

Removing SARS-CoV-2 from Food Production Environments: US EPA List N for Chemical Surface Disinfection

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Introduction

In light of the COVID-19 pandemic, additional measures are being implemented to control the spread of SARS-CoV-2, the virus that causes COVID-19. One control measure is cleaning and disinfecting surfaces. To help one find a disinfectant to kill SARS-CoV-2, the U.S. Environmental Protection Agency (EPA) published List N: Disinfectants for Coronavirus (COVID-19). Disinfectants that are not on List N may meet the criteria for use against SARS-CoV-2, and the EPA will update this list with additional products as needed.

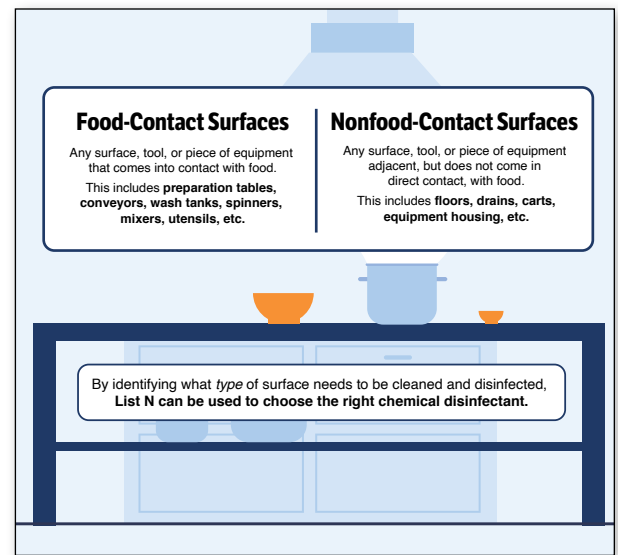
What makes the products listed eligible for List N?

List N includes products that have been tested against

1. SARS-CoV-2 virus
2. a similar virus i.e., human coronavirus or
3. harder to kill viruses, such as norovirus, also known as an Emerging Viral Pathogen (EVP) claim.

What is an EVP claim?

Before the COVID-19 pandemic, the EPA took a proactive approach of allowing products to have an Emerging



Distinction of surface types for cleaning and disinfecting in food production environments

Viral Pathogen claim utilizing existing viral reduction data. This was to ensure that products expected to have efficacy against novel viruses would be available to the public before the virus became available for testing. If a product has an EVP claim, the user will be guided to follow product label directions for one or more viruses that are harder to kill than SARS-CoV-2.

Definitions

Cleaning

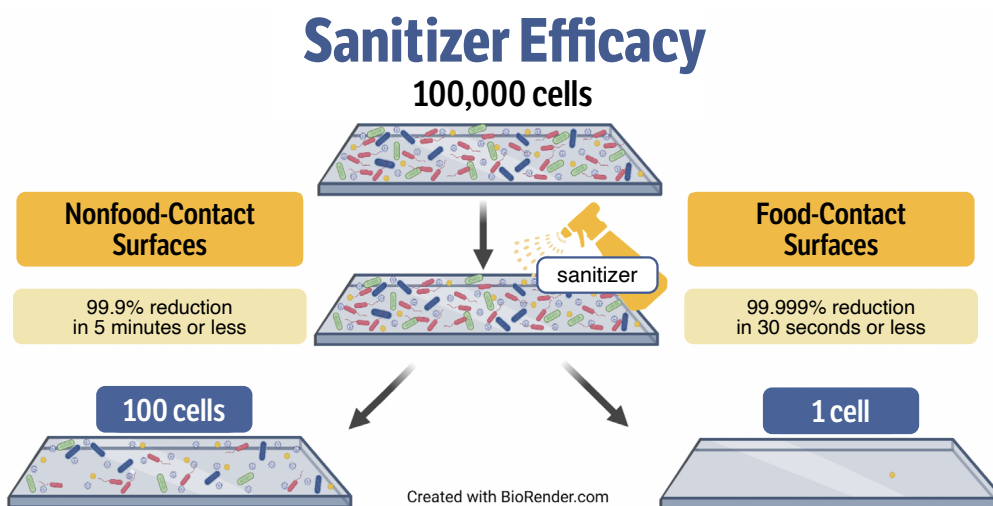
Cleaning removes soil, dirt, dust and debris from a surface but does not kill microorganisms.

Sanitizing

Sanitizing significantly reduces the number of bacteria of public health sig-

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Sanitizer efficacy for food-contact versus nonfood-contact surfaces

nificance and generally has a surface contact time of 1 minute. Sanitizers are regulated by the EPA. Note: At present, there are no sanitizer-only products with approved viral-reduction claims. Thus, any sanitizers included on List N also have disinfection claims. Surfaces that are not cleaned prior to applying sanitizer may have soils present that reduce the efficacy of the sanitizer.

Disinfecting

Disinfecting irreversibly destroys bacteria and often viruses. One-step disinfectants combine the cleaning and disinfectant steps in one action. If used on food-contact surfaces, disinfectants typically require a rinse once the contact time is met, and like sanitizers, are regulated by the EPA.

Treatment of Food-Contact Surfaces

1. Clean or wash the surface with a suitable detergent or cleaner.
2. Rinse the detergent with water.
3. Use an EPA-registered Food Contact Sanitizer according to label use instructions, paying attention to application type (spray/wipe).
4. Leave the surface wet for the listed contact time.
5. Allow the food-contact surface to air dry.

Treatment of Nonfood-Contact Surfaces

1. Clean or wash the surface with a suitable detergent or cleaner. If using a 1-step disinfectant, pre-cleaning is required only if the surface is heavily or visibly soiled.
2. Use an EPA-registered disinfectant according to the label use instructions, paying attention to application type (spray, wipe, mop).

3. Leave the surface wet for the listed contact time.
4. Wipe surface or allow to air dry, per the label instructions.

Organization of List N

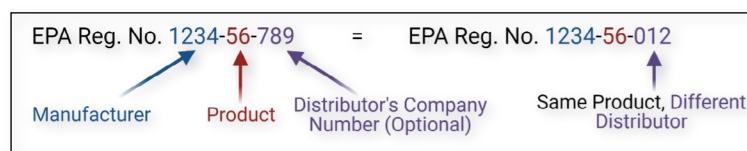
[List N](#) provides information about chemical disinfectants that are EPA approved to effectively destroy SARS-CoV-2 on surfaces when used according to label instructions.

Search List N by:

EPA Registration Number: Found on the product label. Products may have different brand names/labels, but if the first two parts of the EPA Registration Number are found on List N, then the product is approved for use. Only enter the first two parts of the number into List N (1234-56).

#	EPA Registration Number
🧬	Active Ingredient
🏠	Use Site
📈	Surface Types
🕒	Contact Time
🔍	Browse All
A	Keyword Search

Options for searching products on List N Tool



Descriptions for each part of an EPA Registration Number

Other options for searching List N

Active Ingredient: Searches can be filtered by the type of chemical agent(s) desired for use. If unknown, leave blank or select “All.”

Use Site:

There are three types of Use Sites listed:

- **Healthcare:** Hospital, dental, or other health care facilities, including nursing homes and assisted living facilities
- **Institutional:** Schools, office buildings, and restaurants
- **Residential:** Homes

For food production environments, such as food processing or retail/foodservice, select ‘Institutional.’

Surface Types: Search results can also be filtered based on the surface type(s) in a facility.

- **Hard Nonporous (HN):** Use on hard nonporous surfaces like doorknobs, faucets, light switches, and sealed wood.
- **Porous (P):** Use on porous surfaces like fabric, cushions, and untreated wood.
- **Food-Contact Surfaces, Post-Rinse Required (FCR):** Use on surfaces that touch food like preparation tables, dishes, and cooking utensils. Do not use on food. Rinse the surface after using this product.
- **Food-Contact Surfaces, No Rinse (FCNR):** Use on surfaces that touch food like preparation tables, dishes, and cooking utensils. Do not use directly on food. There is no need to rinse the surface after using this product.

Contact Time: Each product requires a specific contact time on the surface. This should be considered when selecting products. Keep in mind that for longer contact times (e.g., 10 minutes), the chemical agent may need to be applied more than once to maintain a wet surface. The surface must be visibly wet for the contact time to be effective. Certain products’ contact times may differ depending on the organism. Select a contact time that controls all of the disease-causing microorganisms relevant to the environment it is being applied within.

Using List N – Example #1

With the product label in Example #1, the product Surface Cleaner Sanitizer - EPA registration number (1677-259) can be searched in the List N Tool. As described above the, product name on List N (CW32A-RTU) differs from its commercial name found on the actual container (Surface Cleaner Sanitizer RTU). The EPA registration number is the most useful identifier to determine whether a product is approved, as there may be multiple commercial names associated with one EPA registration.

