



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

Certificate no: 16E.073NB2.SCE **Page:** 1 of 7

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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D C Watson BSc,CBiol,MRSB

Abbott Analytical Limited
Unit 2, Hickmans Road,
Birkenhead, CH41 1JH, United Kingdom

Registered address: Kemp House, 160 City Road,
London, EC1V 2NX, United Kingdom

Telephone: +44 (0)151 345 6753
email: enqs@abbottanalytical.co.uk
www.abbottanalytical.co.uk

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Company number 10031406



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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^2 .
- Early testing established that 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^2) was spread as evenly as possible over rectangular test surfaces measuring 7.5cm by 2.5cm, being equivalent to 50g/m^2 of dry powder.

0.05ml of the test suspension was pipetted onto the paste-covered surface in separate 10 μl 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.

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Experimental conditions

Concentration(s) of product tested: 117g/m² paste
(equivalent to 50g/m² dry product) *

Product diluent: Sterile hard water (300mg/l CaCO₃)

Test organism(s): *Pseudomonas aeruginosa* (NCTC 13359)
Proteus vulgaris (NCTC 4175)
Staphylococcus aureus (NCTC 10788)
Enterococcus hirae (NCTC 13383)

Contact time(s): 30 min ± 10s

Test temperature: 10°C ± 1°C

Test conditions: High-level soiling

Interfering substance: 10g/l bovine albumin +
10g/l yeast extract

Method: Dilution-neutralisation

Neutralising solution: 30g/l Polysorbate 80 + 3g/l Lecithin +
1g/l L-histidine + 1g/l L-cysteine

Incubation temperature: 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 ⁻⁷ | 272 | 283 | 10 ⁻⁴ | 87 | 78 | 10 ⁻⁴ | 83 | 77 |
| 10 ⁻⁸ | 44 | 52 | 10 ⁻⁵ | 11 | 9 | 10 ⁻⁵ | 12 | 12 |
| $\bar{x}(wm) = 7.40 \times 10^7$ lg = 7.87 | | | $\bar{x}(wm) = 8.25 \times 10^6$ lg = 6.92 | | | $\bar{x}(wm) = 8.00 \times 10^6$ lg = 6.90 | | |
| 7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(B) \geq 0.5 \times \bar{x}(Nw)$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(C) \geq 0.5 \times \bar{x}(Nw)$? <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 | | | | | | |
|--------------------------------------|-----|-----|---|--|--|--|--|--|
| 10^{-4} | 126 | 133 | $\bar{x}(wm) = 1.36 \times 10^7$ $lg Nc = 7.13$ | | | | | |
| 10^{-5} | 22 | 18 | $lg Nw \geq lg N - 1.3 \geq 6.2$? <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 | $Na = \bar{x}(wm) \times 10$ $lg Na =$ | $lg R = (lg Nw - lg Na)$ | Status |
|--------------------|--------------|------------|-----|-----|---|--------------------------|--------|
| $117g/m^2$ | 30 min | 10^0 | 0 | 0 | < 2.15 | > 4.98 | PASS |
| | | 10^{-1} | 0 | 0 | | | |
| | | 10^{-2} | 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 ⁻⁷ | 320 | 313 | 10 ⁻⁴ | 92 | 100 | 10 ⁻⁴ | 88 | 96 |
| 10 ⁻⁸ | 46 | 45 | 10 ⁻⁵ | 13 | 16 | 10 ⁻⁵ | 10 | 14 |
| $\bar{x}(wm) = 8.23 \times 10^7$ lg = 7.92 | | | $\bar{x}(wm) = 9.90 \times 10^6$ lg = 7.00 | | | $\bar{x}(wm) = 9.43 \times 10^6$ lg = 6.97 | | |
| 7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(B) \geq 0.5 \times \bar{x}(Nw)$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(C) \geq 0.5 \times \bar{x}(Nw)$? <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:

| Nw | Vc1 | Vc2 | | | | | | |
|--------------------------------------|-----|-----|---|--|--|--|--|--|
| 10^{-4} | 166 | 159 | $\bar{x}(wm) = 1.77 \times 10^7$ $lg Nc = 7.25$ | | | | | |
| 10^{-5} | 34 | 31 | $lg Nw \geq lg N-1.3 \geq 6.2$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | | | |
| Control of weighted mean counts (Nw) | | | 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 | $Na = \bar{x}(wm) \times 10$ $lg Na =$ | $lg R = (lg Nw - lg Na)$ | Status |
|--------------------|--------------|------------|-----|-----|---|--------------------------|--------|
| $117g/m^2$ | 30 min | 10^0 | 0 | 0 | < 2.15 | > 5.10 | PASS |
| | | 10^{-1} | 0 | 0 | | | |
| | | 10^{-2} | 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 ⁻⁷ | >330 | >330 | 10 ⁻⁴ | 112 | 120 | 10 ⁻⁴ | 104 | 95 |
| 10 ⁻⁸ | 36 | 49 | 10 ⁻⁵ | 20 | 18 | 10 ⁻⁵ | 16 | 13 |
| $\bar{x}(wm) = 1.06 \times 10^8$ lg = 8.03 | | | $\bar{x}(wm) = 1.23 \times 10^7$ lg = 7.09 | | | $\bar{x}(wm) = 1.02 \times 10^7$ lg = 7.01 | | |
| 7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(B) \geq 0.5 \times \bar{x}(Nw)$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(C) \geq 0.5 \times \bar{x}(Nw)$? <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:

| Nw | Vc1 | Vc2 | | | | | | |
|--------------------------------------|-----|-----|---|--|--|--|--|--|
| 10^{-4} | 164 | 160 | $\bar{x}(wm) = 1.68 \times 10^7$ $lg Nc = 7.22$ | | | | | |
| 10^{-5} | 23 | 22 | $lg Nw \geq lg N-1.3 \geq 6.2$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | | | |
| Control of weighted mean counts (Nw) | | | 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 | $Na = \bar{x}(wm) \times 10$ $lg Na =$ | $lg R = (lg Nw - lg Na)$ | Status |
|--------------------|--------------|------------|-----|-----|---|--------------------------|--------|
| $117g/m^2$ | 30 min | 10^0 | 0 | 0 | < 2.15 | > 5.07 | PASS |
| | | 10^{-1} | 0 | 0 | | | |
| | | 10^{-2} | 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 ⁻⁷ | 280 | 294 | 10 ⁻⁴ | 90 | 75 | 10 ⁻⁴ | 88 | 80 |
| 10 ⁻⁸ | 24 | 27 | 10 ⁻⁵ | 15 | 12 | 10 ⁻⁵ | 11 | 10 |
| $\bar{x}(wm) = 7.10 \times 10^7$ lg = 7.85 | | | $\bar{x}(wm) = 8.57 \times 10^6$ lg = 6.93 | | | $\bar{x}(wm) = 8.40 \times 10^6$ lg = 6.92 | | |
| 7.57 ≤ lg N ≤ 8.10 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(B) \geq 0.5 \times \bar{x}(Nw)$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | $\bar{x}(C) \geq 0.5 \times \bar{x}(Nw)$? <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 | | | | | | |
|--------------------------------------|-----|-----|---|--|--|--|--|--|
| 10^{-4} | 122 | 128 | $\bar{x}(wm) = 1.31 \times 10^7$ $lg Nc = 7.12$ | | | | | |
| 10^{-5} | 16 | 23 | $lg Nw \geq lg N - 1.3 \geq 6.2$? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | | | |
| Control of weighted mean counts (Nw) | | | Quotient = 6.41 Between 5 and 15 ? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | | | | |

Test:

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

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