

Report Number :

BOMT21007974



Intertek India Private Limited

TEST REPORT

ULR - TC-589021121007974P

NUMBER : BOMT21007974
DATE : 19-Feb-2021

APPLICANT : Saftgard Technologies
Ground Floor, Ground Floor, Valson Dyeing Bleaching
and printing works,, Opp. Dreams Mall ,L.B.Shastrri Marg,
Bhandup West, Mumbai, Maharashtra, 400078, India
ATTN : Avinash Shivhare

Sample Description : Fibre pieces of submitted woven 100% cotton mask with filter
(middle layer).
Count/Construction: 60 x 60/92 x 88
Date Received/date Test Started : 13 Feb 2021
Date Confirmation Received : 13 Feb 2021
Buyer : NOT PROVIDED
Country of Origin : India
P.O.No : -
Fiber Content :
End Uses : Mask
Style :
Color : PINK
Article No :

**TEST CONDUCTED : AS PER THE REQUEST OF THE APPLICANT. FOR FURTHER DETAILS PLEASE
REFER TO ENCLOSED PAGE(S)**

AUTHORIZED BY
FOR Intertek India Private Limited - [Mumbai]



INDIRA DEVADIGA
LAB MANAGER

TEST REPORT

ULR - TC-589021121007974P

NUMBER : BOMT21007974

DATE : 19-Feb-2021

TEST CONDUCTED (AS REQUESTED BY THE APPLICANT)

1. Differential Pressure

EN 14683:2019, Annex C

1 Specimen	14.5 Pa/cm ²
2 Specimen	16.4 Pa/cm ²
3 Specimen	13.9 Pa/cm ²
4 Specimen	15.1 Pa/cm ²
5 Specimen	16.6 Pa/cm ²
Average : 15.3 Pa/cm ²	

END OF THE TEST REPORT

This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Addressee in respect of this report and only accepts liability to the Addressee insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute.

<http://www.intertek.com/terms>.

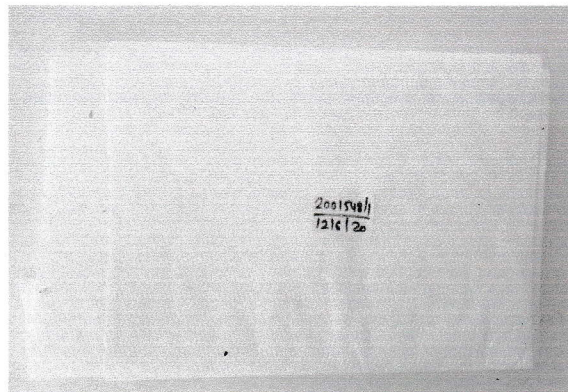
TEST REPORT

LAB NO. : 2001548/ 1

DATE: 19/06/2020

NAME OF CUSTOMER : M/S. MADHURAM POLY FILMS
ADDRESS : At ground floor 84 - A, Krishna Nagar Society,
Limbayat, Surat Gujarat, 394210,
REFERENCE : Letter Ref NIL dated June 08, 2020
DATE OF RECEIPT : 12/06/2020
DATE OF INITIATION : 12/06/2020
DATE OF COMPLETION : 19/06/2020
SAMPLE DESCRIPTION : TEST SAMPLE LABELED AS: -

Sr. No.	Description
1.	25GSM Melt Blown Fabric





BIOTECH TESTING SERVICES

Name of Test:

Bacterial Filtration Efficiency (BFE) of Medical Face Mask Sample Materials, using a Biological Aerosol of Staphylococcus aureus by ASTM: F 2101 - 19

Test Organism Used:

Staphylococcus aureus – ATCC 6538

Inoculum Size:

2.30×10^8 CFU/ ml

Test Equipment:

Aerosol challenge Apparatus with Nebulizer assembly and Cascade impactor

Flow Rate of Cascade Impactor:

28.3 L / min

Aerosol Size:

3 microns \pm 0.5

Procedure:

Test sample was clamped between cascade impactor and an aerosol chamber at a distance of 15 cms. Bacterial aerosol of bacteria – Staphylococcus aureus were generated in the chamber using the nebulizer assembly. Aerosols of test organisms of size 3 microns were drawn through the test material using a vacuum attached to cascade impactor. Positive control samples collected aerosol with no test specimen to determine the upstream aerosol counts. The ratio of upstream to downstream was reported as Percentage Bacterial Filtration efficiency. Following results are the Average of three readings.

