

Our Ref: M03050845Z an  
Replacement to Report No. M03050845

23<sup>rd</sup> February 2004

Dominant (Australia) Pty Ltd  
12 Coglein Street  
BROMPTON SA 5007

ATTENTION: MR CHRIS ASTLEY

Dear Sir,

RE: CHEMICAL DISINFECTION OF FABRIC SWATCHES

The effectiveness of 'Clinic' fabric washing detergent was evaluated by an 'in use' trial as detailed in the following protocol.

### **Swatches and Ballast**

10cm x 10cm swatches of cotton teatowels were used for the trial. The teatowels were purchased specifically for the trial and were soaked in tap water for 48 hours prior to rinsing and drying. This preliminary step was performed to remove any excess dye.

The swatches were sterilized by autoclaving prior to performing the trial.

The ballast for the wash load was made up of pillow cases and polyester fabric squares provided by A WTA. These materials were not sterilized prior to use.

The inoculated swatches were attached to pillow cases by Kimble tags. All organisms were evaluated in the same wash cycle. Swatches were inoculated with only one organism.

### **Organisms**

<i>Escherichia coli</i>	derived from ATCC 8739
<i>Proteus vulgaris</i>	derived from NCTC 4635
<i>Staphylococcus aureus</i>	derived from ATCC 6538

Cultures were grown in Nutrient Broth No. 2 at 37°C/24 hours and diluted such that each swatch was inoculated with approximately 1,000 organisms per cm<sup>2</sup>, i.e. 100,000 cfu per swatch.

The swatches were inoculated on site at A WTA prior to the wash cycle, i.e. the organisms were not dried onto the swatch and additional soil was not added. 1 mL of inoculation fluid was added to each swatch.

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### ***Washing Machine and Wash Cycles***

The washing machines at the Australian Wool Testing Authority (AWTA) were used for this trial.

1. Domestic Top Loader Fischer & Paykel
2. Front Loader Wascator FOM 71 Lab MP.

Both machines used a warm wash cycle at 40°C.

The washing program for the Top Loader was the standard 40°C wash cycle.

The cycle in the Wascator was:

- 2 minute cold rinse
- 8 minute wash at 40°C → detergent added at start of wash cycle.
- 3 rinses.

Prior to each cycle the machines were flushed with hot water. For the Wascator, the temperature of this rinse was 75-90°C, however, the maximum temperature achieved in the top loader was 60°C. The rinse cycle was of 5 minutes duration.

### ***Dryer***

Half the swatches were dried in a standard domestic dryer on a warm setting. Ballast in the drying load was pillow cases dampened with sterile water to approximately the same degree of wetness as the swatches. The drying cycle was 40-45 mins.

### ***Recovery Counts***

Recovery counts were performed by immersing each swatch in 100 mL of 0.1% peptone with Tween 80. The swatches were stomached for 1 minute and 1 mL aliquots transferred to petri dishes which were poured with Tryptone Soy Agar and incubated at 37°C/48 hours. Counts were prepared in duplicate. Duplicate samples were analysed for each test combination.

### ***Disinfection of Washing Machines***

At the end of the trial the Wascator was rinsed with water at 75-90°C for 5 minutes. Because the top loader was only capable of achieving a temperature of 60°C in the rinse cycle this machine was subjected to a chlorine rinse cycle. At the completion of the 'disinfection' cycle, swabs were taken of the interior surfaces to verify the effectiveness of removal of any of the organisms used in the trial.

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**Controls**

As requested, control wash cycles using water only or a non-antibacterial detergent, were not performed.

Test Product and Dose Rate

Clinic 50g in FOM 71 Lab MP  
(Powder) 90g in Top Loader

Top Loader -- Clinic powder was added on the top of the load. It was not dissolved prior to addition.

Front Loader -- Clinic powder was added via the detergent receptacle. The powder was not dissolved prior to addition.

**Results**

**Control**

Organism: Inoculated

	Inoculated Level per Swatch	Recovery Counts per Swatch	Recovery Count/cm <sup>2</sup>
<i>Staphylococcus aureus</i>	260,000	180,000	1,800
<i>Escherichia coli</i>	160,000	94,000	940
<i>Proteus vulgaris</i>	200,000	100,000	1,000

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**Test**

Organism: *Staphylococcus aureus*

Machine	Detergent	Swatch Dried	Recovery/cm <sup>2</sup>
Top Loader	Clinic	-	Not Detected
Front Loader	Clinic	-	Not Detected
Top Loader	Clinic	✓	Not Detected
Front Loader	Clinic	✓	Not Detected

Organism: *Escherichia coli*

Machine	Detergent	Swatch Dried	Recovery/cm <sup>2</sup>
Top Loader	Clinic	-	Not Detected
Front Loader	Clinic	-	Not Detected
Top Loader	Clinic	✓	Not Detected
Front Loader	Clinic	✓	Not Detected

Organism: *Proteus vulgaris*

Machine	Detergent	Swatch Dried	Recovery/cm <sup>2</sup>
Top Loader	Clinic	-	Not Detected
Front Loader	Clinic	-	Not Detected
Top Loader	Clinic	✓	Not Detected
Front Loader	Clinic	✓	Not Detected

**Summary**

Machine	Detergent	Dried 'D' Not Dried 'ND'	Log Reduction % Removal	<i>S. aureus</i>	<i>E. coli</i>	<i>P. vulgaris</i>
Top Loader	Clinic	ND	% Removal	>99.95	>99.89	>99.9
		D	% Removal	>99.95	>99.89	>99.9
Front Loader		ND	% Removal	>99.95	>99.89	>99.9
		D	% Removal	>99.95	>99.89	>99.9

Note: '>' indicates greater than.

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### Comments

A greater than 99.99% removal of *S.aureus* and *Proteus vulgaris* was achieved by Clinic in both the top loader and the front loader. The removal of *E.coli* was 99.899%. The slightly lower value for *E.coli* is probably due to the lower inoculum and lower recovery of *E.coli* on the swatch prior to washing. None of the target organisms were detected after washing and washing and drying.

Yours faithfully,



JILL ANDERSON F.Dip.App.Biol,AAIFST,MASM  
SENIOR CONSULTANT MICROBIOLOGIST

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s) as received. The data therefore may not be representative of the lot or batch or other samples. Consequently the data may not necessarily justify the acceptance or rejection of a lot or batch, a product recall or support legal proceedings. This report does not imply that Silliker Microtech Pty Ltd has been engaged to consult upon any action that should be taken as a result of the analysis and/or opinion requested.