



LEMON-QUAT™
Disinfectant, Cleaner, Mildewstat, Fungicide, Virucide, Deodorizer #0235
EPA Registration Number: 10324-157-2296

DISINFECTION PERFORMANCE:

This product kills the following bacteria in 10 minutes at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Carrier Population (Log ₁₀)	# Positive Carriers
<i>Pseudomonas aeruginosa</i> (ATCC 15442)	6.41	3/60
	6.42	6/60
	6.41	4/60
<i>Salmonella enterica</i> (ATCC 10708)		1/60
	6.01	1/60
		0/60
<i>Staphylococcus aureus</i> (ATCC 6538)	6.48	2/60
	6.41	3/60
	6.56	2/60
<i>Acinetobacter baumannii</i> (ATCC 19003)		0/10
	6.71	0/10
<i>Acinetobacter lwoffii</i> (ATCC 9957)		0/10
	5.60	0/10
<i>Acinetobacter lwoffii</i> (ATCC 15309)		0/10
	5.76	0/10
<i>Bordetella bronchiseptica</i> (ATCC 10580)		0/10
	6.97	0/10
<i>Citrobacter freundii</i> (ATCC 8090)		0/10
	5.59	0/10
<i>Enterobacter agglomerans</i> (ATCC 27155)		0/10
	5.59	0/10
<i>Enterobacter cloacae</i> (ATCC 13047)		0/10
	7.52	0/10
<i>Enterococcus faecalis</i> (ATCC 19433)		0/10
	5.79	0/10
<i>Enterococcus faecalis</i> (VRE) (ATCC 51299)		0/10
	7.11	0/10
<i>Enterococcus hirae</i> (ATCC 10541)		0/10
	4.38	0/10
<i>Escherichia coli</i> (Carbapenem Resistant) (CDC 81371)		0/10
	5.88	0/10
	5.52	0/10



<i>Escherichia coli</i> (ATCC 11229)	7.11	0/10 0/10
<i>Escherichia coli</i> (ESBL) (ATCC BAA-196)	6.90	0/10 0/10
<i>Escherichia coli</i> (Tetracycline Resistant) (ATCC 47041)	5.49	0/10 0/10
<i>Escherichia coli</i> O157:H7 (ATCC 35150)	6.90	0/10 0/10
<i>Fusobacterium necrophorum</i> (ATCC 27852)	5.76	0/10 0/10
<i>Klebsiella aerogenes</i> (ATCC 13048)	7.37	0/10 0/10
<i>Klebsiella oxytoca</i> (ATCC 13182)	6.03	0/10 0/10
<i>Klebsiella pneumonia</i> (Carbapenem-Resistant) (NDM-1) (ATCC BAA-2146)	6.80	0/10 0/10
<i>Klebsiella pneumonia</i> (ATCC 13883)	6.05	0/10 0/10
<i>Listeria monocytogenes</i> (ATCC 19117)	6.89	0/10 0/10
<i>Micrococcus luteus</i> (ATCC 14452)	5.04	0/10 0/10
<i>Micrococcus luteus</i> (ATCC 4698)	5.68	0/10 0/10
<i>Mycoplasma gallisepticum</i> (ATCC 19610)	4.00	0/10 0/10
<i>Pasturella multocida</i> (ATCC 12947)	7.12	0/10 0/10
<i>Proteus vulgaris</i> (ATCC 13315)	4.28	0/10 0/10
<i>Proteus vulgaris</i> (ATCC 9920)	5.09	0/10 0/10
<i>Pseudomonas aeruginosa</i> (Tetracycline Resistant) (ATCC 27853)	6.54	0/10 0/10
<i>Pseudomonas cepacia</i> (ATCC 25416)	6.21	0/10 0/10
<i>Salmonella enterica</i> (ATCC 23564)	4.96	0/10 0/10
<i>Salmonella enterica</i> serotype <i>pullorum</i> (ATCC 19945)	5.85	0/10 0/10
<i>Salmonella enteritidis</i> (ATCC 4931)	5.11	0/10 0/10
<i>Salmonella typhi</i> (ATCC 6539)	6.92	0/10 0/10
<i>Salmonella typhimurium</i> (ATCC 23564)	5.75	0/10 0/10
<i>Serratia marcescens</i> (ATCC 14756)	6.79	0/10 0/10
<i>Serratia marcescens</i> (ATCC 9103)	6.78	0/10 0/10



