



# Abbott Analytical



Consulting Scientists to the Disinfectant Industry

## Test Report

**Product name:** MS DryCare Standard + 1% MS Kiemkill

**Batch or ref no:** Batch 20160523-002

**Manufacturer or supplier:** Schippers Europe BV  
Rond Deel 12, 5531 AH Bladel, The Netherlands

**Sample ref:** 16E/073      **Date received:** 26 May 2016

**Date tested:** 6 July 2016 &  
8 July 2016      **Certificate date:** 11 July 2016

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**Analysis required:** Adaptation of *EN 14349:2012, Chemical disinfectants and antiseptics - Quantitative surface test for the evaluation of bactericidal activity of chemical disinfectants used in the veterinary field on non-porous surfaces without mechanical action - Test method and requirements (phase 2, step 2)* to show the efficacy of a disinfectant powder with varying levels of added moisture

**Storage conditions:** Room temperature in darkness

**Appearance of product (solution):** Grey powder

**Active substance(s) and their concentration(s):** Not disclosed

### Notes

The test results in this report relate only to the sample(s) tested.  
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## Remarks regarding the test method

The standard test method for EN 14349:2012 involves inoculating circular stainless steel surfaces of diameter 2cm with 0.05ml of the test suspension (50% bacterial suspension and 50% interfering substance) and allowing them to dry.

0.1ml of the test product (solution) is then pipetted onto each of the dried surfaces, which are then placed in a temperature controlled cabinet for the chosen contact time at the chosen test temperature.

The surfaces are then 'washed off' with 10ml of neutraliser and a series of dilutions - from  $10^0$  to  $10^{-2}$  - of this neutralised mixture are plated out and incubated.

After discussions with the manufacturer it was clear that the above procedure would not accurately represent the nature and intended use of the test product.

- The product is intended to be used as a dry powder which is spread over floors at an application rate quoted in g/m<sup>2</sup>.
- Early testing established that the in its dry state the powder was not working as intended, however in a real life scenario the powder laid down on a surface would absorb moisture from the surrounding environment.
- Further testing showed that with a moisture content of 40% the product worked fully as intended.

In view of the above, it was agreed to modify the method as follows.

The product was mixed with sterile water making a paste consisting of 43% powder and 57% water by weight.

0.2g of this paste (an application rate of 117g/m<sup>2</sup>) was spread as evenly as possible over rectangular test surfaces measuring 7.5cm by 2.5cm, being equivalent to 50g/m<sup>2</sup> of dry powder.

0.05ml of the test suspension was pipetted onto the paste-covered surface in separate 10µl drops to cover as much of the paste as possible.

These surfaces were then maintained at 10°C for 30 minutes, as per the intended product usage.

The surfaces were then 'washed off' with 10ml of neutraliser and a series of dilutions - from  $10^0$  to  $10^{-2}$  - of this neutralised mixture were plated out and incubated.

In all other respects the test was carried out in line with the standard EN 14349:2012 method.

A handwritten signature in blue ink, appearing to read 'D C Watson'.

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## Experimental conditions

<b>Concentration(s) of product tested:</b>	117g/m <sup>2</sup> paste (equivalent to 50g/m <sup>2</sup> dry product) *
<b>Product diluent:</b>	Sterile hard water (300mg/l CaCO <sub>3</sub> )
<b>Test organism(s):</b>	<i>Pseudomonas aeruginosa</i> (NCTC 13359) <i>Proteus vulgaris</i> (NCTC 4175) <i>Staphylococcus aureus</i> (NCTC 10788) <i>Enterococcus hirae</i> (NCTC 13383)
<b>Contact time(s):</b>	30 min ± 10s
<b>Test temperature:</b>	10°C ± 1°C
<b>Test conditions:</b>	High-level soiling
<b>Interfering substance:</b>	10g/l bovine albumin + 10g/l yeast extract
<b>Method:</b>	Dilution-neutralisation
<b>Neutralising solution:</b>	30g/l Polysorbate 80 + 3g/l Lecithin + 1g/l L-histidine + 1g/l L-cysteine
<b>Incubation temperature:</b>	36°C ± 1°C

\* Paste consisting of 43% powder and 57% water by weight.

