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Version

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Assessment of antimicrobial efficiency
– LifeClean Disinfectant Std and Plus

LC-TD-0052-Public

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Issued by (Name/Signature)

Date

Rahma Wehelie



2022-03-29

Approved by (Name/Signature)

Date

Lars Nord



2022-03-29

	Test norm	Test type	Organism	Log reduction required	Log reduction achieved	Laboratory	Clean or dirty	Contact time	LC Std 400-200 PPM	LC Plus 800-400 PPM
Sporicidal	EN 13697:2001 (Phase 2, Step 2)	Quantitative Carrier test	<i>Bacillus subtilis</i> ATCC 6633	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	2 min		✓
	EN 13697:2001 (Phase 2, Step 2)	Quantitative Carrier test	<i>Clostridium difficile</i> UK 027	3 log ₁₀	>3 log ₁₀		Clean	2 min		✓ ¹
	EN 13704:2002 (Phase 2, Step 1)	Quantitative suspension test	<i>Clostridium difficile</i> UK 027	3 log ₁₀	>3 log ₁₀		Clean	1-5 min	✓	✓
					>3.3 log ₁₀		Clean/Dirty	5 min	✓ ^{1, 5}	✓
			<i>Clostridium difficile</i> UK 023		>6.1-7.5 log ₁₀	Clean	5-10 min	✓ ²	✓	
	EN 17126:2018 (Phase 2, Step 1)	Quantitative suspension test	<i>Bacillus subtilis</i>	4 log ₁₀	>5.02 log ₁₀	MSL Solution, UK	Clean	2-5 min	✓ ⁶	✓
			<i>Bacillus cereus</i>		>5.21 log ₁₀					
			<i>Clostridium difficile</i>		>5.21 log ₁₀					
	EN 17126:2018 (Phase 2, Step 1)	Quantitative suspension test	<i>Bacillus subtilis</i>	4 log ₁₀	>4.08 log ₁₀	MSL Solution, UK	Dirty	2 min	✓ ⁶	✓
			<i>Bacillus cereus</i>		>5.36 log ₁₀					
			<i>Clostridium difficile</i>		>5.43 log ₁₀					
	EN 13727:2012+A2:2015 (Phase 2, Step 2)	Quantitative suspension test	<i>Clostridium perfringens</i>	5 log ₁₀	5.08 log ₁₀	Hygiene Nord GmbH, Germany	Clean	2 min	100 ppm	✓
Dirty							5 min			
Mycobactericidal	EN 14348:2005 (Phase 2, Step 1)	Quantitative suspension test	<i>Mycobacterium terrae</i> ATCC 15755	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
			<i>Mycobacterium avium</i> ATCC 15769						✓	✓
	EN 14563:2009 (Phase 2, Step 2)	Quantitative Carrier test	<i>Mycobacterium terrae</i> ATCC 15755	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
			<i>Mycobacterium avium</i> ATCC 15769						✓	✓
Virucidal	EN 14476:2019 (Phase 2, Step 1)	Quantitative suspension test	<i>Poliovirus</i> Type 1, LSc-2aba	4 log ₁₀	>6.33 log ₁₀	Labor-Enders Laboratory, Germany	Clean	30 sec	17.5 ppm	✓
			<i>Adenovirus</i> Type 5, strain Adenoid 75, ATCC VR-5		>5.33 log ₁₀				17.5 ppm	✓
			<i>Murine Norovirus</i> Strain S99		>5.50 log ₁₀				17.5 ppm	✓
			<i>Polyomavirus</i> SV40		>4.50 log ₁₀				17.5 ppm	✓
	EN 14476:2019 (Phase 2, Step 1)	Quantitative suspension test	<i>Bovine Viral Diarrhea Virus (BVDV)</i> strain NADL	4 log ₁₀	>5.67 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
			<i>Modified vaccinia virus Ankara (MVA)</i>		>4.58 log ₁₀					
	EN 16777:2018	Quantitative Carrier test	<i>Adenovirus</i> Type 5	4 log ₁₀	>6.51 log ₁₀	Labor-Enders Laboratory, Germany	Clean	2 min	110 ppm	✓
	EN16777:2018	Quantitative Carrier test	<i>Murine Norovirus</i>	4 log ₁₀	>6.19 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	2 min	✓	✓
EN16777:2018	Quantitative Carrier test	<i>Modified vaccinia virus Ankara (MVA)</i>	4 log ₁₀	>4.97 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	5 min	✓	✓	

