BTTG Shirley Technologies Limited

Confidential Report

Our Ref: 60951

Shirley Technologies Limited
Unit 11, Westpoint Enterprise Park
Clarence Avenue, Trafford Park
Manchester, M17 1QS
England

Tel: +44 (0)161 869 1610
Fax: +44 (0)161 872 6492
Web: http://www.shirleytech.com
Email: info@shirleytech.co.uk

21st June 2021
Our Ref: 60951
Your Ref: 81A12051
Client: Camira Fabrics Ltd

Address: Camira Fabrics Ltd
Meltham Mills
Meltham
West Yorkshire
WF14 8HE

Job Title: Antibacterial testing

Client's Order Ref: 81A12051

Date of Receipt: 8th June 2021

Description of Sample(s): One sample received labelled:

1. Freedom

The sample was received in good condition

Work Requested: AATCC 147: 2016

Note: This report relates only to the sample submitted and as described in this report.

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INTRODUCTION

One sample was received labelled as above, for testing to AATCC 147: 2016. The client requested testing the face only. Testing commenced on the 15th June 2021.

METHODOLOGY: AATCC 147: 2016

An inoculum of *S. aureus* NCIMB 9518 was prepared by transferring 1± 0.1 ml of a 24-hour nutrient broth culture into 9 ± 0.1 ml of sterile distilled water.

Using a 4mm inoculating loop, one loopful of the diluted inoculum was transferred to the surface of a sterile nutrient agar plate by making five 60 mm long parallel streaks spaced 10 mm apart without refilling the loop.

The non-sterile test specimen was then placed transversely across the five inoculum streaks. This was performed in triplicate.

The replicates was then incubated at 37 ± 2 ^{0}C for 24 hours and repeated with *K.pneumoniae* NCIMB 10341.

The zone of inhibition around the specimen was determined according to the method stated in Section 11 in AATCC Test Method 147:2016.

Controls were performed ensuring that both bacteria did grow adequately.

RESULTS

The replicate samples were examined for any zone of inhibition and if there was any growth under the sample.

The following key is used in the tables below.

W = Width of clear zone of inhibition.

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RESULTS:

AATCC 147: 2016

Sample labelled: Freedom

S. aureus NCIMB 9518

Specimen	Average W /cm	Growth under sample
1	0.39	No Growth
2	0.35	No Growth
3	0.33	No Growth

K.pneumoniae NCIMB 10341

Specimen	Average W /cm	Growth under sample
1	0.00	No Growth
2	0.00	No Growth
3	0.00	No Growth

There was no contamination of the sample as this was verified with incubating under the same test conditions, without the test bacteria.

The control samples performed as expected and proved the validity of the testing.

The criterion for passing the test must be agreed upon by the interested parties.

The standard states that to constitute acceptable antibacterial activity, there must be no bacterial colonies directly under the sample in the contact area.

Reported by: Cristina Alepuz
Section Leader

Countersigned by: Gareth Heywood
Manager

Enquiries concerning this report should be addressed to Customer Services.

Study Title:
Antibacterial Finishes on Textile Materials: Assessment of

Microbiological Solutions Limited (MSL)
Gollinrod, Walmersley, Bury, BL9 5NB, UK

Angela Davies, CEO

Customer: Camira Fabrics Limited
Contact name: Luke Russell
Email: luke.russell@camirafabrics.com
Address: The Watermill Wheatley Park Mirfield West Yorkshire WF148EH
PO/Quote number: Q004721
Report date: 05/07/2021
Issue number: 1

Megan Barrett
Technical Projects Team Leader

Peter Thistlethwaite
Technical Projects Manager

Scope

The test method is designed to give an assessment of the level of antibacterial activity possessed by antimicrobial finishes on textile material.

Outline of Test Method (Obligatory Test Conditions)

Circular swatches of the test and control material are cut to 4.8 cm. Swatches are stacked as required for the absorption of 1ml of liquid, leaving no free liquid.
Control and test materials are exposed to 1ml of bacterial inoculum, samples were recovered at time points of 0 hours and 24 hours in 100ml of neutralizer, and enumerated to calculate the remaining level of bacteria. Samples were incubated at 37oC ±2oC for the 24 hour test period.

