

Quatromyicide V

Efficacy Data

VIRUCIDAL DATA

Test Method: • Protocols for Testing the Efficacy of Disinfectants against Hepatitis B Virus (HBV) (EPA, Federal Register, Vol. 65, No. 166, 8/25/2000, p. 51828). † Protocol for Testing Disinfectants against Hepatitis C Virus using Bovine Viral Diarrhea Virus as approved by the U.S. EPA on August 15, 2002. * U.S. E.P.A. Pesticide Assessment Guidelines, Subdivision G: Product Performance, 1982, Section 91-30, pp. 72-76. † Virucide Assay (EPA, Federal Register 10, No. 123, 6/25/75, p. 26836)

Test Conditions: 3.5 ounces/5 gallons dilution, 10 minute contact time, glass petri dish substrates, 18.5-25°C exposure temperature, tested in the presence of serum

TEST ORGANISM	CONTACT TIME	SAMPLE	TITER REDUCTION
†Adenovirus Type 5	10 minutes	A	≥3.0 log ₁₀
		B	≥3.3 log ₁₀
*Avian Influenza A/Turkey/Wisconsin (ATCC VR-798)	10 minutes	A	≥5.5 log ₁₀
		B	≥5.5 log ₁₀
‡Bovine Viral Diarrhea Virus (BVDV)	10 minutes	A	5.93 log ₁₀
		B	5.93 log ₁₀
•Hepatitis B Virus (HBV) (Duck Hepatitis B Virus-DHBV)	10 minutes	A	4.68 log ₁₀
		B	4.68 log ₁₀
‡Hepatitis C Virus (HCV) (Bovine Viral Diarrhea Virus-BVDV)	10 minutes	A	5.93 log ₁₀
		B	5.93 log ₁₀
†Herpes Simplex Type 1 (Sabin)	10 minutes	A	4.0 log ₁₀
		B	4.0 log ₁₀
*Human Coronavirus (ATCC VR-740, strain 229E)	10 minutes	A	≥4.25 log ₁₀
		B	≥4.25 log ₁₀
*Human Immunodeficiency Virus, HIV-1, strain HTLV-III _B , (associated with AIDS)	10 minutes	A	≥3.5 log ₁₀
		B	≥3.5 log ₁₀
†Influenza A2 (Japan 305/57)	10 minutes	A	7.5 log ₁₀
		B	7.5 log ₁₀
*Laryngotracheitis (LT-IVAX)	10 minutes	A	4.75 log ₁₀
		B	≥4.75 log ₁₀
*Newcastle Disease Virus (strain H.J. Roakin, 1946)	10 minutes	A	≥5.5 log ₁₀
		B	≥5.5 log ₁₀
*Pandemic 2009 H1N1 Influenza A Virus	(Refer to Note below)		
*Porcine Respiratory & Reproductive Syndrome Virus (PRRSV) Strain NVSL)	10 minutes	A	≥5.75 log ₁₀
		B	≥5.75 log ₁₀
*SARS associated Coronavirus (ZeptoMetrix)	10 minutes	A	4.03 log ₁₀
		B	4.03 log ₁₀
†Vaccinia (Wyeth)	10 minutes	A	3.5 log ₁₀
		B	3.5 log ₁₀



Under the conditions of this investigation, BTC® 2125M 10% Solution demonstrated virucidal activity against Adenovirus Type 5, Avian Influenza A/Turkey/Wisconsin, Bovine Viral Diarrhea Virus (BVDV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Herpes Simplex Type 1 (Sabin), Human Coronavirus, Human Immunodeficiency Virus (HIV-1), Influenza A2 (Japan 305/57), Laryngotracheitis, Newcastle Disease Virus, Pandemic 2009 H1N1 Influenza A Virus, Porcine Respiratory & Reproductive Syndrome Virus (PRRSV), SARS associated Coronavirus and Vaccinia (Wyeth) according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a virucide.

Note: Per the EPA guidance document dated October 21, 2009, disinfectant products that bear label claims against human, avian, or swine influenza A virus, and have submitted and received approval of efficacy data to support these label claims, may include a label claim against the Pandemic 2009 H1N1 Influenza A Virus.

