

TECHNICAL BULLETIN

PURELL® Foodservice Surface Sanitizer

Product Description:

U.S. Environmental Protection Agency (EPA) registered, PURELL Foodservice Surface Sanitizer is a ready-to-use, no-rinse food contact surface sanitizer and disinfectant designed to kill the most relevant pathogens in foodservice operations. The 29.4% ethyl alcohol based formula is effective against 48 microorganisms, with efficacy against 36 of those organisms in 30 seconds or less. Ideal for disinfecting hard, non-porous surfaces as well as sanitizing soft surfaces.

Please read product label for usage instructions.

Physical Properties	
Appearance	Colorless
Fragrance	Fragrance Free
Form	Liquid

Formula Ingredients	
Active Ingredient	
Ethyl Alcohol 29.4% w/w	CAS: 64-17-5
Inert Ingredients	
Water	CAS: 7732-18-5
Isopropyl Alcohol	CAS: 67-63-0
Potassium Hydroxide	CAS: 1310-58-3
Lauric Acid	CAS: 143-07-7

Efficacy Testing – Timed, Exposure Kill Evaluation

Objective	Evaluate the antimicrobial effectiveness of the product <i>in vitro</i> .
Description of Tests	Testing was conducted in accordance with the U.S. Environmental Protection Agency guidelines in effect at the time for determining efficacy of disinfectants intended for use on dry inanimate surfaces.
Independent Laboratories	<ul style="list-style-type: none"> • MicroBioTest, A Division of Microbac Laboratories, Sterling, VA 20164 • Microchem Laboratory, Inc., Euless, TX 76040 • Accuratus Lab Services, Eagan, MN 55121

Test Results

<i>Test Organisms Reference List</i>		<i>*Added September 2018</i>
<i>Hard, Nonporous Surface Disinfection Pathogens</i>		
Bacteria	Strain / ATCC No.	Contact Time
Acinetobacter baumannii	ATCC 19606	30 seconds
*Acinetobacter baumannii Multi-drug resistant (MDR)	ATCC 19606	30 seconds
Bordetella pertussis (Whooping Cough)	ATCC 12743	30 seconds
Campylobacter jejuni	ATCC 43451	30 seconds
Escherichia coli (E. coli)	ATCC 11229	30 seconds
*Enterobacter aerogenes	ATCC 13048	30 seconds
*Enterococcus faecium	ATCC 51559	30 seconds
Klebsiella pneumoniae	ATCC 4352	30 seconds
*Klebsiella pneumoniae Carbapenem Resistant (CRE)	BAA-1705	30 seconds
Listeria monocytogenes (Listeria)	ATCC 49594	30 seconds
Methicillin-resistant Staphylococcus aureus (MRSA)	ATCC 33591	30 seconds
Pseudomonas aeruginosa	ATCC 15442	1 minute
Salmonella enterica (Salmonella)	ATCC 10708	30 seconds
Staphylococcus aureus (Staph)	ATCC 6538	1 minute
Streptococcus pneumoniae (Strep)	ATCC 6305	30 seconds
Streptococcus pyogenes (Strep)	ATCC 12344	30 seconds
Vancomycin Resistant Enterococcus faecalis (VRE)	ATCC 51575	30 seconds
Vibrio vulnificus	ATCC 27562	30 seconds
Yersinia enterocolitica	ATCC 9610	30 seconds
*Staphylococcus aureus (use dilution)	ATCC 6538	5 minutes
*Pseudomonas aeruginosa (use dilution)	ATCC 15442	4 minutes
Mold, Mildew & Fungi		
Aspergillus niger (Mold)	ATCC 6275	5 minutes
Candida albicans (Yeast)	ATCC 10231	30 seconds
Trichophyton mentagrophytes (a cause of athlete's foot)	ATCC 9533	30 seconds
Mycobacterium		
Mycobacterium bovis var. BCG (TB) (Tuberculosis)	N/A	5 minutes
Viruses Enveloped		
2009-H1N1 Influenza A Virus (H1N1)	A/California/04/09	30 seconds
Influenza A virus (Flu Virus)	A/California/04/09	30 seconds
*Avian Influenza H7N9	Strain wildtype A/Anhui/1/2013, CDC # 2013759189	25 seconds
*Avian Influenza H5N1	Strain VNH5N1-PR8/CDC-RG, CDC #2006719965	15 seconds
*Herpes simplex virus type 1	ATCC VR-733, Strain F(1)	30 seconds
Human Coronavirus, Strain 229E	ATCC VR-740	30 seconds
*Mumps virus	ATCC VR-1438, Strain Jones	30 seconds

