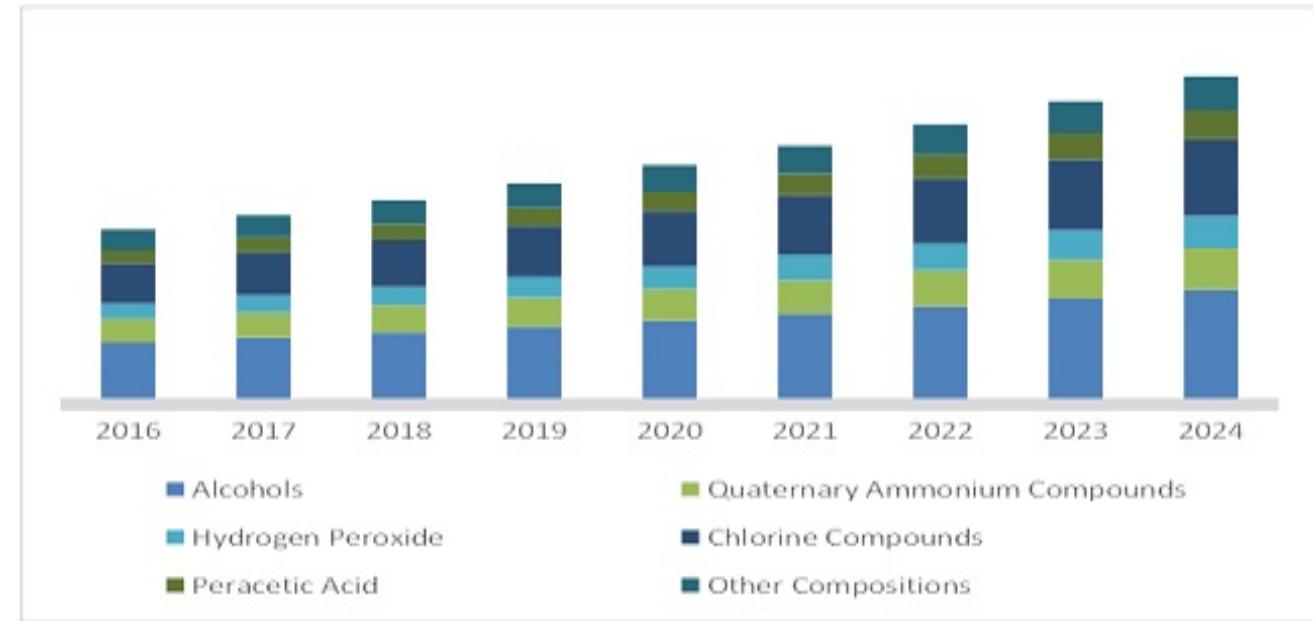
Multiple Combinations

Market Opportunity

By composition, peracetic acid segment is expected to grow at the highest growth rate during the forecast period

The peracetic acid segment is projected to register the highest during the forecast period. It is generally used in the food industry; however, it is increasingly being adopted in the healthcare industry as it is less toxic, cost-effective, and environmentally friendly.

Surface disinfectant Market by Composition, 2017 to 2024, USD Million



Source: Surface Disinfectant Market by Composition (Quaternary Ammonium, Alcohols, Chlorine, Hydrogen Peroxide), Type (Liquids, Sprays, Wipes), Application (In-house, Instrument), End User (Hospital, Diagnostic, Research Labs) - Global Forecast to 2024



Barriers have
been lowered

Antimicrobials for use on surfaces are regulated by the US EPA as pesticides under the Federal Insecticide, Fungicide and Rodenticide Act (Fifra), while antimicrobials for use on humans or animals are regulated by the FDA as drugs under the Federal Food Drug and Cosmetics Act (FFDCA). Both agencies have taken important steps to ensure adequate supplies of antimicrobials to address the current pandemic.

Source: [Expert Focus: Covid-19 – How can companies get disinfectants to market urgently in the EU, US?](#) 27 March 2020

n official website of the United States government.

We've made some changes to EPA.gov. If the information you are looking for is not here, you may be able to find it on the [EPA Web Archive](#) or the [January 19, 2017 Web Snapshot](#).



EPA Pesticide Registration Updated April 16, 2020

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Pesticide Registration

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List N: Disinfectants for Use Against SARS-CoV-2

Products on this list meet EPA's criteria for use against SARS-CoV-2, the virus that causes COVID-19.