<i>Shigella flexneri</i> (ATCC 12022)	4.41	0/10 0/10
<i>Shigella flexneri</i> (ATCC 9380)	6.30	0/10 0/10
<i>Shigella sonnei</i> (ATCC 25931)	6.02	0/10 0/10
<i>Staphylococcus aureus</i> (ATCC 14154)	5.96	0/10 0/10
<i>Staphylococcus aureus</i> (ATCC 25923)	5.82	0/10 0/10
<i>Staphylococcus aureus</i> (CA-MRSA) (Genotype USA 400)	6.80	0/10 0/10
<i>Staphylococcus aureus</i> (CA-MRSA) (Genotype USA 300)	5.01	0/10 0/10
<i>Staphylococcus aureus</i> (ATCC 33586)	4.86	0/10 0/10
<i>Staphylococcus aureus</i> (MRSA) (ATCC 33592)	6.73	0/10 0/10
<i>Staphylococcus aureus</i> (VISA) (HIP 5836)	6.51	0/10 0/10
<i>Staphylococcus epidermidis</i> (ATCC 14990)	6.19	0/10 0/10
<i>Staphylococcus epidermidis</i> (MDR) (ATCC 51625)	5.93	0/10 0/10
<i>Staphylococcus haemolyticus</i> (ATCC 29970)	5.98	0/10 0/10
<i>Streptococcus agalactiae</i> (ATCC 13813)	6.75	0/10 0/10
<i>Streptococcus mutans</i> (ATCC 25175)	4.11	0/10 0/10
<i>Streptococcus pneumoniae</i> (Penicillin Resistant) (ATCC 51915)	4.98	0/10 0/10
<i>Streptococcus pyogenes</i> (ATCC 19615)	4.67	0/10 0/10
<i>Vibrio cholera</i> (ATCC 11623)	6.00	0/10 0/10
<i>Yersinia enterocolitica</i> (ATCC 23715)	7.08	0/10 0/10
<i>Chlamydia psittaci</i> * (VR-125)	7.25	≥6.75 ≥6.75

*Note – *Chlamydia psittaci* evaluated by ASTM E1053. Results shown are in Log₁₀ bacterial reduction.



VIRUCIDAL PERFORMANCE:

This product kills the following viruses in 10 minutes at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Virus Population (Log ₁₀)	Log Reduction (Log ₁₀)
Avian Influenza A Virus (H5N1) (CDC 2006719965)	5.60	≥3.50 ≥3.50
Avian Influenza A Virus (H3N2) (VR-2072)	4.75	≥4.25 ≥4.25 ≥4.25
Cytomegalovirus (AD-169)	5.10	≥3.00 ≥3.00
Coronavirus (SARS-associated) (CDC 200300592)	6.10	≥4.00 ≥4.00
Hantavirus (PHV)	5.00	≥3.50 ≥3.50
Hepatitis B Virus (HBV) (Duck Hepatitis B Virus)	4.79 4.79	4.79 4.79 4.79
Hepatitis C Virus (HCV) (Bovine Viral Diarrhea Virus)	5.88 5.93	5.88 5.88 5.93
Herpes Simplex Type 1 Virus (VR-733)	5.50	≥5.00 ≥5.00
Herpes Simplex Type 2 Virus (VR-734)	6.00	≥5.50 ≥5.50
Human Coronavirus (VR-740)	4.50	≥4.00 ≥4.00
Human Immunodeficiency Virus Type 1*** (AIDS Virus) (HTLV-III _B)	5.00	≥4.50 ≥4.50
Influenza A Virus (H1N1) (Strain A/PR/8/34)	5.60	≥3.50 ≥3.50
Influenza A Virus (H3N2) (VR-544)	6.50	≥6.00 ≥6.00
Norovirus (ATCC VR-782)	5.89	4.39 3.92
Respiratory Syncytial Virus (VR-26)	4.50	≥4.00 ≥4.00
SARS-CoV-2 (COVID-19 virus) (2019-nCoV)*** (USA-WA1/2020)	5.75	≥5.25 ≥5.00 ≥5.25
Vaccinia Virus (VR-119)	6.75	≥6.25 ≥6.25

