

**Bactericidal activity of Peracetic Acid as generated by wipes, (after a 24 hour generation time) as produced by The University of Huddersfield, in accordance with formulation provided by GAMA Healthcare**

**November 2005**

**Author:** S. Cowles  
**Checked by:** P. Humphreys  
**Authorised by:** P. Humphreys



*University of*  
**HUDDERSFIELD**

## Tests Carried Out By:

**University of Huddersfield**      School of Applied Sciences  
Queensgate  
Huddersfield  
HD1 3DH

## Microbiological Tests

**Test Method**      Modified British/European Standard BS EN 1276:1997

**Test Procedures**      Full details of all the test and control procedures used are given in the Test Method

**Disinfectant**      Peracetic acid  
Hydrogen peroxide

**Temperature**      20 °C (± 1 °C)

**Test Organisms**      *Escherichia coli* 8879 (NCIMB); *Enterococcus hirae* 8191 (NCIMB); *Pseudomonas aeruginosa* 10421 (NCIMB) and *Staphylococcus aureus* 9518 (NCIMB)

**Culture Medium**      Tryptone Soya Agar, Lab M

**Incubation**      Plates were incubated at 37 °C for 24 - 48 h

**Diluent**      Tryptone Sodium Chloride Solution

## General Method

Standard suspensions of the test organisms of the four different bacteria were prepared. 4 ml of disinfectant was added and mixed. In this case the disinfectant was peracetic acid produced by the addition of a prepared wipe to 1000ml distilled water. The wipe was immersed in a beaker containing the water and this was left for 24 hours. During this time, the disinfectant was left at room temperature ( $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ) in a covered beaker with the wipe remaining in the liquid. The resulting liquid was used as the disinfectant.

A 1 ml sample of the liquid (bacterial suspension and disinfectant) was taken and pipetted into 2 Petri dishes and mixed with 15 ml of culture medium tempered at  $47^{\circ}\text{C}$ . After setting, the Petri dishes were incubated at  $37^{\circ}\text{C}$ . Colony forming units were counted after 1-2 days incubation and the fraction of surviving organisms calculated.

## Modifications to BS EN 1276:1997

Tests were carried out according to a modified and simplified version of BS EN 1276:1997. These modifications were that no neutraliser was used and therefore there was no contact time involved and that no dirty or clean conditions were involved in the process.

## Results<sup>1</sup>

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

Organism	Log <sub>10</sub> Reduction Achieved	Actual reduction	Cfu's/ml <sup>-1</sup> per plate at 10 <sup>-6</sup> dilution	Mean number of cfu/ml at 10 <sup>-6</sup>	Cfu/ml <sup>-1</sup> In bacterial suspension (concentrate)
<i>Escherichia coli</i> 8879 (NCIMB)	>5 <sup>1</sup>	≥8 <sup>1</sup>	360, 369	364.5	3.65 x 10 <sup>8</sup>
<i>Enterococcus hirae</i> 8191 (NCIMB)	>5 <sup>1</sup>	≥8 <sup>1</sup>	391, 386	388.5	3.88 x 10 <sup>8</sup>
<i>Pseudomonas aeruginosa</i> 10421 (NCIMB)	>5 <sup>1</sup>	≥8 <sup>1</sup>	101, 109	105	1.05 x 10 <sup>8</sup>
<i>Staphylococcus aureus</i> 9518 (NCIMB)	>5 <sup>1</sup>	≥8 <sup>1</sup>	609, 680	644.5	6.45 x 10 <sup>8</sup>

**Table 1. Log<sub>10</sub> reductions in test organisms' viable counts following a 24 hour generation time from wipe immersed in 1000ml distilled water.**

---

## **Interpretation of the Results**

When tested against *Escherichia coli* 8879 (NCIMB); *Enterococcus hirae* 8191 (NCIMB); *Pseudomonas aeruginosa* 10421 (NCIMB) and *Staphylococcus aureus* 9518 (NCIMB) met the requirements of the Standard with the aforementioned modifications.

## **Conclusion**

The highly modified test which was carried out without the use of either a neutraliser (therefore no defined contact time) or clean and dirty conditions, achieved a 8 log reduction in all 4 test organisms as detailed in table 1.

## **Signed:**

Dr Paul Humphreys  
School of Applied Sciences  
University of Huddersfield