## Conclusion

When tested at the concentration detailed above this sample of MS DryCare Standard + 1% MS Kiemkill obtains greater than 4 lg reductions in 30 minutes at 10°C under high-level soiling conditions against the referenced strains of *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Staphylococcus aureus* and *Enterococcus hirae*.

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## Results: *Pseudomonas aeruginosa* (NCTC 13359)

### **Validation and controls:**

Test and validation suspension (N)			Neutralizer toxicity control (B)			Dilution control (C)		
	Vc1	Vc2		Vc1	Vc2		Vc1	Vc2
10 <sup>-7</sup>	272	283	10 <sup>-4</sup>	87	78	10 <sup>-4</sup>	83	77
10 <sup>-8</sup>	44	52	10 <sup>-5</sup>	11	9	10 <sup>-5</sup>	12	12
$\bar{x}(\text{wm}) = 7.40 \times 10^7$ $\lg = 7.87$			$\bar{x}(\text{wm}) = 8.25 \times 10^6$ $\lg = 6.92$			$\bar{x}(\text{wm}) = 8.00 \times 10^6$ $\lg = 6.90$		
7.57 ≤ $\lg N$ ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(B) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(C) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
Control of weighted mean counts (N)			Quotient = 5.78 Between 5 and 15 ?				<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

### **Water control:**

Nw	Vc1	Vc2	$\bar{x}(\text{wm}) = 1.36 \times 10^7$
10 <sup>-4</sup>	126	133	$\lg N_c = 7.13$
10 <sup>-5</sup>	22	18	$\lg N_w \geq \lg N - 1.3 \geq 6.2 ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Control of weighted mean counts (Nw)			Quotient = 6.48 Between 5 and 15 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

### **Test:**

Product test conc.	Contact time	Diln. step	Vc1	Vc2	$Na = \bar{x}(\text{wm}) \times 10$ $\lg Na =$	$\lg R =$ $(\lg N_w - \lg Na)$	Status
117g/m <sup>2</sup>	30 min	10 <sup>0</sup>	0	0	< 2.15	> 4.98	PASS
		10 <sup>-1</sup>	0	0			
		10 <sup>-2</sup>	0	0			

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## Results: *Proteus vulgaris* (NCTC 4175)

### **Validation and controls:**

Test and validation suspension (N)			Neutralizer toxicity control (B)			Dilution control (C)		
	Vc1	Vc2		Vc1	Vc2		Vc1	Vc2
10 <sup>-7</sup>	320	313	10 <sup>-4</sup>	92	100	10 <sup>-4</sup>	88	96
10 <sup>-8</sup>	46	45	10 <sup>-5</sup>	13	16	10 <sup>-5</sup>	10	14
$\bar{x}(\text{wm}) = 8.23 \times 10^7$ lg = 7.92			$\bar{x}(\text{wm}) = 9.90 \times 10^6$ lg = 7.00			$\bar{x}(\text{wm}) = 9.43 \times 10^6$ lg = 6.97		
7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(B) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(C) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
Control of weighted mean counts (N)			Quotient = 6.96 Between 5 and 15 ?				<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

### **Water control:**

N <sub>w</sub>	Vc1	Vc2	$\bar{x}(\text{wm}) = 1.77 \times 10^7$
10 <sup>-4</sup>	166	159	lg N <sub>c</sub> = 7.25
10 <sup>-5</sup>	34	31	lg N <sub>w</sub> ≥ lg N - 1.3 ≥ 6.2 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Control of weighted mean counts (N <sub>w</sub> )			Quotient = 5.00 Between 5 and 15 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

### **Test:**

Product test conc.	Contact time	Diln. step	Vc1	Vc2	Na = $\bar{x}(\text{wm}) \times 10$ lg Na =	lg R = (lg N <sub>w</sub> - lg Na)	Status
117g/m <sup>2</sup>	30 min	10 <sup>0</sup>	0	0	< 2.15	> 5.10	PASS
		10 <sup>-1</sup>	0	0			
		10 <sup>-2</sup>	0	0			