Results:

Sample Identification	Average Bacterial count	BFE (Percentage)
25GSM Melt Blown Fabric	10	99.65
Positive Control	2.90×10^3	N. A.

INTERPRETATION:

Sample labeled as 25GSM Melt Blown Fabric; has exhibited 99.65% Bacterial Filtration Efficiency when analysed as per ASTM: F 2101 - 19 standard.



For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

2001548/1
Page 2 of 2

- Samples are not drawn by the laboratory
- Result relate only to the samples tested
- This report shall not be reproduced except in full without prior permission of this laboratory

TEST REPORT

LAB NO. : 2002329/ 1 - 2

DATE: 22/07/2020

NAME OF CUSTOMER : RAYMOND LUXURY COTTONS LIMITED

ADDRESS : Plot No.T-1, Kagal Hatkanagale Five Star Industrial Area,
Kasba Sangaon, Taluka: Kagal,
Dist.: Kolhapur, Maharashtra Pin- 416 236. INDIA

REFERENCE : Letter Ref. No.: Nil dated July 15, 2020
K. Attention: Yatin Khupekar

DATE OF RECEIPT : 15/07/2020

DATE OF INITIATION : 17/07/2020

DATE OF COMPLETION : 22/07/2020

SAMPLE DESCRIPTION : Fabric Sample Labeled as - (Samples Attached)
Concentration used: Saraguard FL (Sarex)
Chemical Used in GPL: 50

Sr. No.	Fabric details	Sample Identification	Raymond Sample Description	washes
1.	50/1CX50/1C, 58X40,	FW15783	White	Original
2.	50/1CX50/1C, 58X40,	FW15783	White	after 30 washes



Purpose of Test:

Antiviral Activity of Fabric

Name of Test:

Evaluation of Antimicrobial Activity by AATCC Test Method 100-2012

Test Microorganism Information:

MS2 Bacteriophage (MS2) is an RNA virus of the family Leviviridae. Escherichia coli 15597 are the hosts for MS2 bacteriophages. Due to its environmental resistance, MS2 bacteriophages are used as a surrogate virus (particularly in place of Picornaviruses such as Poliovirus and human Norovirus) in water quality and Antimicrobial studies.

Virus: MS2 Bacteriophage

Permissive Host Cell: Escherichia coli ATCC 15597

Test Parameters used in Study:

Sample size	: 48 mm discs
No. of swatches used	: 3 (0.75 g)
Method of Sterilization of sample	: Autoclaving
Viral Inoculum Volume	: 0.5 ml; 1.50×10^5 PFU/ ml
Host Cell Line	: E. coli 15597
Dilution Medium	: Phosphate Buffered Saline (PBS)
Contact Time	: 30 minutes and 2 hours at 35°C
TSA Neutralizer	: 10 ml D/E broth
Assay Medium	: 50% TSA agar
Incubation Period	: 48 hours

Procedure:

1. Test and control fabrics are cut into appropriately-sized swatches of 50 mm diameter and stacked. The numbers of swatches taken are enough to absorb the entire liquid inoculum of 0.5 ml quantity.
2. Stock virus is standardized to prepare a test inoculum.
3. Test and control materials are inoculated with the test virus, and incubated in a humid environment at 35⁰C temperature for 30 minutes and 2 hours contact time.
4. The viral concentration is determined at "Time Zero" to verify the target inoculums using plaque assay techniques. Assay plates are incubated for 48 hours for the virus-host cell system.
5. After the incubation period, following neutralization, the carrier suspensions are quantified to determine the levels of infectious virus survived and the assay is scored for titre of test virus.
6. Adequate control is implemented to verify neutralization effectiveness of the antimicrobial agent with Neutralizer used.
7. Percent reductions are computed for test fabric relative to the Time Zero enumeration(s), and reported.