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DISINFECTION DATA

Test Method: AOAC Use Dilution

Test Conditions: 5% organic soil load, 10 minute contact time, stainless steel carrier substrates 20°C exposure temperature

TEST ORGANISM	DILUTION	SAMPLE	NO. OF CARRIERS	
			EXPOSED	POSITIVE
Staphylococcus aureus (ATCC 6538)	3 ounces/5 gallons	A	60	0
		B	60	0
Salmonella enterica (ATCC 10708)	3 ounces/5 gallons	A	60	0
		B	60	0
Listeria monocytogenes (ATCC 35152)	3 ounces/5 gallons	A	10	0
		B	10	0
Yersinia enterocolitica (ATCC 23715)	3 ounces/5 gallons	A	10	0
		B	10	0
Pseudomonas aeruginosa (ATCC 15442)	3.5 ounces/5 gallons	A	60	0
		B	60	0
Vancomycin intermediate resistant Staphylococcus aureus (VISA) (HIP-5836)	3.5 ounces/5 gallons	A	10	0
		B	10	0
Xanthomonas axonopodis (pathovar citri) (Citrus Canker) (USDA Permit No. 46190)	2.67 ounces/1 gallon	A	10	0
		B	10	0



Under the conditions of these investigations, BTC® 2125M 10% Solution demonstrated disinfectant activity against Staphylococcus aureus, Salmonella enterica, Listeria monocytogenes, Yersinia enterocolitica, Pseudomonas aeruginosa, Vancomycin intermediate resistant Staphylococcus aureus (VISA), and Xanthomonas axonopodis pathovar citri (citrus canker) according to criteria established by the U. S.

Environmental Protection Agency for registration and labeling of a disinfectant product as a bactericide.

NON-FOOD CONTACT SANITIZATION DATA

Test Method: Sanitizer Test for Inanimate, Non-Food Contact Surfaces

Test Conditions: 1 ounce/4 gallon dilution, 30 second contact time, 5% organic soil load, room temperature, synthetic hard water as 200 ppm hardness (as CaCO₃), 1 square inch glass slide carriers

TEST ORGANISM	CONTACT TIME	SAMPLE	% REDUCTION
Klebsiella pneumoniae (ATCC 4352)	30 seconds	A	>99.9
		B	>99.9
		C	>99.9
Staphylococcus aureus (ATCC 6538)	30 seconds	A	>99.9
		B	>99.9
		C	>99.9
Listeria monocytogenes (ATCC 35152)	30 seconds	A	>99.9
		B	>99.9
		C	>99.9

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FOOD CONTACT SANITIZATION DATA

Test Method: AOAC Germicidal and Detergent Sanitizing Action of Disinfectants

Test Conditions: synthetic hard water as 650 ppm hardness (as CaCO₃) 200 ppm active quaternary (public eating establishments and dairies) 200-400 ppm active quaternary (food processing equipment/utensils) 1-2 ounces/4 gallon dilution

