

Efficacy Bulletin

HALT[™]

EPA Reg. No. 10324-93-5741

EFFICACY

Hospital and General Disinfection

This product is bactericidal according to the AOAC Use Dilution Test method on hard inanimate surfaces modified in the presence of 5% organic serum at 2 ounces of this product per gallon of water (703 ppm quat active) Treated surfaces must remain wet for 10 minutes.

(Testing is performed per the AOAC UDT/GST method (DIS/TSS-1). Sixty carriers are required on 3 separate lots, one of which must be > 60 days old against *Pseudomonas aeruginosa*, *Salmonella enterica* and *Staphylococcus aureus*. Killing of 59 out of 60 carriers is required (total carriers = 540).)

Organism	Carrier Population	Sample	#Carriers	#Positive
<i>Pseudomonas aeruginosa</i> ATCC #15442	8.2 X 10 ⁶ CFU/Carrier	A (60 Days Old)	60	0/60
	4.3 X 10 ⁶ CFU/Carrier	B	60	1/60
	9.7 X 10 ⁵ CFU/Carrier	C	60	1/60
<i>Salmonella enterica</i> ATCC #10708	1.4 X 10 ⁴ CFU/Carrier	A (60 Days Old)	60	0/60
	7.3 X 10 ⁴ CFU/Carrier	B	60	0/60
	4.8 X 10 ⁵ CFU/Carrier	C	60	0/60
<i>Staphylococcus aureus</i> ATCC #6538	1.4 X 10 ⁶ CFU/Carrier	A (60 Days Old)	60	1/60
	2.8 X 10 ⁵ CFU/Carrier	B	60	1/60
	9.2 X 10 ⁵ CFU/Carrier	C	60	1/60

Supplemental Organisms

(Testing is performed per the AOAC UDT/GST method. Ten carriers are required on 2 separate lots against each supplemental organism. Killing of 10 out of 10 carriers is required (total carriers = 20).)

Organism	Carrier Population	Sample	#Carriers	#Positive
<i>Acinetobacter baumannii</i> ATCC 19606	6.2 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Bordetella bronchiseptica</i> ATCC 10580	1.38 X 10 ⁷ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Campylobacter jejuni</i> ATCC 29428	4.0 X 10 ⁴ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Corynebacterium ammoniagenes</i> ATCC 6871	9.6 X 10 ⁴ CFU/Carrier	A	10	0/10
		B	10	0/10

Supplemental Organisms (continued)

Organism	Carrier Population	Sample	#Carriers	#Positive
<i>Enterobacter aerogenes</i> ATCC 13048	4.1 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Enterococcus faecalis</i> ATCC 19433	3.5 X 10 ⁶ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Escherichia coli</i> ATCC 11229	3.5 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Escherichia coli</i> O111:H8 ATCC BAA-184	1.34 X 10 ⁶ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Escherichia coli</i> O157:H7 ATCC 35150	3.1 X 10 ⁶ CFU/Carrier	A	10	0/10
	3.4 X 10 ⁶ CFU/Carrier	B	10	0/10
<i>Klebsiella pneumoniae</i> ATCC 13883	4.2 X 10 ⁴ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Listeria monocytogenes</i> ATCC 984	4.5 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Salmonella schottmuelleri</i> ATCC 8759	9.6 X 10 ⁶ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Salmonella typhi</i> ATCC 6539	1.7 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Shigella dysenteriae</i> ATCC 9361	3.7 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Staphylococcus aureus</i> (Methicillin Resistant) (MRSA) ATCC 33591	1.3 X 10 ⁵ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Staphylococcus aureus</i> Community Associated Methicillin Resistant (CA-MRSA)	1.68 X 10 ⁶ CFU/Carrier	A	10	0/10
		B	10	0/10
<i>Streptococcus salivarius</i> ATCC 13419	1.5 X 10 ⁴ CFU/Carrier	A	10	0/10
		B	10	0/10

Virucidal against (at 2 ounces)

This product was evaluated at 2 ounces per gallon use level (703 ppm quat active), in the presence of 5% serum with a 10 minute contact time and found to be effective against the following viruses on hard nonporous environmental surfaces.

(Testing is performed per EPA Guidance (DIS/TSS-7). Two separate lots are tested. Inactivation of virus must be demonstrated at all dilutions when no cytotoxicity is observed or at all dilutions above the cytotoxic level when it is observed. The data must demonstrate a 3-log reduction in viral titer for both lots.)