Finding a Product

The easiest way to find a product on this list is to enter **the first two sets of its EPA registration number** into the search below.

For example, if EPA Reg. No. 12345-12 is on List N, you can buy EPA Reg. No. 12345-12-2567 and know you're getting an equivalent product. You can find this number by looking for the EPA Reg. No. on the product label.

Buying Other Products

If you can't find a product on this list to use against SARS-CoV-2, look at a different product's label to confirm it has an EPA registration number and that human coronavirus is listed

Other COVID-19 Resources

- [EPA's Coronavirus Site](#)
- [CDC's Coronavirus Disease 2019 Site](#)
- [CDC's Cleaning and Disinfection Recommendations for COVID-19](#)
- [NPIC's COVID-19 Virus Factsheet](#)

List N: Products with Emerging Viral Pathogens AND Human Coronavirus claims for use against SARS-CoV-2

A gistration Number	Active Ingredient(s)	Product Name	Company	Follow the disinfection directions and preparation for the following virus <i>i</i>	Contact Time (in minutes <i>i</i>	Formulation Type <i>i</i>	Surface Types for Use <i>i</i>	Use Site <i>i</i>	Emerging Viral Pathogen Claim? <i>i</i>	Date Added to List
Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search
67-137	Potassium peroxymonosulfate; Sodium chloride	Virkon S	Lanxess Corporation	Feline calicivirus	10	Dilutable	Hard nonporous	Institutional	No	04/02/2020
11	Quaternary ammonium	Barbicide	King Research Inc	Human coronavirus	10	Dilutable	Hard nonporous	Healthcare; Institutional	No	04/02/2020
46-3	Sodium hypochlorite	Clorox HW	The Clorox Company	Feline calicivirus; Norovirus	1	Towelette	Hard nonporous	Healthcare; Residential	No	03/26/2020
46-6	Sodium hypochlorite	Clorox HS	The Clorox Company	Feline calicivirus; Norovirus	1	RTU	Hard nonporous	Healthcare; Residential	No	03/26/2020
				Feline						

last updated on April 16, 2020.

able

Show 25 ▲ entries

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List N: Products with Emerging Viral Pathogens AND Human Coronavirus claims for use against SARS-CoV-2

on ▲	Active Ingredient(s) ▲	Product Name ▲	Company ▲	Follow the disinfection directions and preparation for the following virus ▲	Contact Time (in minutes) ▲	Formulation Type ▲	Surface Types for Use ▲	Use Site ▲	Emerging Viral Pathogen Claim? ▲
	copper	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

No matching records found

0 of 0 entries (filtered from 374 total entries)

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to ask a question, provide feedback, or report a problem.

References

- **Effects of Tween 80 on Growth and Biofilm Formation in Laboratory Media** | [Christina K. Nielsen,¹ Jørgen Kjems,¹ Tina Mygind,^{2,†} Torben Snabe,² and Rikke L. Meyer^{1,*}](#) Frontiers in Microbiology [Front Microbiol.](#) 2016; 7: 1878 Published online 2016 Nov 22. doi: [10.3389/fmicb.2016.01878](https://doi.org/10.3389/fmicb.2016.01878)
- **A Review of Isolation Gowns in Healthcare: Fabric and Gown Properties** [J Eng Fiber Fabr.](#) Author manuscript; available in PMC 2016 Mar 15. Published in final edited form as: [J Eng Fiber Fabr. 2015 Sep; 10\(3\): 180–190.](#)
- **Survival of Influenza Viruses on Environmental Surfaces** B. Bean, B. M. Moore, B. Sterner, L. R. Peterson, D. N. Gerding, H. H. Balfour, Jr. *The Journal of Infectious Diseases*, Volume 146, Issue 1, July 1982, Pages 47–51, <https://doi.org/10.1093/infdis/146.1.47>
- **EPA list of disinfectants for use against SARS and COVID-19** as of April 16, 2020 <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>
- **Surface Disinfectant Market by Composition (Quaternary Ammonium, Alcohols, Chlorine, Hydrogen Peroxide), Type (Liquids, Sprays, Wipes), Application (In-house, Instrument), End User (Hospital, Diagnostic, Research Labs) - Global Forecast to 2024** <https://www.marketsandmarkets.com/Market-Reports/surface-disinfectant-market-231286043.html>