*** Indicates a 2-minute contact time is required for this claim.



ANIMAL PREMISE VIRUCIDAL PERFORMANCE:

This product kills the following viruses in 10 minutes at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Virus Population (Log ₁₀)	Log Reduction (Log ₁₀)
Avian Infectious Bronchitis Virus (Strain Beaudette IB42)	6.42	≥5.92 ≥5.92
Avian Influenza A Virus (H5N1) (CDC 2006719965)	5.60	≥3.50 ≥3.50
Avian Influenza A Virus (H3N2) (VR-2072)	4.75	≥4.25 ≥4.25 ≥4.25
Canine Coronavirus (VR-809)	4.50	≥4.00 ≥4.00
Canine Distemper Virus (VR-128)	6.25	≥5.75 ≥5.75
Canine Influenza Virus (H3N8) (Cornell University)	6.00	≥5.50 ≥5.50
Feline Calicivirus (VR-782)	5.89	4.39 3.92
Feline Picornavirus (VR-649)	4.50	≥4.00 ≥4.00
Infectious Bovine Rhinotracheitis Virus (VR-188)	4.50	≥4.00 ≥4.00
Pseudorabies Virus (VR-135)	6.25	≥5.75 ≥5.75
Swine Influenza A Virus (H1N1) (Strain A/Swine/1976/31)	5.35	≥3.25 ≥3.25
Transmissible Gastroenteritis Virus (TGE)	4.75	≥4.25 ≥4.25

ANIMAL PREMISE VIRUCIDAL PERFORMANCE:

This product kills the following viruses in 10 minutes at 18 oz. per gal. of 400 ppm hard water (2970 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Virus Population (Log ₁₀)	Log Reduction (Log ₁₀)
Canine Parvovirus (CPV) (Type 2b)	7.50	4.00 4.00
Rabies	5.35	≥3.25 ≥3.25



NON-FOOD CONTACT SANITIZING PERFORMANCE:

This product is an effective one-step sanitizer in 3 minutes at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Average Population (Log ₁₀)	Log Reduction (Log ₁₀)
<i>Klebsiella pneumonia</i> (ATCC 4352)	6.04	>4.56
		>4.17
		>4.56
<i>Staphylococcus aureus</i> (ATCC 6538)	6.69	>5.21
		>5.21
		>5.21

MILDEWSTATIC PERFORMANCE:

This product controls the following mold at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces for up to 7 days:

Organism	Tile	Untreated (% Covered)	7 days Post Treatment (% Covered)
<i>Aspergillus niger</i> (ATCC 16404)	1	90%	0%
	2	70%	0%
	3	90%	0%
	4	80%	0%
	5	80%	0%
	6	90%	0%
	7	80%	0%
	8	70%	0%
	9	90%	0%
	10	70%	0%

FUNGICIDAL PERFORMANCE: This product kills the following fungi in 10 minutes at 4 oz. per gal. of 400 ppm hard water (660 ppm active) and 5% soil on hard, non-porous surfaces:

Organism	Carrier Population (Log ₁₀)	# Positive Carriers
<i>Candida albicans</i> (ATCC 10231)	5.75	0/10
		0/10
<i>Trichophyton mentagrophytes</i> (ATCC 9533)	4.78	0/10
		0/10