1. **What is the pH of Coved -19?**

I am not sure what is meant by asking what the pH of COVID-19 is? I’m wondering if the person meant to ask what the favorable pH is for viral replication once inside the body?

1. **What substances will kill COVID-19 on surfaces, plastic, fruit and vegetables, laundry?**
* i.e. What % hydrogen peroxide, % isopropyl alcohol, % acetic acid (vinegar 3%, regular white, 5% pickling vinegar, 10% cleaning vinegar).
* What else is available and could work.

Research has shown that coronaviruses can be inactivated within a minute by:

**Alcohol**: [disinfecting surfaces with 62-71% alcohol](https://www.sciencedirect.com/science/article/pii/S0195670120300463),

**Bleach**:

Household bleach containing 0.1% sodium hypochlorite (You can typically use ¼ cup of bleach per 1 gallon of cold water)

**Hydrogen peroxide:**

Hydrogen peroxide is typically sold in concentrations of about 3%. It can be used as is, or diluted to 0.5%

**Natural chemicals (vinegar or tea tree oil):**

Vinegar, tea tree oil and other natural products are not recommended for fighting coronaviruses. A study on influenza virus found that cleaning with a **10% solution** of malt vinegar was effective, but few other studies have found vinegar to be able to kill a significant fraction of viruses or other microbes. While tea tree oil may help control the virus that causes cold sores, there is no evidence that it can kill coronaviruses.[[1]](#footnote-1)

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| Hard (Non-porous) Surfaces | * If surfaces are dirty, they should be cleaned using a detergent or soap and water prior to disinfection.
* For disinfection, most common EPA-registered household disinfectants should be effective.
	+ A list of products that are EPA-approved for use against the virus that causes COVID-19 is available [herepdf iconexternal icon](https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list_03-03-2020.pdf%22%20%5Ct%20%22new).
	+ Additionally, diluted household bleach solutions (at least 1000ppm sodium hypochlorite) can be used if appropriate for the surface.
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| Soft (Porous) Surfaces(carpeted floor, rugs, and drapes) | * Remove visible contamination if present and clean with appropriate cleaners indicated for use on these surfaces. After cleaning:
* Launder items as appropriate in accordance with the manufacturer’s instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.
	+ Otherwise, use products [that are EPA-approved for use against the virus that causes COVID-19pdf iconexternal icon](https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list_03-03-2020.pdf) and that are suitable for porous surfaces.
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| Electronics(cell phones, tablets, touch screens, remote controls, and keyboards) | * Remove visible contamination if present.
* Consider use of wipeable covers for electronics.
* If no manufacturer guidance is available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol to disinfect touch screens. Dry surfaces thoroughly to avoid pooling of liquids.
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| Linens, clothing, and other items that go in the laundry | * If no gloves are used when handling dirty laundry, be sure to wash hands afterwards.
* If possible, do not shake dirty laundry. This will minimize the possibility of dispersing virus through the air.
* Launder items as appropriate in accordance with the manufacturer’s instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.
* Dirty laundry from an ill person can be washed with other people’s items.
* Clean and disinfect clothes hampers according to guidance above for surfaces. If possible, consider placing a bag liner that is either disposable (can be thrown away) or can be laundered.
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| Food  | Perishables do not need to be disinfected prior to use, but fresh produce should always be washed in water with out soap. Accidentally ingesting soap can cause nausea, vomiting, and diarrhea.Follow basic food safety guidelines that call for washing your hands before eating or preparing food, using clean utensils, and properly preparing and storing food. Restaurants and delivery services should also be following safe food preparation and handling practices. |

1. How long COVID -19 is contagious on hard non-porous surfaces and on soft porous surfaces? That could be very helpful to know.[[2]](#footnote-2)

A single cough can produce up to 3,000 droplets. These particles can land on other people, clothing and surfaces around them, but some of the smaller particles can remain in the air.

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| **Media**  | **SARS-CoV-2** |
| **Aerosols**  | **3 hours**  |
| **Plastic**  | The virus titer was greatly reduced after **72 hours** on plastic |
| **Stainless steel**  | The virus titer was greatly reduced after **48 hours** on stainless steel |
| **Copper**  | On copper, no viable SARS-CoV-2 was measured after **4 hours** |
| **Cardboard** | On cardboard, no viable SARS-CoV-2 was measured after **24 hours** |
| **Clothing**  | On clothing and other soft porous surfaces, it is not yet clear how long the virus can survive. |

1. <https://www.rutgers.edu/news/best-ways-kill-coronavirus-your-home> [↑](#footnote-ref-1)
2. The [study](https://www.nejm.org/doi/full/10.1056/NEJMc2004973) [↑](#footnote-ref-2)