

# STABILIZED AQUEOUS OZONE PATHOGEN SUMMARY

## TESTING SPONSORED BY TERSANO, INC.

Revised Apr 3, 2018

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				
<b>Escherichia coli</b> (E.coli) ATCC 11 229	Bacteria	AOAC 960.09	> 99.999%	30 secs
<b>Staphylococcus aureus</b> (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				
<b>Listeria monocytogenes</b> ATCC 19 115	Bacteria	AOAC 960.09	> 99.999%	30 secs & 5 minutes
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.				
<b>Escherichia coli</b> (E.coli) ATCC 11 229	Bacteria	ASTM E1153	> 99.9%	30 secs
<b>Salmonella typhimurium</b> (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.				
<b>Enterococcus hirae</b> ATCC 10 541	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
<b>Escherichia coli</b> (E. coli) ATCC 10 536	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
<b>Pseudomonas aeruginosa</b> ATCC 15 442	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
<b>Staphylococcus aureus</b> (Staph) ATCC 6 538	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
<b>Candida albicans</b> ATCC 10 231	Yeast	BS EN 13697:2015	> 99.9%	30 minutes
<b>Aspergillus niger</b> (A. niger) ATCC 16 404	Mould	BS EN 13697:2015	> 99.9%	30 minutes
Claim: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 9/22/17.				
<b>Enterococcus hirae</b> ATCC 10 541	Bacteria	EN 1276	99.999%	5 minutes
<b>Escherichia coli</b> (E. coli) ATCC 10 536	Bacteria	EN 1276	> 99.999%	5 minutes
<b>Pseudomonas aeruginosa</b> ATCC 15 442	Bacteria	EN 1276	99.999%	5 minutes
<b>Staphylococcus aureus</b> (Staph) ATCC 6 538	Bacteria	EN 1276	> 99.999%	5 minutes

\* All standard protocols are modified. BS EN 13697:2015 & EN 1276 standards were done under clean condition protocol. For more detailed kill rate data, please contact your Tersano Customer Representative. Tested to meet or exceed TUV, UL and CSA standards. Tersano's aqueous ozone is created by a dispenser regulated as a pesticidal device manufactured at EPA Establishment No. 089093-CAN-001. lotus is a registered trade mark of Tersano Inc. All other marks are property of their respective owners.



Meets standards  
GS-37 and GS-53

# AQUEOUS OZONE PATHOGEN SUMMARY

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

## TESTING RESULTS BELOW SPONSORED BY 3<sup>RD</sup> PARTY ORGANIZATIONS

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

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