



TERSANO BULLETIN ON THE CORONAVIRUS

Monday, April 20, 2020

We are writing to all of our customers and partners to provide our latest update regarding the status of the Tersano SAO™ solution pertaining to SARS-CoV-2 (Coronavirus) effectiveness claims.

In our most recent testing, the SAO solution was tested against an approved surrogate for SARS-CoV-2, which is the Coronavirus/MHV-3. MHV-3 (Murine coronavirus/Murine Hepatitis Virus) is one of the approved surrogates as it belongs to the same Genus (Betacoronavirus) as SARS (SARS-CoV), MERS (MERS-CoV) and COVID-19 (SARS-CoV-2). While testing against MHV-3, the lab also tested against Influenza A Virus (H1N1), Measles Virus and Syncytial Respiratory Virus.

We are pleased to announce that Tersano's SAO solution was effective in eliminating >99.99% (>4-log) of all four (4) enveloped viruses with a one minute dwell time. Please see our updated Pathogen Summary.

For our next stage of testing, we have been informed by various labs that they will soon begin offering efficacy testing against SARS-CoV-2, the causative agent of COVID-19. They are in the process of preparing virus stock, performing feasibility, and developing test protocols that are aligned with the requirements of the regulatory bodies. They plan to offer testing starting some time in June.

Please reach out with any questions or concerns to either myself or our partners around the world.

We wish you all the best of health.

Steve Hengsperger
President

SAO™ PATHOGEN SUMMARY

TESTING SPONSORED BY TERSANO, INC.

Updated: April 20, 2020

MICRO-ORGANISM	GROUP	STANDARD	REDUCTION	TIME
CLAIM: For use as a food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Microchem Laboratory, Round Rock, TX 12/15/17				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	AOAC 960.09	> 99.999%	30 secs
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	AOAC 960.09	> 99.999%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at MycoScience Labs, Wilmington, CT 4/13/17				
Listeria monocytogenes ATCC 19 115	Bacteria	AOAC 960.09	> 99.999%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 3/17/16 and 2/26/16.				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	ASTM E1153	> 99.9%	30 secs
Salmonella typhimurium (Salmonella) ATCC 1 428	Bacteria	ASTM E1153	> 99.9%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 4/4/17.				
Enterococcus hirae ATCC 10 541	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Escherichia coli (E. coli) ATCC 10 536	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Pseudomonas aeruginosa ATCC 15 442	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Candida albicans ATCC 10 231	Yeast	BS EN 13697:2015	> 99.9%	30 minutes
Aspergillus niger (A. niger) ATCC 16 404	Mould	BS EN 13697:2015	> 99.9%	30 minutes
CLAIM: For use as a food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 9/22/17.				
Enterococcus hirae ATCC 10 541	Bacteria	EN 1276	99.999%	5 minutes
Escherichia coli (E. coli) ATCC 10 536	Bacteria	EN 1276	> 99.999%	5 minutes
Pseudomonas aeruginosa ATCC 15 442	Bacteria	EN 1276	99.999%	5 minutes
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	EN 1276	> 99.999%	5 minutes
CLAIM: Determination of the antiviral effectiveness of SAO using a suspension time-kill procedure against Canine Parvovirus. Testing conducted at Microchem Laboratory, Round Rock, TX.				
Canine Parvovirus ATCC VR-2016	Small, non-enveloped virus	ASTM E1052	99.44%	5 minutes
CLAIM: Virucidal Activity Test.				
Coronavirus MHV-3 (Murine Hepatitis Virus)	Enveloped Virus	EN 14476	> 99.99%	1 minute
Influenza A Virus (HINI)	Enveloped Virus	EN 14476	> 99.99%	1 minute
Measles Virus	Enveloped Virus	EN 14476	> 99.99%	1 minute
Syncytial Respiratory Virus	Enveloped Virus	EN 14476	> 99.99%	1 minute

NOTE: All standard protocols are modified. BS EN 13697:2015, EN 1276 & EN 14476 standards were done under clean condition protocol.

Tested to meet or exceed TUV, UL and CSA standards. Tersano's aqueous ozone is created by a dispenser regulated as a pesticide device manufactured at EPA Establishment No. 089093-CAN-001.

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1-800-727-8835
www.tersano.com

AQUEOUS OZONE PATHOGEN SUMMARY

TESTING SPONSORED BY TERSANO, INC.

Results from Tersano testing showing the power of aqueous ozone and the time required to destroy various bacteria at a strength of 2 ppm or less.

MICRO-ORGANISM	GROUP	STANDARD	REDUCTION	TIME
ODOR TEST RESULTS Testing conducted at Microbiotest Inc.				
Proteus mirabilis ATCC 7002	Bacteria	Fabric Surface Sanitizer Method	>99%	30 secs
BACTERIA TEST RESULTS Testing conducted at Microbiotest Inc.				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs
Listeria monocytogenesi (L. monocytogenes) ATCC 19 111	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs
Escherichia coli (S. choleraesuis) ATCC 10 708	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs

TESTING RESULTS BELOW SPONSORED BY 3RD PARTY ORGANIZATIONS

Results of Aqueous Ozone Tested For Use As a Sanitizer on Non-Porous Surfaces

MICROBE	REDUCTION	TIME	REPORTING ORGANIZATION
Bacteriophage F2	99.9999%	Instantaneously	Journal of Food Sciences
E. faecalis	99.9%	Instantaneously	American Society for Microbiology
Mycobacterium avium	99.9%	Instantaneously	Virginia Tech
Hepatitis A	99%	Instantaneously	Journal of Food Sciences
Rotovirus (HRV)	99.9%	6 seconds	Applied and Environmental Microbiology
Tricophyton Mentagrophytes	99.9999%	30 seconds	Water Quality Products, Inc
Enteric Adenovirus	99.9%	30 seconds	Elsevier Water Research
Feline callicivirus	99.9%	30 seconds	Elsevier Water Research
Norwalk virus	99.9%	30 seconds	Applied and Environmental Microbiology

Aqueous Ozone is approved by the EPA, FDA, USDA, is considered GRAS, and is compliant with the EPA Organic Program as a natural and effective cleaner and sanitizer.



Nonfood Compounds Program listed on White List as a no-rinse sanitizer and cleaner



Awarded Maximum 10 Points



GRAS and compliant with the EPA Organic Program



Aqueous ozone approved as antimicrobial agent June 26, 2001



Recognized as environmentally preferable



USDA/National Organic Program (NOP) Ozone Approval

Data compiled from third party independent industry and academic sources, and is for general information purpose only. Kill rates vary with temperature, surface texture, pH and other factors. For more detailed kill rate data along with a more thorough and complete list of microbes, please contact your Tersano Customer Representative. lotus is a registered trade mark of Tersano Inc. All other marks are property of their respective owners.



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