

**Bactericidal activity of GAMA Healthcare Ltd.
Clinell biocide determined using the European
Standard Test method BS EN 1276:1997
against: *Listeria monocytogenes* ATCC 7644.**

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Commercial in Confidence

contact, for the selected reference strain), shall demonstrate at least a 5 log₁₀ reduction in viable counts.

Results¹

Results from the test are summarised in Tables 1 and 2, a full set of results can be found in Table 3.

Test Conditions	Contact Time (minutes)	Log ₁₀ Reduction Achieved
0.3 g l ⁻¹ (clean)	5	>5 ¹
3.0 g l ⁻¹ (dirty)	5	>5 ¹

Table 1. Log₁₀ reductions in *L. monocytogenes* (ATCC 7644) viable counts following a 5 minute exposure to the test material.

Referenced Organism	Starting concentration CFU ml ⁻¹	Final concentration CFU ml ⁻¹ clean 0.3 g l ⁻¹ Bovine Albumin	Final concentration CFU ml ⁻¹ dirty 3.0 g l ⁻¹ Bovine Albumin
<i>Listeria monocytogenes</i> ATCC 7644	1.9 x 10 ⁸ (186,199 ¹ , 23,19 ²)	Plate count 0, 0. (Actual 6 log ₁₀ reduction)	Plate count 0, 0. (Actual 6 log ₁₀ reduction)
CFU = colony forming units ¹ viable count of bacterial colonies, 1 ml sample of 10 ⁻⁶ bacterial suspension ² viable count of bacterial colonies, 1 ml sample of 10 ⁻⁷ bacterial suspension			

Table 2. Reductions in *L. monocytogenes* (ATCC 7644) viable counts following a 5 minute exposure to the test material.

Interpretation of the Results

When tested against *L. monocytogenes* (ATCC 7644) with a 5 minute contact time a full strength GAMA Healthcare Ltd Clinell biocide met the requirements of the Standard under simulated clean and dirty conditions.

Conclusion

According to EN 1276:1997, the batch of GAMA Healthcare Ltd Clinell biocide provided possesses bactericidal activity in 5 minutes at ambient temperature (25°C) under clean conditions (0.3g/l bovine albumin) and dirty conditions (3g/l bovine albumin) for referenced strain *L. monocytogenes* (ATCC 7644).

Signed:

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¹ See Table of results in Appendix 1.

Appendix 1

Test Organism	VALIDATIONS										Bacterial Test Suspension			Test Procedure Results															
	Bacterial Suspension	Experimental Conditions Validation				Neutraliser Toxicity Control	Dilution Neutralisation Control		Clean					Dirty															
			Clean		Dirty			Clean	Dirty																				
<i>Listeria monocytogenes</i> ATCC 7644	Vc	186	199	Vc	146	176	172	186	Vc	167	195	Vc	179	171	172	191	10-6	186	199	Vc	<	15	15	<	15	15			
	Nv	1.9E+03		A	1.6E+02		1.8E+02		B	1.8E+02		C	1.8E+02		1.8E+02		10-7	23	19	Na	<	1.5E+02		<	1.5E+02				
																		N	1.9E+08	R	>	3.E+05		>	3.E+05				
Verification of Methodology				Passed				Log10 Reductions/cfu/ml																					
N is between 1.5E+8 cfu/ml and 5E+8 cfu/ml, N =				1.9E+08				Yes				Clean				5.4													
Nv is between 6E+2 cfu/ml and 3E+3 cfu/ml, Nv =				1.9E+03				Yes				Dirty				5.4													
CLEAN A ≥ 0.05 x Nv when 0.05 x Nv =				9.6E+01				Yes																					
DIRTY A ≥ 0.05 x Nv when 0.05 x Nv =				9.6E+01				Yes																					
B ≥ 0.05 x Nv when 0.05 x Nv =				9.6E+01				Yes																					
CLEAN C ≥ 0.5 x B when 0.5 x B =				9.1E+01				Yes																					
DIRTY C ≥ 0.5 x B when 0.5 x B =				9.1E+01				Yes																					

Table 3. Testing of *L. monocytogenes* (ATCC 7644) the GAMA Healthcare Ltd Clinell biocide using BS EN 1276:1997.