Results:

Fabric swatches in contact with individual test cultures for 30 minutes and 2 hours at 37⁰ C showed the following results:-

Sample Identification	Test Organism: MS2 Bacteriophage				Log Reduction of Virus at 30 min	Percentage Reduction of Virus at 30 min	MS2 Bacteriophage		Log Reduction of Virus at 2 hours	Percentage Reduction of Virus at 2 hours
	Average PFU/Carrier at 0 hours (B)		Average PFU/Carrier at 30 min (A)				Average PFU/Carrier at 2 hours (A)			
	PFU	log	PFU	log			PFU	log		
50/1CX50/1C, 58X40, FW15783 Original	6.50 x10 ⁴	4.80	50	1.69	3.11	99.92	<10	<1	>3.80	>99.99
50/1CX50/1C, 58X40, FW15783 after 30 washes			1.00x10 ²	2.00	2.80	99.84	3.00x10 ⁵	2.47	2.33	99.53
Untreated lab control			1.00x10 ⁵	5.00	0.00	0.00	1.50x10 ⁵	5.17	0.00	.00

REMARKS:

1. PFU: Plaque Forming Unit = No. of Microorganisms
2. Percentage Reduction = $(B - A / B) \times 100$
3. Log reduction Log (B/A)

Where:

B = Number of viable test microorganisms on the control carriers immediately after inoculation

A = Number of viable test microorganisms on the test carriers after the contact time

INTERPRETATION:

Fabric labeled as 50/1CX50/1C, 58X40, FW15783 - Original has shown 99.92% and >99.99% reduction of Virus; 50/1CX50/1C, 58X40 - FW15783 - After 30 washes has shown 99.84% and 99.53% reduction of Virus in 30 minutes and 2 hours when analyzed as per AATCC 100 - 2012 test Method using MS2 Bacteriophage as surrogate virus.

Disclaimer:

Bacteriophages are viruses of Bacteria. They are suitable only as a Preliminary screen in the development of germicidal product. Due to variation in virus antigen, for specific virucidal claims, test should be conducted specifically with that virus

For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

Applicant : SAREX CHEMICALS
Contact Person : DR. MANASI DAMLE
Address : 501, WATERFORD, 'C' WING C.D. BARFIWALA, MARG, ZAILAWAD NANAR,
LANE, ANDHERI WEST, MUMBAI, MAHASHASTRA 400058

Sample not drawn by TUV Rheinland (India) Pvt. Ltd.

Sample Description : Polyester, Cotton, Polyamide fabric
Buyer : Self-Reference
Style No. : Cotton (Unfinished, Finished, Finished-50HL), Polyester (Unfinished, Finished,
Finished-50HL), Polyamide (Unfinished, Finished, Finished-50HL)
PO No : Not Provided
Article No : Not Provided
Colour Name : White Pearl, Purple, Pink
Fiber Content : Not Provided
End Use : Not Provided
Country of Destination : India
Sample Receiving Date : 31st July, 2019
Testing Period : 31st July, 2019 to 08th August, 2019
Sample Condition : Sample was received in good condition
Applicant's Provided Care Instruction/Label : ---

For and on behalf of
TÜV Rheinland (India) Pvt. Ltd.



Kulwant Singh
Technical Executive (Soft lines)

Test result is drawn according to the kind and extent of tests performed.

Without permission of the test centre this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products. This test report represents the test parameters as requested by the customer based on submitted samples only.

Conclusion:

Test Property	Pass	Fail	Remark
Evaluation of Antimicrobial Activity#			Refer Results

Remark: As Per Supplier's Request Testing Has Been Conducted For Their Self-Reference Only.

#-Above test was subcontracted to ISO 17025 accredited laboratories

THIS IS TO SUPERSEDE REPORT NO. 0192423756 DATED 08 AUGUST 2019. THE TEST REPORT NO. 0192423756 DATED 08 AUGUST 2019. HAS BEEN REVISED TO UPDATE TEST RESULTS AS PER APPLICANT REQUEST.