**TOTAL BACTERIAL COUNTS/
% KILL vs. EXPOSURE TIME**

TEST ORGANISM	SAMPLE	30 SECONDS		60 SECONDS		INITIAL INOCULUM CONTROL COUNT
		TBC*	% KILL †	TBC*	% KILL †	
Staphylococcus aureus (ATCC 6538)	A	970	99.999	105	99.999	7.8 x 10 ⁷
	B	1285	99.999	205	99.999	9.2 x 10 ⁷
	C	1145	99.999	130	99.999	9.3 x 10 ⁷
Escherichia coli (ATCC 11229)	A	1125	99.999	50	99.999	1.0 x 10 ⁸
	B	1075	99.999	95	99.999	9.3 x 10 ⁷
	C	835	99.999	75	99.999	8.1 x 10 ⁷
Campylobacter jejuni (ATCC 29428)	A	790	99.999	410	99.999	8.6 x 10 ⁷
	B	780	99.999	470	99.999	8.6 x 10 ⁷
Escherichia coli O157:H7 (ATCC 43895)	A	1220	99.999	110	99.999	9.2 x 10 ⁷
	B	1000	99.999	125	99.999	9.2 x 10 ⁷
Listeria monocytogenes (ATCC 35152)	A	<10	>99.999	<10	>99.999	7.8 x 10 ⁸
	B	<10	>99.999	<10	>99.999	7.8 x 10 ⁸
Methicillin resistant Staphylococcus aureus (ATCC 33592)	A	950	99.999	<10	>99.999	1.0 x 10 ⁸
	B	970	99.999	<10	>99.999	1.0 x 10 ⁸
Salmonella typhi (ATCC 6539)	A	<10	>99.999	<10	>99.999	1.4 x 10 ⁸
	B	<10	>99.999	<10	>99.999	1.4 x 10 ⁸
Shigella sonnei (ATCC 11060)	A	680	99.999	<10	>99.999	9.3 x 10 ⁷
	B	4500	99.999	<10	>99.999	9.3 x 10 ⁷
Vancomycin resistant Enterococcus faecalis (ATCC 51299)	A	<10	>99.999	<10	>99.999	1.2 x 10 ⁸
	B	<10	>99.999	<10	>99.999	1.2 x 10 ⁸
Vibrio cholera (ATCC 14035)	A	<10	>99.999	<10	>99.999	8.3 x 10 ⁷
	B	<10	>99.999	<10	>99.999	8.3 x 10 ⁷
Yersinia enterocolitica (ATCC 23715)	A	108	99.999	<10	>99.999	1.7 x 10 ⁸
	B	1300	99.999	263	99.999	5.9 x 10 ⁸

*TBC = Total Bacterial Count, organisms/ml
† = % Kill calculation based on Initial Inoculum Control Count.



Under the conditions of these investigations, BTC® 2125M 10% Solution demonstrated sanitizing activity against Staphylococcus aureus, Escherichia coli, Campylobacter jejuni, Escherichia coli O157:H7, Listeria monocytogenes, Methicillin resistant Staphylococcus aureus, Salmonella typhi, Shigella sonnei, Vancomycin resistant Enterococcus faecalis, Vibrio cholera and Yersinia enterocolitica according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer.

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FOOD CONTACT SANITIZATION DATA

Test Method: AOAC Germicidal and Detergent Sanitizing Action of Disinfectants

Test Conditions: synthetic hard water as 650 ppm hardness (as CaCO₃) 300-400 ppm active quaternary (food processing equipment/utensils ONLY) 1.5-2.0 ounces/4 gallon dilution

TOTAL BACTERIAL COUNTS/
% KILL vs. EXPOSURE TIME

SAMPLE	30 SECONDS		60 SECONDS		INITIAL INOCULUM CONTROL COUNT
	TBC*	% KILL †	TBC*	% KILL †	

TEST ORGANISM

Klebsiella pneumoniae (ATCC 4352)	A	100	99.999	<10	>99.999	9.4 x 10 ⁸
	B	310	99.999	<10	>99.999	9.4 x 10 ⁸

*TBC = Total Bacterial Count, organisms/ml
† = % Kill calculation based on Initial Inoculum Control Count.

Under the conditions of these investigations, BTC® 2125M 10% Solution demonstrated sanitizing activity against Klebsiella pneumonia at 300 ppm quaternary concentration and 650 ppm water hardness according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer.

Test Method: AOAC Germicidal and Detergent Sanitizing Action of Disinfectants

Test Conditions: synthetic hard water as 500 ppm hardness (as CaCO₃) 200 ppm active quaternary (public eating establishments, dairies, and food processing equipment/utensils) 1 ounce/4 gallon dilution

TOTAL BACTERIAL COUNTS/
% KILL vs. EXPOSURE TIME

SAMPLE	30 SECONDS		60 SECONDS		INITIAL INOCULUM CONTROL COUNT
	TBC*	% KILL †	TBC*	% KILL †	

TEST ORGANISM

Klebsiella pneumoniae (ATCC 4352)	A	340	99.999	<10	>99.999	1.1 x 10 ⁸
	B	190	99.999	<10	>99.999	1.1 x 10 ⁸

*TBC = Total Bacterial Count, organisms/ml
† = % Kill calculation based on Initial Inoculum Control Count.

Under the conditions of these investigations, BTC® 2125M 10% Solution demonstrated sanitizing activity against Klebsiella pneumoniae at 200 ppm quaternary concentration and 500 ppm water hardness according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer.