IMSL

INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

STUDY REPORT: **Determination of Antibacterial Activity against MRSA and *E coli* using a Method Based on Japanese Industrial Standard JIS Z 2801.**

Wippe TPb ex Merten GmbH & Co KG

CLIENT: **Polygiene AB**

REPORT NO: **IMSL LRN 1003655.145A**

DATED: **22 March 2006**

Contents

1 Introduction

This report summarises a study performed to assess the antibacterial performance of Wippe TPb with and without SysM against MRSA and *E coli*.

2 Test Materials

Samples (each 50 x 50 mm) of plastic which had been formulated either with (432125) or without (432119) a silver based antimicrobial agent were supplied by Polygiene AB. All samples were held in the dark at 20°C prior to initial testing. Prior to testing, 3 replicate sub-samples of each were wiped with a solution of ethanol in water (70% v/v). The samples were then allowed to dry in air. A sample of unfortified polypropylene was supplied by IMSL to act as a reference system.

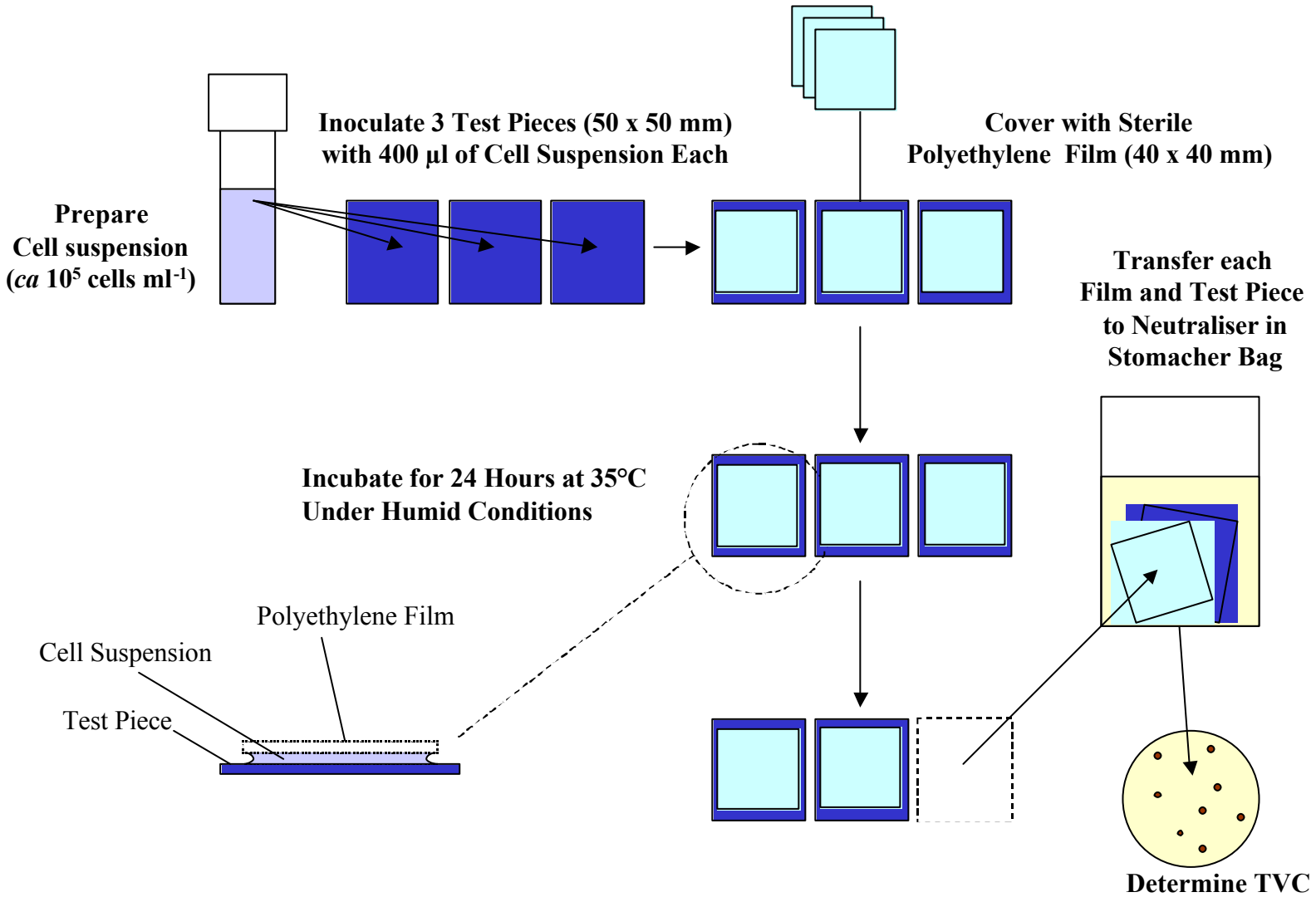
3 Method

Antibacterial activity was determined using the method described in Japanese Industrial Standard JIS Z 2801 (Ref 1).

3.1 Determination of Antibacterial Activity

An aliquot (225 µl) of a log phase cell suspension of either *Escherichia coli* (4.0×10^5 cells ml^{-1}; ATCC 8739) or MRSA (5.6×10^5 cells ml^{-1}; NCTC 11939) prepared using the method described in JIS Z 2801 were held in intimate contact with each of the 3 replicates of the test surfaces supplied using a 30 x 30 mm polyethylene film (cut from a sterile Stomacher bag) for 24 hours at 35°C. The size of the surviving population was determined using the method described in JIS Z 2801 and in Figure 1 below. The viable cells in the resulting suspension were enumerated by spiral dilution onto Trypcase Soya Agar. These plates were then incubated at 37°C for 24 hours and then counted.

Figure 1: Antibacterial Activity Method



4 Results / Discussion

The results are shown in Table 1 as total viable counts and as both $\log_{10}$ and % reduction from the initial population after exposure for 24 hours at 35°C.

Table 1: Results of testing with *E coli*
(Geometric Mean of 3 Replicates as Colony Forming Units cm^{-2})

Sample	Contact Time (Hours)		Reduction	
	0	24	Log CFU	%
432125	1.0×10^4	< 11	> 3.0	> 99.89
432119	1.0×10^4	4.4×10^5	-	-
Polypropylene	1.0×10^4	5.7×10^5	-	-

The theoretical limit of detection is 11 CFU cm^{-2}

Table 2: Results of testing with MRSA
(Geometric Mean of 3 Replicates as Colony Forming Units cm^{-2})

Sample	Contact Time (Hours)		Reduction	
	0	24	Log CFU	%
432125	1.4×10^4	< 11	> 3.1	> 99.92
432119	1.4×10^4	2.0×10^4	-	-
Polypropylene	1.4×10^4	7.6×10^3	-	-

The theoretical limit of detection is 11 CFU cm^{-2}

It can be seen from the results above that the populations of *E coli* and MRSA remained viable on the surface of both unfortified polypropylene and the Wippe TPb formulation 432119 following incubation at 35°C for 24 hours. In contrast, both populations were reduced to below the limit of detection when exposed to the fortified variant of Wippe Tpb (432125).

5 Raw Data

The raw data for this study will be held in file IMSL LRN 1003655 in the Archive of IMSL at Pale Lane, Hartley Wintney, Hants, RG27 8DH, UK for 6 years from the date of this report unless other specific instructions are given.

6 References

1 Japanese Industrial Standard JIS Z 2801: 2000 (E)

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