Material List:

Component no	Material	Colour	Description
M001	Textile	Pearl White	Polyester Unfinished
M002	Textile	Pearl White	Polyester -60g/l Saraguard-FL finished
M003	Textile	Pearl White	Polyester -60g/l Saraguard-FL 50 HL
M004	Textile	Purple	Polyamide Unfinished
M005	Textile	Purple	Polyamide- 60g/l Saraguard-FL finished
M006	Textile	Purple	Polyamide- 60g/l Saraguard-FL 50 HL
M007	Textile	Pink	Cotton- Unfinished
M008	Textile	Pink	Cotton- 90g/l Saraguard-FL finished
M009	Textile	Pink	Cotton- 90g/l Saraguard- FL 50 HL

Test Results:**Evaluation of Antimicrobial Activity**

(AATCC 100)

I. Discipline: Biological testing**1. Sub – group: Textile****I] Name of the Test:**Evaluation of Antimicrobial Activity by **AATCC 100-2012****II] Test Organisms:**

- *Staphylococcus aureus* ATCC 6538
- *Klebsiellapneumoniae* ATCC 4352

III] Additional Test Information:

- a. Sample Size: 48± 1 mm discs
- b. No. of swatches used: 4
- c. Method of Sterilisation: U.V. Exposure
- d. Neutralizer: Dey Engley Neutralizing Broth
- e. Dilution Medium: Sterile Distilled water
- f. Incubation conditions: 37⁰C for 24 hours

IV] Test Results

Sample Code	Test organisms	No. of Bacteria per sample (CFU/Sample) at		Percentage Reduction of Bacteria (R)
		'0' hr (B)	'24' hr (A)	
M001	Staphylococcus aureus	1.54 x 10 ⁵	1.45 x 10 ⁶	No Reduction
	Klebsiella pneumoniae	1.95 x 10 ⁵	5.55 x 10 ⁶	No Reduction
M002	Staphylococcus aureus	1.61 x 10 ⁵	2.05 x 10 ¹	99.98 %
	Klebsiella pneumoniae	1.99 x 10 ⁵	1.23 x 10 ²	99.93 %
M003	Staphylococcus aureus	1.62 x 10 ⁵	2.8 x 10 ⁴	82.76 %
	Klebsiella pneumoniae	2.04 x 10 ⁵	7.95 x 10 ⁶	74.21%
M004	Staphylococcus aureus	1.94 x 10 ⁵	2.13 x 10 ⁶	No Reduction
	Klebsiella pneumoniae	1.88 x 10 ⁵	4.25 x 10 ⁶	No Reduction
M005	Staphylococcus aureus	1.37 x 10 ⁵	2.85 x 10 ¹	99.97 %
	Klebsiella pneumoniae	1.85 x 10 ⁵	3.95 x 10 ²	97.87 %

Sample Code	Test organisms	No. of Bacteria per sample (CFU/Sample) at		Percentage Reduction of Bacteria (R)
		'0' hr (B)	'24' hr (A)	
M006	Staphylococcus aureus	1.54 x 10 ⁵	3.65 x 10 ¹	99.97 %
	Klebsiella pneumoniae	2.17 x 10 ⁵	5.15 x 10 ⁶	72.33%
M007	Staphylococcus aureus	1.48 x 10 ⁵	1.35 x 10 ⁶	No Reduction
	Klebsiella pneumoniae	2.05 x 10 ⁵	1.96 x 10 ⁶	No Reduction
M008	Staphylococcus aureus	1.61 x 10 ⁵	2.05 x 10 ¹	99.98 %
	Klebsiella pneumoniae	1.79 x 10 ⁵	3.75 x 10 ⁶	82.35%
M009	Staphylococcus aureus	2.12 x 10 ⁵	2.10 x 10 ¹	99.99 %
	Klebsiella pneumoniae	2.29 x 10 ⁵	2.21 x 10 ⁶	77.32%

Note:

Percentage Reduction of Microorganism (R) = 100 (B-A)/B

*Small portion of the submitted sample is attached for your reference.

