



Technical Report

Multiple Surface Comparison of Disinfectant Efficacy

- CONFIDENTIAL -

WO: 870

Prepared by: Food & Drug Analytical Services Limited, BioCity Nottingham,
Pennyfoot Street, Nottingham, NG1 1GF

Author: Larissa Taylor, Technical Director

Work by: Claire Evans, Analyst

Report For: NHS National Innovation Centre, part of the NHS Institute of
Innovation & Improvement
Coventry House, University of Warwick Campus CV4 7AL

Date: 28 November 2007

APPROVALS:

	FDAS
Name:	
Title:	
Signature / Date	

APPROVALS:1

1. SUMMARY3

2. RESPONSIBILITIES.....3

3. LOCATIONS3

4. DATES3

5. TEST METHOD4

 5.1 EXPERIMENTAL CONDITIONS..... 4

 5.2 SAMPLES..... 4

6 RESULTS4

Table 1 : Results for Floor Surface 4

Table 2 : Results for Metal Handle Surface 5

Table 3 : Results for Perspex Surface 5

Table 4 : Results for Plastic Handle Surface 5

Table 5 : Results for Seatbelt Surface 5

Table 6 : Results for Steel Surface 6

Table 7 : Results for Stretcher Surface 6

Table 8a : Result Summary by Product..... 6

Table 8b : Result Summary by Surface 6

Figure 1a : Result Summary – Tests Passed by Product..... 7

Figure 1b : Result Summary – Tests Passed by Surface 7

7 CONCLUSION8

8 ARCHIVE8

ATTACHMENT 1 – TEST RESULTS – ANALYSIS CERTIFICATES9

1. SUMMARY

A number of proprietary disinfectant products (8) used in the healthcare industry have been tested for their bactericidal efficacy on a range of surfaces (7) against 9 specified pathogens according to BSEN13697:2001 surface test.

The surfaces used are representative of those within an ambulance environment; floor, metal and plastic handles, seatbelt, stretcher, steel and Perspex. Bactericidal activity has been evaluated using *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Enterococcus hirae* and *Escherichia coli*. The fungicidal activity has been evaluated using *Candida albicans* and *Aspergillus niger*. In addition to the standard organisms, specific organisms *Acinetobacter baumannii*, *Clostridium difficile* and Methicillin resistant *Staphylococcus aureus* (MRSA) have been used

The results obtained show a degree of variability between the products tested. Of the 8 products tested no product is effective against all organisms on all surfaces. Two of the products tested were not effective on any of the surfaces. On all of the 7 surfaces tested, there is at least one product that is effective against all 9 organisms.

2. RESPONSIBILITIES

Study Director (FDAS)	Larissa Taylor, Technical Director
Analyst (FDAS)	Claire Evans, Analyst
Study Director (Customer)	Mary Green

3. LOCATIONS

Laboratory	Food & Drug Analytical Services Limited BioCity, Pennyfoot Street Nottingham, NG1 1GF
------------	---------------------------------------------------------------------------------------------

4. DATES

Start Date:	25 September 2007
Analysis Complete:	15 October 2007

5. TEST METHOD

BSEN13697:2001 Chemical disinfectant & antiseptics – Quantitative non-porous surface test for the evaluation of bactericidal &/or fungicidal activity of chemical disinfectants used in food, domestic and industrial areas - Test method and requirements without mechanical action (phase 2 / step 2).

5.1 EXPERIMENTAL CONDITIONS

Surfaces:

Seatbelt Steel
 Stretcher Floor
 Metal Handle Plastic Handle
 Perspex

5.2 SAMPLES

S0707234 - A
 S0707232 - B1
 S0707233 - B2
 S0709257 - C
 S0709323* - D
 S0706172 - Hygienilac liquid
 S0706174 - Hygienilac multi purpose surface cleaner
 S0709256 - F

6 RESULTS

Table 1 : Results for Floor Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B2	S0707233	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
C	S0709257	PASS	FAIL	FAIL	PASS	PASS	PASS	FAIL	FAIL	PASS
D	S0709323	PASS	FAIL	FAIL	FAIL	FAIL	PASS	FAIL	FAIL	FAIL
Hygienilac liquid	S0709172	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
F	S0707256	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

* NB: This product's results are considered invalid since they were supplied unsealed and with no indication of expiry date

