a) **Identification of test laboratory:**

| | |
|---|---|
| Test laboratory | MGS Laboratories Ltd<br>Unit 20 Hoeford Point<br>Barwell Lane<br>Gosport<br>Hampshire<br>PO13 0AU |

b) **Identification of the Customer:**

| | |
|---|---|
| Customer Name | Advanced Engineering Ltd |
| Customer Address | Guardian House<br>Stroudley Rd<br>Basingstoke<br>Hampshire<br>RG24 8NL |

c) **Identification of the sample:**

| | |
|---|---|
| Name of product | CondenCide |
| Batch number (and expiry date if available) | N/A |
| Manufacturer | Advanced Engineering Ltd |
| Date of delivery | 01 Sep 16 |
| Storage conditions | Room temperature and darkness |
| Product diluent recommended by the manufacturer for use | Not stated |
| Active substance(s) and their concentration(s) (optional) | Didecyl dimethyl ammonium chloride - Pre-diluted: 6.25g/100g (0.173mol/L). |
| Appearance of the product | Clear pale blue liquid |

d) **Test method and its validation:**

| | |
|---|---|
| MGS procedure reference | WIN-1000.048-05 |
| Method | Dilution neutralisation |
| Neutraliser | Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l |
| Details of validation of the neutraliser | Neutraliser validation performed according to 5.5.2 of EN 1040: 2005. |

e) **Experimental conditions:**

| | |
|---|---|
| Period of analysis | 05 Sep 16 to 12 Sep 16 |
| Product diluent used during the test | Distilled water |
| Product test concentrations | 1:6 Dilution (1 part product:6 parts water) |
| Appearance of product dilutions | Clear pale blue liquid |
| Contact time | 5 minutes ± 10s |
| Test temperature range | 20°C ± 2°C |
| Stability and appearance of the mixture | Precipitate absent throughout test |
| Temperature of incubation | 36°C ± 2°C |
| Identification of the bacterial strains used | *Pseudomonas aeruginosa* ATCC 15442<br>*Staphylococcus aureus* ATCC 6538 |

f) **Results:**

| | |
|---|---|
| Test results | 1) Controls and validation<br>2) Evaluation of bactericidal activity |
| g) **Conclusion:** | Based on EN 1040 (2005), the product CondenCide, when tested 1 part product: 6 parts water, possesses bactericidal activity in 5 minutes at 20°C for the referenced strains of *P. aeruginosa* and *S. aureus*. |
| h) **Deviations:** | None |
| i) **Comments:** | This report replaces TRB-2016-122-01 |

**Re-issued by:** Linda James

**Name:** Linda James

**Position:** Laboratory Manager

**Date:** 22 SEP 16

**Approved by:**

**Name:** Kim Morwood

**Position:** Technical Director

**Date:** 22 SEP 16

The MGS procedure WIN-1000.048 is a laboratory method based on the EN 1040 (2005) standard; the minor deviations from the standard, which do not affect the overall results, are detailed below:

- EN 1040 states an allowed tolerance of 36°C ±1°C or 37°C±1°C, MGS laboratories equipment is validated to ±2°C therefore MGS procedures state ±2°C.
- Organisms are prepared by swabbing plates and adding to 9ml diluent to form a suspension, rather than adding loopfuls of organism to 10ml diluent with beads, shaking for 3 minutes, aspirating and adding to a new container.
- All tests performed include validation of neutralisation; however, the neutraliser is not always pre-proved.
- The laboratory is regulated at 20°C; therefore for testing at 20°C a water bath is not used.
- Plates are incubated for ≥40 hours rather than 20-24 hours read followed by another 20-24 hours. The interim counting does not add value since plates are re-counted, extended incubation allows recovery of stressed organisms so they can be detected.
- Plates are incubated for the full time rather than performing an interim read; in addition the incubation period may be extended to a maximum of 4 due to business hours.
- Any part of the method may be altered to meet customer requirements; MGS does not insist on testing the standard conditions or three concentrations of product with replicates of the limiting organism

Product batch number: N/A
Dilution-neutralisation method Pour plate [X] Spread plate [ ]
Number of plates: 1 / ml
Neutraliser: Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l
Actual test temperature: 23.5°C
Test organism: *P. aeruginosa* ATCC 15442
Incubation temperature: 36°C ± 2°C
Date of Test: 05 Sep 16
Person responsible: Laura Taylor Signature: pr Ewan
Diluent used for product test solutions: Distilled water
Appearance of product test solutions: Clear pale blue liquid

**Validation and Controls**

| **Validation suspension ($Nv_0$)** | | | **Experimental Conditions Control (A)** | | | **Neutraliser Control (B)** | | | **Method Validation (C)** Prod conc: 1:6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc1 | 104 | χ =100 | Vc1 | 93 | χ =105 | Vc1 | 96 | χ =94 | Vc1 | 87 | χ =95 |
| Vc2 | 96 | | Vc2 | 117 | | Vc2 | 92 | | Vc2 | 103 | |
| 30 ≤ χ of $Nv_0$ ≤ 160? Yes [X] No [ ] | | | χ of A is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | | χ of B is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | | χ of C is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | |

**Test suspension and test**

| **Test suspension (N and $N_0$):** | **N** | **Vc1** | **Vc2** | χ = 42 x $10^7$; lgN= 8.63 |
|---|---|---|---|---|
| | $10^{-6}$ | >330 | >330 | $N_0$ = N/10; lg$N_0$ = 7.63 |
| | $10^{-7}$ | 45 | 39 | 7.17 ≤ lg $N_0$ ≤ 7.70? Yes [X] No [ ] |

| **Conc of the product** | **Vc1** | **Vc2** | **Na = χ x10** | **lgNa** | **lgR** | **Contact time** |
|---|---|---|---|---|---|---|
| 1:6 | <14 | <14 | <140 | <2.15 | >5.48 | 5 minutes |

| mgsLABORATORIES Microbiological Services and Consultancy | | | | | | Doc No. | TRB-2016-122-02 | UKAS TESTING 4393 |
|---|---|---|---|---|---|---|---|---|
| Title | **Microbiological Analysis Based on EN 1040 (2005) Quantitative suspension test for the evaluation of basic bactericidal activity of chemical disinfectants and antiseptics (Phase 1 / Step 1)** | | | | | | | |
| **Product** | **CondenCide** | **MGS No** | **24136** | **SO No** | **5786** | | | |

Product batch number: N/A
Dilution-neutralisation method Pour plate [X] Spread plate [ ]
Number of plates: 1 / ml
Neutraliser: Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l
Actual test temperature: 24.1°C
Test organism: *S. aureus* ATCC 6538
Incubation temperature: 36°C ± 2°C
Date of Test: 08 Sep 16
Person responsible: Edward Webber Signature: E. Webber
Diluent used for product test solutions: Distilled water
Appearance of product test solutions: Clear pale blue liquid

**Validation and Controls**

| **Validation suspension ($Nv_0$)** | | | **Experimental Conditions Control (A)** | | | **Neutraliser Control (B)** | | | **Method Validation (C)** Prod conc: 1:6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc1 | 44 | χ =50 | Vc1 | 62 | χ =65 | Vc1 | 62 | χ =72 | Vc1 | 97 | χ =88 |
| Vc2 | 55 | | Vc2 | 67 | | Vc2 | 82 | | Vc2 | 78 | |
| 30 ≤ χ of $Nv_0$ ≤ 160? Yes [X] No [ ] | | | χ of A is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | | χ of B is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | | χ of C is ≥ 0.5 x χ of $Nv_0$? Yes [X] No [ ] | | |

**Test suspension and test**

| **Test suspension (N and $N_0$):** | **N** | **Vc1** | **Vc2** | χ wm = 220 x $10^6$; lgN= 8.34 |
|---|---|---|---|---|
| | $10^{-6}$ | 201 | 239 | $N_0$ = N/10; lg$N_0$ = 7.34 |
| | $10^{-7}$ | 21 | 22 | 7.17 ≤ lg $N_0$ ≤ 7.70? Yes [X] No [ ] |

| **Conc of the product** | **Vc1** | **Vc2** | **Na = χ x10** | **lgNa** | **lgR** | **Contact time** |
|---|---|---|---|---|---|---|
| 1:6 | <14 | <14 | <140 | <2.15 | >5.19 | 5 minutes |

Explanations:

Vc = count per plate (one plate or more)
$\chi$ = average of Vc1 and Vc2 (1. + 2. duplicate)
$\chi$ wm = weighed mean of $\chi$
R = reduction ($lgR = lgN_0 - lgNa$)
Na = number of survivors in the test mixture
Nv = number of cells in the validation suspension
$Nv_0$ = Nv/10

All test results have an associated uncertainty of measurement; for this test the expanded uncertainty is based on the estimated uncertainty multiplied by a coverage factor K=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been assessed in accordance with MGS laboratories' UKAS Accreditation and is available on request.

