# Bactericidal analysis of SPRAYSAN

# Project Report Prepared for Chemanglia Ltd



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# Bactericidal analysis of SPRAYSAN

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Tests Carried Out By:	<b>Hygiene and Disinfection Centre</b> School of Applied Sciences University of Huddersfield Queensgate Huddersfield HD1 3DH
Test Method	British/European Standard BS EN 1276:1997. Dilution neutralisation approach
Test Procedures	Full details of all the test and control procedures used are given in the Test Method
Disinfectant	SPRAYSAN Date of delivery: January 2013 Storage conditions: 20°C – 25°C
Interfering Substance (Organic Challenge)	Simulated clean conditions: 0.3 g l <sup>-1</sup> bovine albumin (final concentration) Simulated dirty conditions: 3 g l <sup>-1</sup> bovine albumin (final concentration)
Temperature	20°C
Contact Time Tested	30 seconds, 1 minute, 3 minutes and 5 minutes.
Test Organisms	Escherichia coli 8879 (NCIMB) Enterococus hirae 8191 (NCIMB) Pseudomonas aeruginosa 10421 (NCIMB) Staphylococus aureus 9518 (NCIMB)
Culture Medium	Tryptone Soya Agar, LabM.
Incubation	37ºC for 24-48hrs.
Diluent	MRD, Lab M
Neutraliser	10g/L sodium thiosulphate, 12g/L saponin and 0.4g/L L-histidine.

# 1 Introduction

A Sample of SPRAYSAN was submitted for the following analysis:

• Bactericidal activity employing modified BS EN1276<sup>1</sup> under clean and dirty conditions against. *Escherichia coli, Enterococcus hirae, Pseudomonas aeruginosa and Staphylococcus aureus.* 

#### 1.1 Product

The product required no dilution.

# 2 Test Procedures

#### 2.1 BS EN1276

The test was carried out as specified by BS  $EN1276^{1}$  (Appendix 1). Briefly this involves the preparation of a standard suspension of test organisms containing  $1.5 - 5.0 \times 10^{8}$  cells ml<sup>-1</sup>. The four standard bacteria; *Escherichia coli* 8879 (NCIMB); *Enterococcus hirae* 8191 (NCIMB); *Pseudomonas aeruginosa* 10421 (NCIMB) and *Staphylococcus aureus* 9518 (NCIMB) were selected for testing.

In order to carry out the test 1ml of interfering substance (0.3 gl<sup>-1</sup> Bovine Serum Albumin (BSA) Clean conditions and 3.0 gl<sup>-1</sup> Bovine Serum Albumin (BSA) Dirty conditions) was pipetted into a Universal bottle, followed by 1ml of the desired bacterial suspension. The mixture was vortexed and left for 2 minutes at 20°C, after which 8ml of product was added and vortexed. The reaction mixture was then left for 5 minutes at 20°C, after this contact time a 1ml sample was transferred to a tube containing 8 ml of neutraliser and 1ml of water and left for a further 5 minutes at 20°C. The neutralisation mixture was then plated onto Tryptone Soya Agar (TSA) and incubated at 37°C for 24 to 48 hours. Following incubation the fraction of surviving organisms was noted and a log reduction factor calculated. In addition to the test procedure outlined above a range of validations were performed to ensure the validity of the test (Appendix 1 and 2). At the customers' request the test was carried out with additional contact times of 30 seconds, 1 minute and 3 minutes.

#### 2.1.1 Requirements of this standard

The product, when tested as stipulated under the required test conditions (clean and dirty,  $20^{\circ}$ C, 5 minute contact time, for the selected reference strains), shall demonstrate at least a 5 log<sub>10</sub> reduction in viable counts. Additional contact times of 30 seconds, 1 minute and 3 minutes were also included at the customers' request.

#### 2.2 Neutraliser

10g/L sodium thiosulphate, 12g/L saponin and 0.4g/L L-histidine was prepared in deionised water and sterilised at 121  $^{\circ}$ C for 15 minutes.

Whilst these analyses have been carried out carefully and have been checked, no liabilities can be accepted for consequential or indirect damages.