Acceptance Criteria

The criteria for passing the test must be determined by the interested parties.

Test information		Deviation
Name of Product	Freedom	
Batch Number & Expiry Date	Batch – D1202	
Date of Delivery	14/06/2021	
Period of Analysis	01/07/2021	
Manufacturer / Supplier	Camira Fabrics Limited	
Storage Conditions	Ambient	
Appearance of the Product	Auburn Fabric	
Neutraliser	N6	
Test Temperature	20^0C ± 1°C	
Temperature of Incubation	Bacteria - 37°C ±1°C for 24hr to 48hrs	
Identification of the Bacterial Strains:	Klebsiella pneumoniae *Staphylococcus aureus* NCTC 10788 (ATCC 6538)	
Contact Times	24 Hours	

Deviations from Standard Method

There were no deviations from the standard method

Test Result Summary

The test product received has achieved a 100% reduction when tested against S.aureus and K.pneumoniae, under the condition stipulated in this report.

See page 2 for acceptance criteria and raw data tables below for complete test results.

Microbiological Solutions Ltd
Gollinrod
Walmersley
Bury, BL9 5NB

Tel: 0844 824 6003
Email: info@mls.io
Web: www.msl.io
Company number: 4218514

Test results

		R1				R2				Average recovery per surface
		Dilution	Count 1	Count 2	Recovery	Dilution	Count 1	Count 2	Recovery	
S.aureus	C - Control 0hr	2	33	30	315000	2	40	42	400000	357500
	Control 24hr	2	330	330	3300000	2	330	330	1850000	2575000
	B - Test 0hr	2	19	22	205000	2	31	20	1805000	1005000
	A - Test 24hr	0	0	0	0	0	0	0	0	0
									D	681250

Percentage reduction %
100.000

		R1				R2				Average recovery per surface
		Dilution	Count 1	Count 2	Recovery	Dilution	Count 1	Count 2	Recovery	
K.pneumoniae	C - Control 0hr	2	19	22	205000	2	23	26	230000	217500
	Control 24hr	2	330	330	3300000	2	330	330	1765000	2532500
	B - Test 0hr	2	58	49	535000	2	58	55	1940000	1237500
	A - Test 24hr	0	0	0	0	0	0	0	0	0
									D	727500.00

Percentage reduction %
100.000

Key

A – Number of bacteria recovered from inoculated treated test specimen following contact time
B – Number of bacteria recovered from inoculated treated test specimen immediately after inoculation (0hrs)
C – Number of bacteria from untreated control immediately after inoculation (0hrs)
D – (B+C)/2

Calculation of percentage reduction

100(D-A)/D = % Reduction

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Date of Issue: 7/19/2021
Report Number: 21-002594
Revision Number:1
Date Order Received: 06/10/2021

For the Account of: Camira Fabrics Ltd.
Meltham Mills
Meltham
Holmfirth, West Yorkshire HD9 4AY
United Kingdom

Client's Identification: Freedom

CERTIFICATE OF TESTING

TEST PERFORMED: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi ASTM G21-13

TEST RESULTS

	Fungal Activity
Specimen 1	0.0
Specimen 2	0.0
Specimen 3	0.0

ABBREVIATIONS USED

0 None
1 Trace of growth (less than 10%)
2 Light growth (10 - 30%)
3 Medium growth (30 - 60%)
4 Heavy growth (60 to complete coverage)

NOTES

Test Organisms: Aspergillus niger ATCC 9642
Penicillium funiculosum ATCC 11797
Chaetomium globosum ATCC 6205
Aureobasidium pullulans ATCC 9348
Trichoderma virens ATCC 9645
Growth Medium: Nutrient Salts Agar
Test Conditions: Incubated at 28-30°C for 28 days

CERTIFICATION I certify that the above results were obtained after testing specimen in accordance with the procedures and equipment specified by the standard stated above. These results were obtained from an outside source.

Berta Stiver

Authorized Signature

Date Order Completed: 07/19/2021