Test Organisms Reference List (cont.)**Added September 2018***Hard, Nonporous Surface Disinfection Pathogens**

Viruses Non-Enveloped	Strain / ATCC No.	Contact Time
Canine Parvovirus (Parvo)	ATCC VR-2017	30 seconds
*Coxsackie virus type B3 (a cause of Hand, Foot Mouth disease)	ATCC VR-30, Strain Nancy	30 seconds
*Enterovirus type D68 (a cause of Hand, Foot & Mouth disease)	ATCC VR-1825, Strain US/KY/14-18953	30 seconds
Hepatitis A virus (HAV)	University of Ottawa	1 minute
Murine norovirus (Norovirus)	MNV-G, Yale University	30 seconds
Feline Calicivirus (as surrogate for Norovirus)	ATCC VR-782	30 seconds
Polio Type 1 virus	ATCC VR-1562	30 seconds
Respiratory syncytial virus (RSV)	ATCC VR-26	30 seconds
Rhinovirus (a cause of the common cold)	ATCC VR-284	30 seconds
Rotavirus	ATCC VR-2018	30 seconds
Bloodborne Pathogens		
Human Hepatitis B virus (HBV)	Grimaud	30 seconds
Human Hepatitis C virus (HCV)	NADL	30 seconds
Human immunodeficiency virus Type I (HIV-1)	Strain IIB (B)	30 seconds

Food Contact Surface Sanitization Pathogens

Bacteria	Strain / ATCC No.	Contact Time
Campylobacter jejuni	ATCC 29428	1 minute
*Clostridium perfringens	ATCC 13124	1 minute
*Cronobacter sakazakii	ATCC 29544	1 minute
Escherichia coli (E. coli)	ATCC 11229	1 minute
Staphylococcus aureus (Staph)	ATCC 6538	1 minute
Escherichia coli O157:H7 (STEC Shiga toxin-producing)	ATCC 35150	1 minute
Listeria monocytogenes (Listeria)	ATCC 19117	1 minute
Salmonella typhimurium (Salmonella typhi)	ATCC 14028	1 minute
Shigella dysenteriae (Shigella)	ATCC 11835	1 minute

Non-Food Contact Surface Sanitization Pathogens

Bacteria	Strain / ATCC No.	Contact Time
*Enterobacter aerogenes (liquid application)	ATCC 13048	10 seconds
Klebsiella pneumoniae (spray application)	ATCC 4352	10 seconds
Staphylococcus aureus (Staph) (*liquid/spray application)	ATCC 6538	10 seconds
Soft Surface Sanitization Pathogens		
Bacteria		
Klebsiella pneumoniae	ATCC 4352	20 seconds
Staphylococcus aureus (Staph)	ATCC 6538	20 seconds

Safety and Toxicity Testing

Objective	Evaluate the acute safety and toxicity of product formulation <i>in vivo</i> .
Description of Tests	Testing was conducted in accordance with the U.S. Environmental Protection Agency guidelines in effect at the time for determining acute toxicity of disinfectants intended for use on dry inanimate surfaces.
Independent Laboratories	Stillmeadow, Inc., 12852 Park One Drive, Sugar Land, TX 77478
Test Results	
Acute Oral Toxicity*	Meets EPA requirement for Category IV rating (greater than 5000 mg/kg).
Acute Dermal Toxicity*	Meets EPA requirement for Category IV rating (greater than 5000 mg/kg).
Acute Inhalation Toxicity*	Meets EPA requirement for Category IV rating (greater than 2 mg/liter).
Acute Eye Irritation	<u>EPA Testing Guideline</u> : OCSPP 870.2400 Meets EPA requirement for Category IV rating (minimal effects clearing in less than 24 hours). Under the conditions of the test, the product did not produce eye irritation.
Acute Dermal Irritation*	Meets EPA requirement for Category IV rating. Mild or slight irritation at 72 hours (no irritation or slight erythema).
Skin Sensitization*	Meets EPA requirements as a non-sensitizer for Category IV rating.

* The ingredients in this product are generally regarded as safe (GRAS) and toxicity testing was not required for registration of this product.

Product Stability Testing

Objective	Determine if the product meets the performance requirements over the desired three-year product shelf life.
Description of Tests	Stability Study to measure the properties of product over time (on shelf, unopened, opened). Using standardized test methods defined by the EPA and other international standards, testing was completed under accelerated (54°C) and real time (25°C) conditions for up to three years.