a) **Identification of test laboratory:**

| | |
|---|---|
| Test laboratory | MGS Laboratories Ltd<br>Unit 20 Hoeford Point<br>Barwell Lane<br>Gosport<br>Hampshire<br>PO13 0AU |

b) **Identification of the Customer:**

| | |
|---|---|
| Customer Name | Advanced Engineering Ltd |
| Customer Address | Guardian House<br>Stroudley Rd<br>Basingstoke<br>Hampshire<br>RG24 8NL |

c) **Identification of the sample:**

| | |
|---|---|
| Name of product | CondenCide |
| Batch number (and expiry date if available) | N/A |
| Manufacturer (or supplier) | Advanced Engineering Ltd |
| Date of delivery | 01 Sep 16 |
| Storage conditions | Room temperature and darkness |
| Product diluent recommended by the manufacturer for use | Not stated |
| Active substance(s) and their concentration(s) (optional) | Didecyl dimethyl ammonium chloride - Pre-diluted: 6.25g/100g (0.173mol/L). |
| Appearance of the product | Clear pale blue liquid |

d) **Test method and its validation:**

| | |
|---|---|
| MGS procedure reference | WIN-1000.049-05 |
| Method | Dilution neutralisation |
| Neutraliser | Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l |
| Details of validation of the neutraliser | Neutraliser validation performed according to 5.5.2 of EN 1275:2005. |

e) **Experimental conditions:**

| | |
|---|---|
| Period of analysis | 09 Sep 16 to 13 Sep 16 |
| Product diluent used during the test | Distilled water |
| Product test concentrations | 1:6 Dilution (1 part product:6 parts water) |
| Appearance of product dilutions | Clear pale blue liquid |
| Contact time | 15 minutes ± 10s |
| Test temperature range | 20°C ± 2°C |
| Stability and appearance of the mixture | Precipitate absent throughout test |
| Temperature of incubation | 30°C ± 2°C |
| Identification of the fungal strains used | *Aspergillus brasiliensis* ATCC 16404<br>*Candida albicans* ATCC 10231 |

f) **Results:**

| | |
|---|---|
| Test results | 1) Controls and validation<br>2) Evaluation of fungicidal or yeasticidal activity |
| g) **Conclusion:** | Based on EN 1275 (2005), the product CondenCide, when tested 1 part product:6 parts water, possesses fungicidal activity in 15 minutes at 20°C for the referenced strains of *A. brasiliensis and C. albicans.* |
| h) **Deviations:** | None |
| i) **Comments:** | This report replaces TRB-2016-123-01 |

**Re-issued by:** Linda James

**Name:** Linda James

**Position:** Laboratory Manager

**Date:** 22 SEP 16

**Approved by:**

**Name:** Kim Morwood

**Position:** Technical Director

**Date:** 22 SEP 16

The MGS procedure WIN-1000.049 is a laboratory method based on the EN 1275 (2005) standard; the minor deviations from the standard, which do not affect the overall results, are detailed below:

- Temperature tolerance of ±2°C rather than ±1°C. Validations are performed in tandem with the test, if the temperature has an adverse effect this would be reflected in the validations and the test would be invalid.
- Since the laboratory is maintained at 20°C a water bath is not used for testing at this temperature
- MGS Laboratories use Pro-Lab Microbank™ cryovials according to the manufacture instructions.
- For mould a cryovial bead is added to broth and stored at 2-8°C for a maximum of 7 days; streaks are made from that broth, rather than streaking from stored slopes for 6-9 weeks.
- EN 12353 states mould for cryovials should be filter through a fritted filter and centrifuge at 2000 $g_N$ for 20 min, MGS laboratories centrifuge step only.
- Organisms are prepared by swabbing plates and adding to diluent which gives a homogenous suspension; rather than adding loopfuls to diluent with beads and vortexing to get a homogenous suspension
- Mould spores have been prepared based on the most recently issued EN method (EN 1650:2008 +A1:2013)
- Mould spores have been validated for storage at 2-8°C beyond the date of preparation
- The incubation period may be extended to a maximum of 4 days (6 for mould) due to business hours
- All tests performed include validation of neutralisation; however the neutraliser is not always pre-proved
- Preparation of hard water is based on the most recently issued standard rather than taking into account minor sterilisation differences between different EN methods
- Any part of the method may be altered to meet customer requirements; MGS does not insist on testing the standard conditions or three concentrations of product with replicates of the limiting organism

Product batch number: N/A
Dilution-neutralisation method Pour plate [X] Spread plate [ ]
Number of plates: 1 / ml
Neutraliser: Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l
Actual test temperature: 23.2°C
Test organism: *A. brasiliensis* ATCC 16404
Incubation temperature: 30°C ± 2°C
Date of Test: 09 Sep 16
Person responsible: Edward Webber Signature: E. Webber
Diluent used for product test solutions: Distilled water
Appearance of product test solutions: Clear pale blue liquid