# 3 Results and Conclusions.

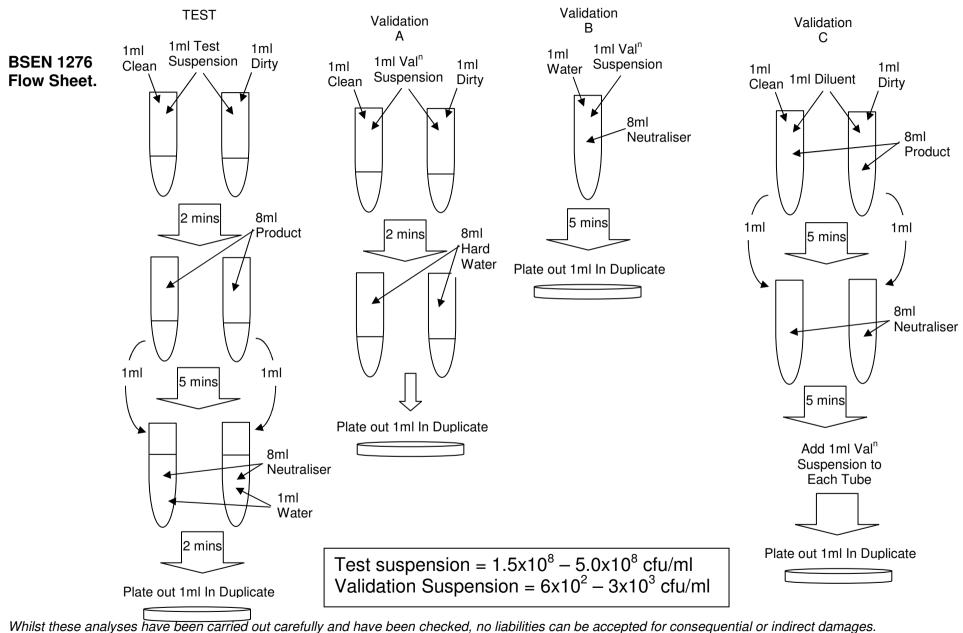
The BSEN 1276 results (Table 1, Appendix 2) show that under both clean and dirty conditions, SPRAYSAN was capable of generating the >5 Log reduction in viable counts required to pass the test against the selected organisms within 5 minutes. The additional contact times tested suggest that the >5 Log reduction in viable counts is achieved within 30 seconds.

	Performance										
	E.c	oli	E. H	lirae	P.aeru	ginosa	S. aureus				
Contact time	Clean	Dirty	Clean	Dirty	Clean	Dirty	Clean	Dirty			
30 seconds	>5.0 Log <sup>rdn</sup>										
1 minute	>5.0 Log <sup>rdn</sup>										
3 minute	>5.0 Log <sup>rdn</sup>										
5 minute	>5.0 Log <sup>rdn</sup>										
Log <sup>rdn</sup> -Log <sub>10</sub> reduction in viable counts											

#### Table 1. BS EN1276 Results

#### 4 References

1. BSI (1997) *BSEN 1276:1997. Chemical disinfectants and antiseptics — Quantitative suspension test for the evaluation of bactericidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic, and institutional areas — Test method and requirements (phase 2, step 1).* British Standards Institute, London.



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#### Appendix 2 Results: SPRAYSAN