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Virucidal	EN16777:2018	Quantitative Carrier test	Murine Parvovirus (MVM)	4 log ₁₀	>4.41 log ₁₀	Labor-Enders Laboratory, Germany	Clean	5 min		✓
	EN 14675:2015 (Phase 2, Step 1)	Quantitative suspension test	IPN Virus Salmonid fish viral infection	4 log ₁₀	>4 log ₁₀	Norwegian Veterinary Institute, Norway	Clean	5 min	✓	✓
				4 log ₁₀	>4 log ₁₀		Dirty	5 min	✓	✓
	EN 14349:2007 (Phase 2, Step 1)	Quantitative Carrier test	Avian influenza virus, (H10N7)	4log ₁₀	>4.2 log ₁₀	SVA	clean	1 min		✓
	EN 14349:2007 (Phase 2, Step 2)	Quantitative Carrier test	PPV, strain 893/76	4log ₁₀	>5.3 log ₁₀	SVA	Clean	5 min	✓	✓
	EN 14476:2013+A2:2019	Suspension test	Feline coronavirus (FCoV)	4 log ₁₀	>4.3 log ₁₀	MSL solution, UK	Clean	1 min	✓	✓
	EN 14476:2013+A2:2019	Suspension test	Bovine coronavirus (BCoV)	4 log ₁₀	>5.5 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	30 sec	50 ppm	✓
	EN 14476:2013+A2:2019	Suspension test	SARS-CoV-2-Covid-19	4 log ₁₀	>5.6 log ₁₀	SVA	Clean	30 sec	50 ppm	✓
AOAC 961.02	Quantitative Carrier test	Adenovirus Type 5, strain Adenoid 75, ATCC VR-5	5 log ₁₀	6.1 log ₁₀	MicroChem Laboratory, Texas, USA	Clean	5 min	✓	✓	
Fungicidal	EN 13624:2013 (Phase 2, Step 1)	Quantitative suspension test	Candida albicans ATCC 10231	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
			Aspergillus brasiliensis ATCC 16404						✓	✓
	EN 13624:2013 (Phase 2, Step 1)	Quantitative suspension test	Candida albicans ATCC 10231	4 log ₁₀	>6.36 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
	EN 13624:2013 (Phase 2, Step 1)	Quantitative suspension test	Candida auris DSM 21092	4 log ₁₀	>4 log ₁₀	Microbial Analytics Sweden	Clean	2 min	✓	✓
	EN 14562:2006 (Phase 2, Step 2)	Quantitative Carrier test	Aspergillus brasiliensis (niger) / black mold ATCC 16404	4 log ₁₀	>4 log ₁₀	Mikrolab Stockholm AB	Clean/Dirty	3/5 min	✓	✓
	EN 14562:2006 (Phase 2, Step 2)	Quantitative Carrier test	Candida albicans ATCC 10231	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
	EN 14562:2006 (Phase 2, Step 2)	Quantitative Carrier test	Aspergillus brasiliensis (niger) / black mold ATCC 16404	4 log ₁₀	>4 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany and	Clean	2 min		✓
				4 log ₁₀	>4 log ₁₀		Dirty	2 min		✓
	AOAC 961.02	Germicidal Spray	Trichophyton mentagrophytes	0/60	0/60	Medical Technology, Mahidol University, Thailand	Clean	30 sec	✓	✓
	EN 16615:2015 (Phase 2, step 2)	4-Field test	Candida albicans ATCC 10231	4 log ₁₀	>5 log ₁₀	RISE Research Institutes of Sweden	Clean	2 min	✓	✓
			Candida albicans ATCC 10231	4 log ₁₀	>5.63 log ₁₀					
EN 17387:2020	Quantitative Carrier test	Candida albicans ATCC 10231	4 log ₁₀	>5.47 log ₁₀	Labor-Enders Laboratory, Germany	Clean	5 min	✓	✓	
Gram-Negative Bacteria	EN 13727:2014 (Phase 2, Step 1)	Quantitative suspension test	Pseudomonas aeruginosa ATCC 15442	5 log ₁₀	>7.58 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
	EN 14561:2006 (Phase 2, Step 2)	Quantitative Carrier test	Pseudomonas aeruginosa ATCC 15442	5 log ₁₀	>5.11 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Pseudomonas aeruginosa ATCC 15442	5 log ₁₀	>5 log ₁₀	Food Safety Laboratory, Chung-Ang University, Seoul, South Korea	Dirty	2 min	✓	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test ⁵	Escherichia coli ATCC 25922	5 log ₁₀	>5 log ₁₀	Internal test at Örebro University Hospital, Sweden	Clean	2 min	✓	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Escherichia coli K12, NCTC 10538	5 log ₁₀	>7.5 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Campylobacter jejuni ATCC 33560	5 log ₁₀	>5 log ₁₀	Internal test at Örebro University Hospital, Sweden	Clean/Dirty	2 min	✓	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Proteus mirabilis ATCC 14153	5 log ₁₀	>7.5 log ₁₀	Labor-Enders Laboratory, Germany Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Salmonella typhimurium ATCC 14028	5 log ₁₀	>5.76 log ₁₀	Internal test at Örebro University Hospital, Sweden	Clean	2 min	✓	✓
				5 log ₁₀	>5.76 log ₁₀		Dirty	2 min	✓	✓
Legionella pneumophila ATCC 33152			5 log ₁₀	>5.76 log ₁₀	Clean		2 min	✓	✓	
			5 log ₁₀	>5 log ₁₀	Dirty		2 min	✓	✓	