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## Results: *Staphylococcus aureus* (NCTC 10788)

### **Validation and controls:**

Test and validation suspension (N)			Neutralizer toxicity control (B)			Dilution control (C)		
	Vc1	Vc2		Vc1	Vc2		Vc1	Vc2
10 <sup>-7</sup>	>330	>330	10 <sup>-4</sup>	112	120	10 <sup>-4</sup>	104	95
10 <sup>-8</sup>	36	49	10 <sup>-5</sup>	20	18	10 <sup>-5</sup>	16	13
$\bar{x}(\text{wm}) = 1.06 \times 10^8$ lg = 8.03			$\bar{x}(\text{wm}) = 1.23 \times 10^7$ lg = 7.09			$\bar{x}(\text{wm}) = 1.02 \times 10^7$ lg = 7.01		
7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(B) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(C) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
Control of weighted mean counts (N)			Quotient = N/A Between 5 and 15 ?				<input type="checkbox"/> yes	<input type="checkbox"/> no

### **Water control:**

N <sub>w</sub>	Vc1	Vc2	$\bar{x}(\text{wm}) = 1.68 \times 10^7$
10 <sup>-4</sup>	164	160	lg N <sub>c</sub> = 7.22
10 <sup>-5</sup>	23	22	lg N <sub>w</sub> ≥ lg N - 1.3 ≥ 6.2 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Control of weighted mean counts (N <sub>w</sub> )			Quotient = 7.20 Between 5 and 15 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

### **Test:**

Product test conc.	Contact time	Diln. step	Vc1	Vc2	$Na = \bar{x}(\text{wm}) \times 10$ lg Na =	$lg R = (lg N_w - lg Na)$	Status
117g/m <sup>2</sup>	30 min	10 <sup>0</sup>	0	0	< 2.15	> 5.07	PASS
		10 <sup>-1</sup>	0	0			
		10 <sup>-2</sup>	0	0			

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**Results: *Enterococcus hirae* (NCTC 13383)**

**Validation and controls:**

Test and validation suspension (N)			Neutralizer toxicity control (B)			Dilution control (C)		
	Vc1	Vc2		Vc1	Vc2		Vc1	Vc2
10 <sup>-7</sup>	280	294	10 <sup>-4</sup>	90	75	10 <sup>-4</sup>	88	80
10 <sup>-8</sup>	24	27	10 <sup>-5</sup>	15	12	10 <sup>-5</sup>	11	10
$\bar{x}(\text{wm}) = 7.10 \times 10^7$ lg = 7.85			$\bar{x}(\text{wm}) = 8.57 \times 10^6$ lg = 6.93			$\bar{x}(\text{wm}) = 8.40 \times 10^6$ lg = 6.92		
7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(B) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no			$\bar{x}(C) \geq 0.5 \times \bar{x}(N_w) ?$ <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
Control of weighted mean counts (N)			Quotient = 11.25 Between 5 and 15 ?				<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

**Water control:**

Nw	Vc1	Vc2	$\bar{x}(\text{wm}) = 1.31 \times 10^7$
10 <sup>-4</sup>	122	128	lg Nc = 7.12
10 <sup>-5</sup>	16	23	lg Nw ≥ lg N - 1.3 ≥ 6.2 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Control of weighted mean counts (Nw)			Quotient = 6.41 Between 5 and 15 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

<b>Test:</b>	Product test conc.	Contact time	Diln. step	Vc1	Vc2	Na = $\bar{x}(\text{wm}) \times 10$ lg Na =	lg R = (lg Nw - lg Na)	Status
117g/m <sup>2</sup>	30 min		10 <sup>0</sup>	0	0	< 2.15	> 4.97	PASS
			10 <sup>-1</sup>	0	0			
			10 <sup>-2</sup>	0	0			

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