T	Test Reacterial Experimental Conditions Neutraliser Dilution Neutralisation Contro		Bacterial Test	Test Procedure Results		Test Procedure Results 1		Test P	rocedure Results	3 Tact Broadur	Test Procedure Results5min				
Organism				Dilution Neutralisation Control		Suspension	30s		min		min		Test Flocedul	Test Procedure Resultsomm	
_	Suspension	Clean	Dirty	Toxicity Control		Dirty		Clean	Dirty	Clean	Dirty		Clean Dirt		Dirty
E.coli		Vo 167 162	171 173	Vo 156 158	Vo 157 151	164 169	10-6 157 164	Vo < 15 15	< 15 15	Vok 15 15	< 15 15			15 Vok 15 15	< 15 15
í '	N. 1.6E+03	A 1.6E+02	1.7E+02	B 1.6E+02	C 1.5E+02	1.7E+02	10-7 <mark>1815</mark> N 1.6E+08	Na < 1.5E+02 B > 1.1E+05	< 1.5E+02 > 1.1E+05	Na < 1.5E+02 B > 1.1E+05	< 1.5E+02 > 1.1E+05		l.5E+02 < 1.5E+0 1.1E+05 > 1.1E+0		< 1.5E+02 > 7.2E+01
·		cation of Methodo		Log10 Reduction		1.72+02	N 1.6E+00	N > 1.1E+05	> 1.1E+00	IN 2 1.1E+00	> 1.1E+00		I.IE+03 > I.IE+0	0 h > 7.2E+01	> 7.2E+01
N is bety		ml and 5E+8 cfu/ml, N =			Dirty Imin 5.0										
		l and 3E+3 ofu/ml, Nv =		3min 5.0											
1		5 x Nv when 0.05 x Nv =		5min 5.0	) 5min 5.0										
1		5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv =													
1		2 0.5 x B when 0.5 x B =													
L	DIRTY C	2 0.5 x B when 0.5 x B =	7.9E+01 Yes												
			-	-	-										
Test	Test VALIDATIONS			Bacterial Test Procedure	Test Procedu			est Procedure	Test Procedure	Test Procedure Results5min					
Organism	Bacterial	Experimental		Neutraliser		alisation Control	Suspension		ts1min	3mi	-		Results5min		
	Suspension	Clean	Dirty	Tozicity Control	- Cicali	Dirty	10.0 100 101	Clean	Dirty	Clean	Dirty		Clean Dirt		Dirty
E.hirae		Vo 162 158	175 182	Vc 171 168	Vo 173 174	187 188	10-6 196 191 10-7 18 19	Voik 15 15 Naik 1.5E+02	< 15 15 < 1.5E+02	Vc < 15 15 Na < 1.5E+02	< 15 15 < 1.5E+02		5 15 < 15 1.5E+02 < 1.5E+0	15 Vo.< 15 15 2 Na≺ 1.5E+02	< 1.5E+02
í '	N. 1.9E+03	A 1.6E+02	1.8E+02	B 1.7E+02	C 1.7E+02	1.9E+02	N 1.9E+08	R > 1.3E+05		R > 1.3E+05	> 1.3E+05		.3E+05 > 1.3E+0		> 8.6E+01
		cation of Methodo		Log10 Reduction											
		ml and 5E+8 cfu/ml, N =			1 Dirty Imin 5.1										
		l and 3E+3 cfu/ml, Nv =		3min 5.1											
1		5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv =		5min 5.1	1 5min 5.1										
1		5 x Nv when 0.05 x Nv =													
1		2 0.5 x B when 0.5 x B =													
L	DIRTY C	2 0.5 x B when 0.5 x B =	8.5E+01 Yes												
ļ															
Test	Bacterial	Experimental		ATIONS Neutraliser	Dilution Monte	alisation Control	Bacterial Test		dure Results Os	Test Procedur min		TestP	rocedure Results min	<sup>3</sup> Test Procedure	e Results5min
Organism	Suspension	Clean	Dirte	Tozicity Control		Dirty	Suspension	Clean	Dirty	Clean	Dirty		Clean Dirt	Clean	Dirty
P.aeruginosa		Vc 171 166	206 185	Vc 197 220		172 168	10-6 158 186	Vo < 15 15	< 15 15	Volk 15 15	< 15 15		5 15 < 15		< 15 15
							10-7 19 16	Na < 1.5E+02	< 1.5E+02	Na < 1.5E+02	< 1.5E+02		.5E+02 < 1.5E+0		< 1.5E+02
'	Nv 1.7E+03	A 1.7E+02	2.0E+02	B 2.1E+02	C 1.7E+02	1.7E+02	N 1.7E+08	R > 1.1E+05	> 1.1E+05	R > 1.1E+05	> 1.1E+05	B > 1	1.1E+05 > 1.1E+0	5 R ≻ 7.7E+01	> 7.7E+01
		cation of Methodo		Log10 Reduction											
		ml and 5E+8 cfu/ml, N = I and 3E+3 cfu/ml, Nv =		Clean 1min 5.1	1 Dirty 1min 5.1										
	ween of +2 orann		17E-02 Vec												
1	CLEAN A≥ 0.0			3min 5.1	1 3min 5.1										
l.		5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv =	8.6E+01 Yes	3min 5.1	1 3min 5.1										
l	DIRTY A≿ 0.0 B≥ 0.0	5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes	3min 5.1	1 3min 5.1										
	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C	5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = ≥ 0.5 x B when 0.5 x B =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes	3min 5.1	1 3min 5.1										
	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C	5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes	3min 5.1	1 3min 5.1										
	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C	5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = ≥ 0.5 x B when 0.5 x B =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes 1.0E+02 Yes	3min 5. 5min 5.1	1 3min 5.1			Test Pi	ocedure	Test Procedu	re Results	T	est Procedure		
Test	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C	5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = 5 x Nv when 0.05 x Nv = ≥ 0.5 x B when 0.5 x B =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes 1.0E+02 Yes VALID	3min 5.1	1 3min 5.1 1 5min 5.1	alisation Control	Bacterial Test		ocedure ts1min	Test Procedu 3mii			est Procedure Results5min	Test Procedure	e Results5min
Organism	DIRTYA≿0.0 B≥0.0 CLEANC DIRTYC	5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B =	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes 1.0E+02 Yes VALID	3min 5. 5min 5. DATIONS	1 Jmin 5.1 1 Smin 5.1 Dilution Neutra Clean	alisation Control Dirty	Bacterial Test Suspension								e Results5min
	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C DIRTY C Bacterial	5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 2 0.5 x B when 0.5 x B = 2 0.5 x B when 0.5 x B = Experimental	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes 1.0E+02 Yes YALID Conditions	3min 5. 5min 5. )ATIONS Neutraliser	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean		Suspension	Resul Clean Vo. < 15 15	t <b>s1min</b> Dirty < 15 15	3mii Clean Vo≺1515	n Dirty < 15 15	Vok 1	Results5min Clean Dirte 5 15 < 15	Clean 15 Vc < 15 15	Dirty < 15 15
Organism	DIRTY A≿ 0.0 B≿ 0.0 CLEAN C DIRTY C Bacterial Suspension	5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = Clean Vc 168 170	8.6E+01 Yes 8.6E+01 Yes 8.6E+01 Yes 1.0E+02 Yes 1.0E+02 Yes 1.0E+02 Yes 1.0E+02 Yes 1.0E+02 Jes YALID Conditions Dirty 186 192	3min 5. 5min 5. 0ATIONS Neutraliser Toxicitg Control Vo 163 154	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism	DIRTY A≿ 0.0 B≥ 0.0 CLEAN C DIRTY C Bacterial Suspension N. 1.7E+03	5×Nu when 0.05 ×Nu = 5×Nu when 0.05 ×Nu = 5×Nu when 0.05 ×Nu = ≥ 0.5 ×B when 0.5 ×N = ≥ 0.5 ×B when 0.5 ×B = ≥ 0.5 ×B when 0.5 ×B = <b>Experimental</b> Clean Vc 168 170 A 1.7E+02	8.6E-01 Yes 8.6E-01 Yes 8.6E-01 Yes 1.0E-02 Yes 1.0E-02 Yes VALID Conditions Dirty 186 192 1.3E-02	3min 5. 5min 5. Neutraliser Toxicity Control Vo 163 154 B 1.6E+02	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02	Dirty	Suspension	Resul Clean Vo. < 15 15	t <b>s1min</b> Dirty < 15 15	3mii Clean Vc < 15 15	n Dirty < 15 15	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15
Organism S aureus	DIRTY A≥ 0.0 B≥ 0.0 CLEAN C DIRTY C Bacterial Suspension N. 1.7E+03 Verifi	5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = Clean Vc 168 170	8.6E-01 Yes 8.6E-01 Yes 8.6E-01 Yes 1.0E-02 Yes 1.0E-02 Yes VALID Conditions 186 192 1.9E-02 1.9E-02	3min 5. 5min 5. ATIONS Neutraliser Tozicity Control Vo 163 154 B 1.6E+02 I Log10 Reduction	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism S aweus N is betw Nv is betw	DIRTY A2 00 B2 00 CLEANC DIRTYC Bacterial Suspension Nu 1.7E-03 Verifi ween 15E-8 cful ween 5E-2 cful	5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = <b>Experimental</b> Clean Vc 168 170 A 1.7E+02 cation of Methodo nl and 5E+8 cfu/ml, Nu = l and 3E+8 cfu/ml, Nu =	8.6E-01 Yes 8.6E-01 Yes 8.6E-01 Yes 1.0E-02 Yes 1.0E-02 Yes <b>VALID</b> Conditions Dirt 186 192 1.3E-02 1.3E-02 1.3E-02 Yes 1.7E-03 Yes	3min 5. 5min 5. 0ATIONS Neutraliser Toxicity Control Vo 163 154 B 1.6E+02 I Log10 Reduction Clean Imin 5. 3min 5.	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02 nst/ofu/min 5.1 1 3min 5.1	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism S aureus N is betw Nv is betw	DIRTY A2 0.0 B2 0.0 CLEAN C DIRTY C Bacterial Suspension N. 1.7E-03 Verifi ween 15E-8 of W ween 6E-2 of W CLEAN A2 0.0	5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 2 0.5 x B when 0.5 x B = 2 0.5 x B when 0.5 x B = 2 0.5 x B when 0.5 x B = 2 0.5 x B when 0.5 x Nu = 1 and 3E+3 cfu/ml, Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu =	8.6E-01 Yes 8.6E-01 Yes 8.6E-01 Yes 1.0E-02 Yes 1.0E-02 Yes <b>VALID</b> Conditions 1.9E-02 1.9E-02 1.9E-02 1.9E-02 1.9E-02 1.9E-02 1.9E-03 Yes 8.6E-01 Yes	3min 5. 5min 5. Neutraliser Toxicitg Control Vo 163 154 B 1.6E+02 Log10 Reduction Clean Imin 5.	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02 nst/ofu/min 5.1 1 3min 5.1	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism S aweus N is betw Nv is betw	DIRTY A2 0.0 B2 0.0 CLEANC DIRTYC Bacterial Suspension Ns 1.7E+03 Yerifi ween 15E-8 druh ween 6E-2 druh CLEAN A2 0.0 DIRTY A2 0.0	5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 2 0.5 x B when 0.5 x B = 1 and 3E + 3 cfu/ml, Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.0	8.6E-01 Yes 8.6E-01 Yes 8.6E-01 Yes 1.0E-02 Yes 1.0E-02 Yes <b>VALID</b> Conditions Dirty 136 192 1.3E-02	3min 5. 5min 5. 0ATIONS Neutraliser Toxicity Control Vo 163 154 B 1.6E+02 I Log10 Reduction Clean Imin 5. 3min 5.	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02 nst/ofu/min 5.1 1 3min 5.1	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism S aureus N is betw Nv is betw	DIRTY A2 00 B2 00 CLEAN C DIRTY C Bacterial Suspension Ns 1.7E-03 Verifi ween 15E-8 chuk ween 5E-2 chuk CLEAN A2 00 DIRTY A2 0.0 B2 0.0	5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = 5 × Nu when 0.05 × Nu = ≥ 0.5 × B when 0.5 × B = ≥ 0.5 × B when 0.5 × B = <b>Experimental</b> Clean Vc 168 170 A <u>1.7E+02</u> cation of Methodo nl and 5E+3 cfu/ml, Nu = 5 × Nu when 0.05 × Nu =	8.6E-01 Yes   8.6E-01 Yes   8.6E-01 Yes   1.0E-02 Yes   1.0E-02 Yes   VALID   Conditions   Dist   1.8E-02 Passed   1.7E-03 Yes   8.6E-01 Yes   8.6E-01 Yes   8.6E-01 Yes   8.6E-01 Yes	3min 5. 5min 5. 0ATIONS Neutraliser Toxicity Control Vo 163 154 B 1.6E+02 I Log10 Reduction Clean Imin 5. 3min 5.	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02 nst/ofu/min 5.1 1 3min 5.1	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02
Organism S aureus N is betw Nv is betw	DIRTY A2 00 B2 00 CLEAN C DIRTY C Bacterial Suspension N. 1.7E-03 Verifi ween 15E-8 cfuh ween 15E-8 cfuh cLEAN A2 0.0 DIRTY A2 0.0 B2 0.0 CLEAN C	5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.05 x Nu = 2 0.5 x B when 0.5 x B = 1 and 3E + 3 cfu/ml, Nu = 5 x Nu when 0.05 x Nu = 5 x Nu when 0.0	8.6E-01 Yes   8.6E-01 Yes   8.6E-01 Yes   1.0E-02 Yes   1.0E-02 Yes   VALID   Conditions   Inge   1.3E-02   1.0Ey Passed   1.7E+08 Yes   8.6E-01 Yes	3min 5. 5min 5. 0ATIONS Neutraliser Toxicity Control Vo 163 154 B 1.6E+02 I Log10 Reduction Clean Imin 5. 3min 5.	1 3min 5.1 1 5min 5.1 Dilution Neutra Clean Vo 154 153 C 1.5E+02 nst/ofu/min 5.1 1 3min 5.1	Dirty 175 169	<b>Suspension</b> 10-6 173 170 10-7 17 18	Result   Clean   Vc < 15	t <b>s1min</b> Dirty < 15 15 < 1.5E+02	<b>3mi</b> Clean Vo < 15 15 Na < 1.5E+02	n Dirty < 15 15 < 1.5E+02	<mark>Vok 18</mark> Nak 1	Results5min Clean Dirte 5 15 < 15 1.5E+02 < 1.5E+0	Clean 1 <mark>5 Vc≺ 15 15</mark> 2 Na≺ 1.5E+02	Dirty < 15 15 < 1.5E+02