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Gram-Negative Bacteria	EN 14349:2012 (Phase 2, Step 2)	Quantitative suspension test	Aeromonas salmonicida ATCC 14174	5 log ₁₀	>5.65 log ₁₀	Internal test at Örebro University Hospital, Sweden	Clean	2 min	✓	✓
			Yersinia ruckeri ATCC 29473		>5.65 log ₁₀		Dirty	2 min	✓	✓
					>5 log ₁₀		Clean	2 min	✓	✓
					>5 log ₁₀		Dirty	2 min	✓	✓
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Klebsiella pneumoniae (ESBL) CCUG 54718	5 log ₁₀	> 5.76 log ₁₀	Internal test at Örebro University Hospital	Clean/Dirty	2 min	✓	✓
			Acinetobacter baumannii (Clinical strain)						✓	✓
	AOAC 961.02	Germicidal Spray	Salmonella choleraesuis (ATCC 10708)	0/60	0/60	Medical Technology, Mahidol University, Thailand	Clean	30 sec		✓
Pseudomonas aeruginosa (ATCC 15442)			Dirty				2 min		✓	
AOAC 961.02	Quantitative Carrier test	Salmonella enterica (ATCC 10708)	5 log ₁₀	>6.2 log ₁₀	MicroChem Laboratory, Texas, USA	Clean	5 min	✓	✓	
		Pseudomonas aeruginosa (ATCC 15442)		>6.7 log ₁₀						
EN 16615:2015 (Phase 2, step 2)	4-Field test	Pseudomonas aeruginosa (ATCC 15442)	5 log ₁₀	>6.83 log ₁₀	Hygiene Nord GmbH, Germany	Clean	1 min	✓	✓	
EN 17387:2020 (Phase 2, step 2)	Quantitative Carrier test	Pseudomonas aeruginosa (ATCC 15442)	5 log ₁₀	>6.41 log ₁₀	Labor-Enders Laboratory, Germany	Clean	5 min	✓	✓	
Gram-Positive Bacteria	EN 13727:2014 (Phase 2, Step 1)	Suspension test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>5 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
	EN 13727:2014 (Phase 2, Step 1)	Suspension test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>7.36 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	✓
	EN 13727:2015 (Phase 2, Step 2)	Suspension test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>5 log ₁₀	Food Safety Laboratory, Chung-Ang University, Seoul, South Korea	Dirty	2 min	✓	✓
	EN 14561:2006 (Phase 2, Step 2)	Quantitative Carrier test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>5 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
	AOAC 961.02	Germicidal Spray	Staphylococcus aureus ATCC 6538	0/60	0/60	Medical Technology, Mahidol University, Thailand	Clean	30 sec		✓
							Dirty	2 min		✓
	AOAC Use Dilution	Quantitative Carrier test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>6.71 log ₁₀	MicroChem Laboratory, Texas, USA	Clean	5 min	✓	✓
	EN 14349:2012 (Phase 2, Step 2)	Quantitative Carrier test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>5.02 log ₁₀	SVA, Sweden	Dirty	5 min		✓
	EN 14349:2012 (Phase 2, Step 2)	Quantitative Carrier test	Enterococcus hirae ATCC 10541	5 log ₁₀	>5.11 log ₁₀	SVA	Dirty	5 min		✓
	EN 14561:2006 (Phase 2, Step 2)	Quantitative Carrier test	Enterococcus hirae ATCC 10541	5 log ₁₀	>5.11 log ₁₀	Dr. Brill + Partner GMBH Laboratory, Germany	Clean	1 min	✓	✓
	EN 13727: 2015 (Phase 2, Step 2)	Quantitative suspension test	Enterococcus hirae ATCC 10541	5 log ₁₀	>5 log ₁₀	Food Safety Laboratory, Chung-Ang University, Seoul, South Korea	Dirty	2 min	✓	✓
	EN 13727: 2015 (Phase 2, Step 2)	Quantitative suspension test	Enterococcus hirae ATCC 10541	5 log ₁₀	>7.45 log ₁₀	Labor-Enders Laboratory, Germany	Clean	1 min	20 ppm	
	EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Listeria monocytogenes CCUG 51681	5 log ₁₀	>5 log ₁₀	Internal test at Örebro University Hospital	Clean/dirty	2 min	✓	✓
		Quantitative suspension test	Streptococcus equi CCUG 37782	5 log ₁₀	>5 log ₁₀	Internal test at Örebro University Hospital	Clean	2 min	✓	✓
EN 14349:2012 (Phase 2, Step 2)	Quantitative suspension test	Carnobacterium piscicola ATCC 3586	4 log ₁₀	>5 log ₁₀	Internal test at Örebro University Hospital	Clean	2 min	✓	✓	
			4 log ₁₀	>5 log ₁₀		Dirty	2 min	✓	✓	
EN 16615:2015 (Phase 2, step 2)	4-Field test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>5 log ₁₀	RISE Research Institutes of Sweden	Clean	2 min	✓	✓	
		Enterococcus hirae ATCC 10541								
EN 13727:2015 (Phase 2, Step 2)	Quantitative suspension test	Enterococcus faecium (VRE) CCUG 56431	5 log ₁₀	> 5.75 log ₁₀	Internal test at Örebro University Hospital	Clean/Dirty	2 min	✓	✓	
EN 16615:2015 (Phase 2, step 2)	4-Field test	Staphylococcus aureus ATCC 6538	5 log ₁₀	>6.95 log ₁₀	Hygiene Nord GmbH, Germany	Clean	1 min	✓	✓	