TO KILL NOROVIRUS and SARS-CoV-2 on Food and Non-Food Contact Surfaces		
	Active Ingredients	
	ppm DDBSA**	ppm Lactic Acid
	527 - 694	1340 - 1910
Virus*	ATCC Strain	Contact Time
*Norovirus (Feline calicivirus surrogate)	ATCC VR-782, Strain F-9	30 seconds
*SARS - Related Coronavirus 2 (SARS-CoV-2)	BEI Resources NR-52281, Strain Isolate USA-WA 1/2020	15 seconds
** Dodecylbenzenesulfonic Acid		

Label Instructions for Use in Example 1

In Example #1, 0.25 min, or 15 seconds, is needed to kill SARS-CoV-2 when used according to the product label instructions. Closely follow the directions for use on the product label to ensure effectiveness. This product can be used either as a ready-to-use spray or in an electrostatic sprayer. It is approved for hard non-porous (HN) surfaces, and for food-contact no-rinse (FCNR) applications.

EPA Registration Number	Active Ingredient(s)	Product Name	Company	Follow the disinfection directions and preparation for the following virus	Contact Time (in minutes)	Formulation Type	Surface Type	Use Site	Why is this product on List N?
1677-259	Dodecylbenzenesulfonic acid; L-Lactic acid	CW32A-RTU	Ecolab Inc	SARS-CoV-2	0.25	Ready-to-use, Electrostatic spray	Hard Nonporous (HN); Food Contact No Rinse (FCNR)	Healthcare; Institutional; Residential	Tested against SARS-CoV-2 (COVID-19); Emerging viral pathogen claim

Search Output from EPA Reg. No. 1677-259 in Example 1

Using List N – Example #2

With the product label in Example #2, the EPA registration number (70627-63) can be searched in the List N Tool, which provides guidance on use. In Example #2, 10 minutes is needed to kill SARS-CoV-2 when used according to the product label instructions. Closely follow the directions for disinfection against human coronavirus on the product label to ensure effectiveness. For example, this product must be diluted according to the label before use. With this product, List N guides users to follow product label directions and preparation for ‘human coronavirus.’



Front Label of Product with EPA Reg. No. 70627-63 in Example 2

EPA Registration Number	Active Ingredient(s)	Product Name	Company	Follow the disinfection directions and preparation for the following virus	Contact Time (in minutes)	Formulation Type	Surface Type	Use Site	Why is this product on List N?
70627-63	Quaternary ammonium	512 Sanitizer	Diversey Inc	Human coronavirus	10	Dilutable	Hard Nonporous (HN)	Healthcare; Institutional	Kills a human coronavirus similar SARS-CoV-2 (COVID-19)

Search Output from EPA Reg. No. 70627-63 in Example 2

Resources

U.S. Centers for Disease Control and Prevention [CDC]. 2021. Cleaning and Disinfecting Your Facility. Available from <https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-build-ing-facility.html>

U.S. Environmental Protection Agency [EPA]. 2021. Cleaning and Disinfecting Best Practices During the COVID-19 Pandemic. Available from <https://www.epa.gov/sites/production/files/2021-04/documents/cleaning-disinfecting-one-pager.pdf>

U.S. Environmental Protection Agency [EPA]. 2021. Frequent Questions about Disinfectants and Coronavirus (COVID-19). Available from <https://www.epa.gov/coronavirus/frequent-questions-about-disinfectants-and-coronavirus-covid-19>

U.S. Environmental Protection Agency [EPA]. 2021. List N Tool: COVID-19 Disinfectants. Available from <https://cfpub.epa.gov/giwiz/disinfectants/>

U.S. Environmental Protection Agency [EPA]. 2021. List N How-To. Available from <https://www.youtube.com/watch?v=mrp7xscZ4LA>

U.S. Environmental Protection Agency [EPA]. 2021. What's the difference between products that disinfect, sanitize, and clean surfaces? Available from <https://www.epa.gov/coronavirus/whats-difference-between-products-disinfect-sanitize-and-clean-surfaces>

U.S. Environmental Protection Agency [EPA]. 2021. Which Disinfectants Kill COVID-19? Available from https://www.epa.gov/sites/production/files/2020-12/documents/list_n_how-to_infographic_final_0.pdf

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