Organism	Dried Virus Control	Sample	Result	Log Reduction
Avian Influenza A (H5N1) virus	4.5 Log ₁₀	A	≤0.5 Log ₁₀	≥4.0 Log ₁₀
		B	≤0.5 Log ₁₀	≥4.0 Log ₁₀
Avian influenza Turkey/Wisconsin ATCC VR-798	7.5 Log ₁₀	A	≤1.8 Log ₁₀	≥5.7 Log ₁₀
		B	≤1.8 Log ₁₀	≥5.7 Log ₁₀
Hepatitis B Virus	6.84 Log ₁₀	A	≤1.78 Log ₁₀	≥5.06 Log ₁₀
		B	≤2.05 Log ₁₀	≥4.79 Log ₁₀
	7.14 Log ₁₀	Confirmatory B	≤2.35 Log ₁₀	≥4.79 Log ₁₀
Hepatitis C Virus ATCC CCL-22	6.85 Log ₁₀	A	≤1.29 Log ₁₀	≥5.56 Log ₁₀
		B	≤1.06 Log ₁₀	≥5.79 Log ₁₀
	6.85 Log ₁₀	Confirmatory B	≤1.06 Log ₁₀	≥5.79 Log ₁₀
Herpes Simplex Type 1 ATCC VR-266	6.8 Log ₁₀	A	≤1.8 Log ₁₀	≥5.0 Log ₁₀
		B	≤1.8 Log ₁₀	≥5.0 Log ₁₀
Human Coronavirus ATCC VR-740	4.5 Log ₁₀	A	≤1.5 Log ₁₀	≥3.0 Log ₁₀
		B	≤1.5 Log ₁₀	≥3.0 Log ₁₀
Human Immunodeficiency Virus type 1 (HIV 1) HTLV-III _B	6.0 Log ₁₀	A	≤2.5 Log ₁₀	≥3.5 Log ₁₀
		B	≤2.5 Log ₁₀	≥3.5 Log ₁₀
Influenza A (H1N1) Virus ATCC VR-1469	6.5 Log ₁₀	A	≤0.5 Log ₁₀	≥6.0 Log ₁₀
		B	≤0.5 Log ₁₀	≥6.0 Log ₁₀
Influenza A2/Japan/305 ATCC VR-100	7.5 Log ₁₀	A	≤1.8 Log ₁₀	≥5.7 Log ₁₀
		B	≤1.8 Log ₁₀	≥5.7 Log ₁₀
Norwalk/Norovirus ATCC VR-782	5.75 Log ₁₀	A	≤1.5 Log ₁₀	≥4.25 Log ₁₀
		B	≤1.5 Log ₁₀	≥4.25 Log ₁₀
	5.5 Log ₁₀	Confirmatory A	≤0.5 Log ₁₀	≥5.0 Log ₁₀

Virucidal against (at 8 ounces)

This product was evaluated at 8 ounces per gallon use level (2,800 ppm quat active), in the presence of 5% serum with a 10 minute contact time and found to be effective against the following viruses on hard nonporous environmental surfaces.

Organism	Dried Virus Control	Sample	Result	Log Reduction
Canine Parvovirus	7.5 Log ₁₀	A	≤4.0 Log ₁₀	≥3.5 Log ₁₀
		B	≤4.33 Log ₁₀	≥3.17 Log ₁₀
Minute virus of Mice (Parvovirus) ATCC VR-1346	5.75 Log ₁₀	A	≤2.5 Log ₁₀	≥3.25 Log ₁₀
		B	≤2.5 Log ₁₀	≥3.25 Log ₁₀
Porcine Parvovirus ATCC VR-742	5.5 Log ₁₀	A	≤2.5 Log ₁₀	≥3.0 Log ₁₀
		B	≤2.5 Log ₁₀	≥3.0 Log ₁₀

Non-Food Contact Surface Sanitizer

Add 2 ounces of this product to 1 gallon of water to sanitize hard porous and non-porous non-food contact surfaces. Treated surfaces must remain wet for 60 seconds. Then wipe with sponge, mop or cloth or allow to air dry. At this dilution food contact surfaces must be rinsed.

Testing is performed per EPA Guidance (DIS/TSS-10). Three lots are required, one of which must be > 60 days old. Testing is performed against *Staphylococcus aureus* and *Klebsiella pneumoniae* containing 5% organic load. *Enterobacter aerogenes* may be substituted for *Klebsiella pneumoniae*. The results must show a reduction of at least 99.9% in the number of each test microorganism over the parallel control count within 5 minutes.

Organism	Carrier Population	Sample Average Log ₁₀	Survivor	60 Second Percent Kill
<i>Klebsiella pneumoniae</i> ATCC 4352	5.71 Log ₁₀	A (60 Days Old)	≤4.23 Log ₁₀	≥99.9
		B	≤4.31 Log ₁₀	≥99.9
		C	≤4.03 Log ₁₀	≥99.9
<i>Staphylococcus aureus</i> ATCC #6538	6.45 Log ₁₀	A (60 Days Old)	≤4.69 Log ₁₀	≥99.9
		B	≤4.87 Log ₁₀	≥99.9
		C	≤4.33 Log ₁₀	≥99.9

Mold and Mildew Control

Use this product at 2 ounces per gallon to control the growth of mold and mildew and their odors on hard, non-porous surfaces. Thoroughly wet all treated surfaces completely. Let air-dry. Repeat application weekly or when growth or odor reappears.

Organism	Title Number	Untreated After 7 Days	Sample A After 7 Days	Sample B After 7 Days
Aspergillus niger ATCC #6275	1	Growth 80%	No Growth 0%	No Growth 0%
	2	Growth 100%	No Growth 0%	No Growth 0%
	3	Growth 90%	No Growth 0%	No Growth 0%
	4	Growth 80%	No Growth 0%	No Growth 0%
	5	Growth 80%	No Growth 0%	No Growth 0%
	6	Growth 80%	No Growth 0%	No Growth 0%
	7	Growth 80%	No Growth 0%	No Growth 0%
	8	Growth 100%	No Growth 0%	No Growth 0%
	9	Growth 100%	No Growth 0%	No Growth 0%
	10	Growth 80%	No Growth 0%	No Growth 0%

Fungicidal against

This product was evaluated at 2 ounces per gallon with a 10 minute contact time and found to be effective against the following fungi on hard nonporous environmental surfaces.

(Testing is performed per the AOAC fungicidal method (DIS/TSS-6). Two separate lots are tested against *Trichophyton mentagrophytes* in a suspension test. Killing of all fungal spores in 10 minutes is required.)

Organism	Carrier Population	Sample	#Carriers	#Positive
<i>Trichophyton mentagrophytes</i> ATCC #9533	1.1 X 10 ⁶ CFU/carrier	A	10	0/10
		B	10	0/10