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Category	Standard	Method	Organism	Initial Concentration	Final Concentration	Location	Condition	Time	Result 1	Result 2
Gram-Positive Bacteria	EN 16615:2015 (Phase 2, step 2)	4-Field test	<i>Enterococcus hirae</i> ATCC 10541	5 log ₁₀	>7.02 log ₁₀	Hygiene Nord GmbH, Germany	Clean	5 min	✓	✓
	EN 17387:2020 (Phase 2, step 2)	Quantitative Carrier test	<i>Enterococcus hirae</i> ATCC 10541	5 log ₁₀	7.30	Labor-Enders Laboratory, Germany	Clean	5 min	✓	✓
			<i>Staphylococcus aureus</i> ATCC 6538		6.95			5 min		
Parasites	N/A	In vitro sporulation method for Coccidia	<i>Coccidia spp</i>	N/A	N/A	VidiLab, Sweden	Dirty	N/A		✓
	Salmon lice	In vitro	<i>Lepeophtheirus salmonis</i>	N/A	N/A	ILAB, Norway	N/A	1 min	100 ppm	✓
	N/A	In Vitro	<i>Gyrodactylus salaris</i>	N/A	N/A	Norwegian Veterinary Institute, Norway	N/A	10 sec / 1 min	200 / 100 ppm	✓
	DNA Analysis	In Vitro	Plasmid DNA	N/A	N/A	SLU	Clean	10 / 2 min	✓	✓

¹Initial **bacterial** spores 10⁶

²Initial **bacterial** spores 10⁸

³Initial **bacterial** spores 10⁸ and different bacteria strain

⁴Initial **bacterial** spores 10⁸ and 200 PPM

⁵Bactericidal effect (Clean condition for 2 minutes and Dirty condition for 5 minutes).

⁶These bacteria: *Bacillus subtilis*, *Bacillus cereus* and *Clostridium difficile* were tested for 400 PPM for 2 minutes for clean/dirty condition.

Third party test institutes



Veterinærinstituttet
Norwegian Veterinary Institute

LABOR ENDERS
Labor Prof. Dr. G. Enders MVZ GbR · Medizinische Diagnostik



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