Test Conclusions

This product has met the requirements necessary to show that the product is stable for a minimum of three years of shelf life if stored in accordance with label instructions.

Surface Compatibility Testing

Objective

Determine product compatibility with common surfaces after extended and repeat contact exposures.

Description of Tests

- Compatibility studies measure the effects of product on the properties of common surfaces. Using a standardized test methodology, many different hard and soft surface materials were exposed to the product under a worst case simulated use condition, equivalent to approximately one year of extreme use. Where applicable, test materials were soaked in PURELL® Foodservice Surface Sanitizer and other commercially available surface disinfectants for comparison for up to 12 cycles in “use dilution”. 1 cycle = 20 hrs. static soak followed by 2-4 hr. air dry at room temperature
- 12 cycles simulate ~1300 to 1500 exposures or one year (3-4x day) with a 10-minute contact time

For handheld electronics, the device was directly sprayed and allowed to stand for 5 minutes before wiping. This test was repeated 50 times.

Test Conclusions

- Testing has demonstrated this product is compatible with many common hard and soft surface materials, including:

Category	Material
Metals	Stainless Steel 316, Stainless Steel A2 and Brushed Bronze
Plastics	PVC Type 1, PET, HDPE, Vinyl Tile, Formica, Corian, Acrylic and Polycarbonate
Rubber	EPDM and Natural
Ceramic	Porcelain Tile
Soft Surfaces	*Cotton, Polyester, Polyamide, and Nylon blended fabrics, Urethane Foam, High Density Foam, EVA Foam, and various Vinyl Fabrics
Natural Stone	Sealed granite, **Quartz (polished and unpolished), Limestone
Exercise Equipment	Life Fitness Cross Trainer 95X with LCD console
Handheld Electronics	LG (V30), Google (Pixel 2), Apple (iPhone 8), Samsung (Galaxy S8, Galaxy Note8), ***Motorola (Moto Z2), Microsoft (Surface 3)

Some dyes may bleed color ** May cause slight color change on unpolished quartz *Some cosmetic discoloration with no loss of functionality*

Recommendations

- For best results, always test in a small inconspicuous area before broad application.
- Wood and metal surfaces coated with alcohol soluble finishes, such as varnish, shellac, linseed oil and some powder coatings should be avoided. *Note: Wax or modern polyurethane finishes are not alcohol soluble and do not present incompatibility concerns.*
- Not recommended for repeat use on marble, untreated copper, brass, and aluminum surfaces.
- Spray handheld devices (cellphones/tablets) lightly and avoid open ports. Verify compatibility with other manufacturers and models.
- Not recommended for use on natural leather surfaces. *Note: Synthetic vinyl fabrics, such as Naugahyde® have shown no incompatibility issues during testing.*

Cleaning Capability Testing

Objective	Evaluate cleaning performance compared to leading cleaning, sanitizing and disinfecting products found in professional and retail markets.
Description of Tests	<p>Cleaning Study to measure the effectiveness of soil and organic matter removal from common surfaces. Standardized test methodology used to provide numerical evaluation (0 to 100) of a product's capability in removing/cleaning five difficult soils from common surfaces.</p> <p>Data compared cleaning capability of products on five difficult soils (blood, coke, ketchup, salad dressing, and syrup) applied to four common surfaces (ABS plastic, Formica, stainless steel, vinyl composite). Data was generated for this product in addition to six leading competitive products.</p>
Independent Laboratories	Sterling Laboratories, Toledo, Ohio (Study Nbr. 14261FM29)

Test Conclusions

All products had statistically equivalent cleaning performance for the respective soil and surface combinations.

Allergen Removal Testing

Objective	Evaluate removal of allergen proteins from textured HDPE and stainless-steel surfaces.
Description of Tests	Creamy peanut butter (0.5 g) was spread onto a 3"x3" surface area on a textured HDPE or stainless-steel surface. One spray of product was applied to the surface and wiped for 5 strokes with a Chicopee towel wipe. Untreated, treated, and water treated surfaces were swabbed and evaluated for protein allergens by ELISA.

Test Results

On a stainless-steel surface, treatment with PURELL® Foodservice Surface Sanitizer significantly reduced the peanut allergen protein. On a textured HDPE surface, treatment with the PURELL Foodservice Surface Sanitizer significantly reduced the peanut allergen protein.

Test Conclusions

PURELL Foodservice Surface Sanitizer, when used according to the label instructions, can be used as part of an allergen management program to help remove soil containing food allergen proteins from hard, non-porous surfaces. However, a customer is responsible for any validation and verification of their food safety plan and allergen management program.