**Validation and Controls**

| **Validation suspension ($Nv_0$)** | | | **Experimental Conditions Control (A)** | | | **Neutraliser Control (B)** | | | **Method Validation (C)** Prod conc: 1:6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc1 | 41 | $\chi$ =45 | Vc1 | 39 | $\chi$ =46 | Vc1 | 42 | $\chi$ =42 | Vc1 | 50 | $\chi$ =49 |
| Vc2 | 49 | | Vc2 | 52 | | Vc2 | 42 | | Vc2 | 47 | |
| 30 ≤ $\chi$ of $Nv_0$ ≤ 160? | | | $\chi$ of A is ≥ 0.5 x $\chi$ of $Nv_0$? | | | $\chi$ of B is ≥ 0.5 x $\chi$ of $Nv_0$? | | | $\chi$ of C is ≥ 0.5 x $\chi$ of $Nv_0$? | | |
| Yes [X] No [ ] | | | Yes [X] No [ ] | | | Yes [X] No [ ] | | | Yes [X] No [ ] | | |

**Test suspension and test**

| **Test suspension (N and $N_0$):** | **N** | **Vc1** | **Vc2** | $\chi = 29 \times 10^6$; lgN= 7.46 |
|---|---|---|---|---|
| | $10^{-5}$ | >165 | >165 | $N_0$ = N/10; $lgN_0$ = 6.46 |
| | $10^{-6}$ | 31 | 26 | 6.17 ≤ lg $N_0$ ≤ 6.70? Yes [X] No [ ] |

| **Conc of the product** | **Vc1** | **Vc2** | **Na = $\chi$ x10** | **lgNa** | **lgR** | **Contact time** |
|---|---|---|---|---|---|---|
| 1:6 | <14 | <14 | <140 | <2.15 | >4.31 | 15 minutes |

Product batch number: N/A
Dilution-neutralisation method  Pour plate [X]  Spread plate [ ]
Number of plates: 1 / ml
Neutraliser: Lecithin 3g/l, polysorbate 80 30g/l, sodium thiosulphate 5g/l, L-histidine1g/l, saponin 30g/l, phosphate buffer powder 0.35g/l
Actual test temperature: 23.2°C
Test organism: *C. albicans* ATCC 10231
Incubation temperature: 30°C ± 2°C
Date of Test: 09 Sep 16
Person responsible: Edward Webber  Signature: E. Webber
Diluent used for product test solutions: Distilled water
Appearance of product test solutions: Clear pale blue liquid

**Validation and Controls**

| **Validation suspension ($Nv_0$)** | | | **Experimental Conditions Control (A)** | | | **Neutraliser Control (B)** | | | **Method Validation (C)** Prod conc: 1:6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc1 | 70 | χ =71 | Vc1 | 73 | χ =73 | Vc1 | 74 | χ =78 | Vc1 | 71 | χ =71 |
| Vc2 | 71 | | Vc2 | 73 | | Vc2 | 81 | | Vc2 | 71 | |
| 30 ≤ χ of $Nv_0$ ≤ 160? | | | χ of A is ≥ 0.5 x χ of $Nv_0$? | | | χ of B is ≥ 0.5 x χ of $Nv_0$? | | | χ of C is ≥ 0.5 x χ of $Nv_0$? | | |
| Yes [X] No [ ] | | | Yes [X] No [ ] | | | Yes [X] No [ ] | | | Yes [X] No [ ] | | |

**Test suspension and test**

| **Test suspension (N and $N_0$):** | **N** | **Vc1** | **Vc2** | χ = 274 x $10^5$; lgN= 7.44 |
|---|---|---|---|---|
| | $10^{-5}$ | 275 | 282 | $N_0$ = N/10; lg$N_0$ = 6.44 |
| | $10^{-6}$ | 24 | 21 | 6.17 ≤ lg $N_0$ ≤ 6.70? Yes [X] No [ ] |

| **Conc of the product** | **Vc1** | **Vc2** | **Na = χ x10** | **lgNa** | **lgR** | **Contact time** |
|---|---|---|---|---|---|---|
| 1:6 | <14 | <14 | <140 | <2.15 | >4.29 | 15 minutes |

Explanations:

Vc = count per plate (one plate or more)
$\chi$ = average of Vc1 and Vc2 (1. + 2. duplicate)
R = reduction ($lgR = lgN_0 - lgNa$)
Na = number of survivors in the test mixture
Nv = number of cells in the validation suspension
$Nv_0$ = Nv/10

All test results have an associated uncertainty of measurement; for this test the expanded uncertainty is based on the estimated uncertainty multiplied by a coverage factor K=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been assessed in accordance with MGS laboratories' UKAS Accreditation and is available on request.