Table 2 : Results for Metal Handle Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	PASS	PASS	PASS	FAIL	PASS	PASS	FAIL	PASS	PASS
B1	S0707232	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B2	S0707233	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS
C	S0709257	PASS	FAIL	FAIL	PASS	PASS	PASS	FAIL	FAIL	PASS
D	S0709323	PASS	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL
Hygienilac liquid	S0709172	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	PASS
F	S0707256	FAIL	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS

Table 3 : Results for Perspex Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	PASS
B2	S0707233	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
C	S0709257	FAIL	PASS	PASS	FAIL	FAIL	PASS	FAIL	FAIL	PASS
D	S0709323	PASS	PASS	PASS	FAIL	FAIL	PASS	FAIL	FAIL	FAIL
Hygienilac liquid	S0709172	PASS	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
F	S0707256	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS

Table 4 : Results for Plastic Handle Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	FAIL	PASS
B2	S0707233	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS
C	S0709257	FAIL	PASS	PASS	FAIL	FAIL	FAIL	PASS	FAIL	PASS
D	S0709323	PASS	PASS	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL
Hygienilac liquid	S0709172	PASS	PASS	PASS	PASS	FAIL	FAIL	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
F	S0707256	FAIL	FAIL	PASS	FAIL	PASS	PASS	FAIL	PASS	PASS

Table 5 : Results for Seatbelt Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	FAIL	PASS
B2	S0707233	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
C	S0709257	FAIL	FAIL	PASS	PASS	PASS	PASS	FAIL	FAIL	PASS
D	S0709323	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	FAIL	PASS
Hygienilac liquid	S0709172	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
F	S0707256	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	PASS

Table 6 : Results for Steel Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B2	S0707233	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	FAIL	FAIL
C	S0709257	FAIL	FAIL	FAIL	PASS	FAIL	FAIL	PASS	FAIL	FAIL
D	S0709323	PASS	PASS	FAIL	PASS	FAIL	FAIL	PASS	FAIL	PASS
Hygienilac liquid	S0709172	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
F	S0707256	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Table 7 : Results for Stretcher Surface

Product	Result									
	Organism:	A.baumannii	A.niger	C.Albicans	C.difficile	E.coli	E.hirea	MRSA	P.aeruginosa	S.aureus
A	S0707234	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B1	S0707232	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
B2	S0707233	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS
C	S0709257	FAIL	FAIL	PASS	FAIL	FAIL	PASS	PASS	FAIL	PASS
D	S0709323	FAIL	PASS	PASS	PASS	PASS	PASS	FAIL	FAIL	FAIL
Hygienilac liquid	S0709172	FAIL	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Hygienilac MS	S0709174	PASS	PASS	PASS	PASS	PASS	PASS	PASS	FAIL	PASS
F	S0707256	FAIL	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	PASS

Table 8a : Result Summary by Product

Product	# Tests Passed	% Tests Passed	# Surfaces Meeting BSEN Requirements
A	58	92	3
B1	56	89	2
B2	57	90	2
C	33	52	0
D	33	52	0
Hygienilac liquid	57	90	2
Hygienilac MS	61	97	5
F	53	84	1

Table 8b : Result Summary by Surface

Surface	# Effective Products
Seatbelt	2
Steel	3
Stretcher	1
Floor	5
Metal Handle	1
Plastic Handle	2
Perspex	2

Figure 1a : Result Summary – Tests Passed by Product

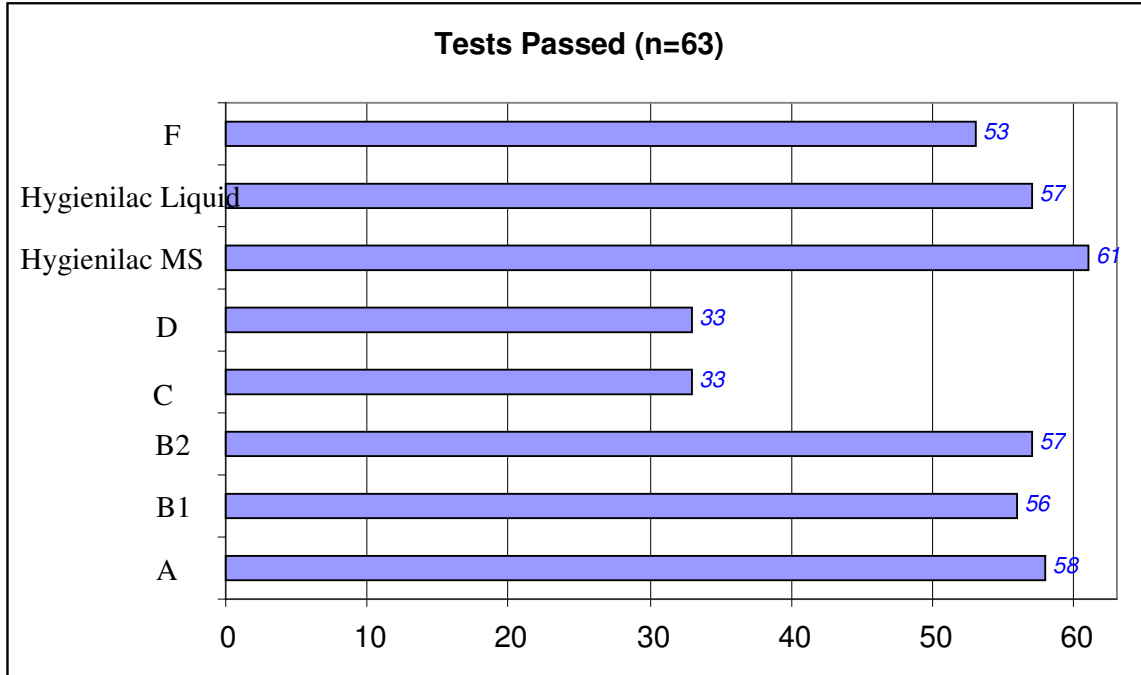
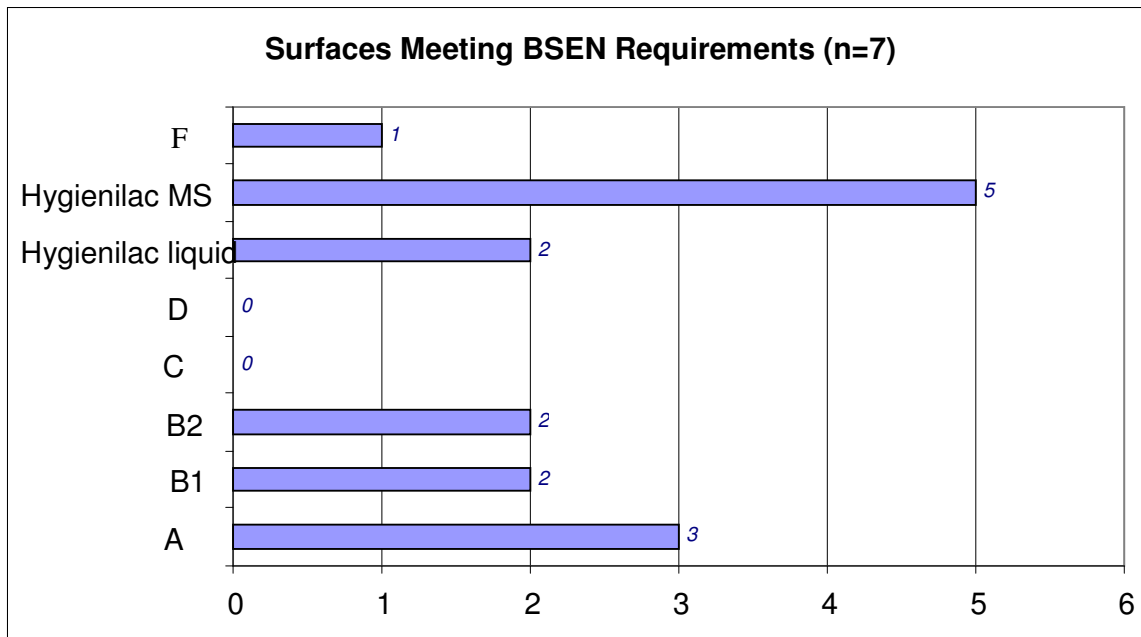


Figure 1b : Result Summary – Tests Passed by Surface



7 CONCLUSION

Of the 63 tests performed (9 organisms on 7 surfaces) four of the products (including Hygenilac Multi Purpose and Hygenilac Liquid) have a pass rate of 90% or greater. Two of the products had a pass rate of only 52%. Of all 7 surfaces at least one of the products tested proved to be effective on all 9 organisms. One product proved to be significantly more effective (Hygenilac Multi Purpose) and met the requirements for all 9 organisms on 5 surfaces. Two of the products tested were not effective on any of the surfaces.

8 ARCHIVE

Raw data: WO# 870

Data to be stored at FDAS indefinitely.



Study: WO 870
Title: Multiple Surface Comparison of Disinfectant Efficacy
Author: L.Taylor

ATTACHMENT 1 – Test Results – Analysis Certificates