Sample Photo



-End of Test Report-

General Terms and Conditions of Business of TÜV Rheinland (India) Pvt Ltd

- 1. Scope**
 1.1 The following terms and conditions apply to agreed services including consultancy services, information, deliveries and similar services as well as ancillary services and other secondary obligations provided within the scope of contract performance.
- 1.2 If there is any conflict between these terms and conditions and the client's General Terms and Conditions of Business, including the client's Terms and Conditions of Purchasing, if any, these terms and conditions shall apply. No contractual terms and conditions of the client shall form part of the contract unless specifically referred to or incorporated in the documents forming the contract with the client.
- 2. Quotations**
 Unless otherwise agreed, all quotations submitted by TÜV Rheinland (India) Pvt Ltd shall be subject to change without notice.
- 3. Coming into effect and duration of contracts**
 3.1 The contract shall come into effect for the agreed term upon the quotation letter of TÜV Rheinland (India) Pvt Ltd or a separate contractual document being signed by both contracting parties, or upon the works requested by the client being carried out by TÜV Rheinland (India) Pvt Ltd. If the client instructs TÜV Rheinland (India) Pvt Ltd without receiving a prior quotation from TÜV Rheinland (India) Pvt Ltd (quotation), TÜV Rheinland (India) Pvt Ltd is – in its sole discretion – entitled to accept the order by giving written notice of such acceptance (including notice sent via electronic means) or by performing the requested services.
- 3.2 The contract term starts upon the coming into effect of the contract in accordance with article 3.1 and shall continue for the term agreed in the contract.
- 4. Scope of services**
 4.1 The scope of the services shall be decided solely by a unanimous declaration issued by both parties. If no such declaration exists, then the written confirmation of order by TÜV Rheinland (India) Pvt Ltd shall be decisive.
- 4.2 The agreed services shall be performed in compliance with the regulations in force at the time the contract is entered into.
- 4.3 Furthermore, TÜV Rheinland (India) Pvt Ltd is entitled to determine (in its sole discretion) the method and nature of the assessment unless otherwise agreed in writing or if mandatory provisions require a specific procedure to be followed.
- 4.4 On execution of the work there shall be no simultaneous assumption of any guarantee of the correctness (proper quality) and working order of either tested or examined parts nor of the installation as a whole and its upstream and/or downstream processes, organisations, use and application in accordance with regulations, nor of the systems on which the installation is based; in particular, no responsibility shall be assumed for the construction, selection of materials and assembly of installations examined, nor for their use and application in accordance with regulations unless these questions are expressly covered by the contract.
- 4.5 In the case of inspection work, TÜV Rheinland (India) Pvt Ltd shall not be responsible for the accuracy or checking of the safety programmes or safety regulations on which the inspections are based, unless otherwise expressly agreed in writing.
- 5. Performance periods/dates**
 5.1 The contractually agreed periods and dates of performance are based on estimates of the work involved which are prepared in line with the details provided by the client. They shall only be binding if confirmed as binding by TÜV Rheinland (India) Pvt Ltd in writing.
- 5.2 If binding periods of performance have been agreed, these periods shall not commence until the client has submitted all required documents to TÜV Rheinland (India) Pvt Ltd. This also applies, even without express approval by the client, to all extensions of agreed dates for performance not caused by TÜV Rheinland (India) Pvt Ltd.
- 6. The client's obligation to cooperate**
 6.1 The client shall guarantee that all cooperation required on its part, its agents or third parties will be provided in good time and at no cost to TÜV Rheinland (India) Pvt Ltd.
- 6.2 Design documents, supplies, auxiliary staff etc. necessary for performance of the services shall be made available free of charge by the client. Moreover, collaborative action of the client must be undertaken in accordance with legal provisions, standards, safety regulations and accident prevention instructions.
- 6.3 The client shall bear any additional cost incurred on account of work having to be redone or being delayed as a result of late, incorrect or incomplete information or lack of proper cooperation. Even where a fixed or maximum price is agreed, TÜV Rheinland (India) Pvt Ltd shall be entitled to charge extra for such additional expense.
- 7. Invoicing of work**
 7.1 If the scope of performance is not laid down in writing when the order is placed, invoicing shall be based on costs incurred. If no payment is agreed in writing, invoicing shall be in accordance with the TÜV Rheinland (India) Pvt Ltd price list valid at the time of performance.
- 7.2 Unless otherwise agreed, work shall be invoiced according to the progress of the work.
- 7.3 If the execution of an order extends over more than one month and the value of the contract or the agreed fixed price exceeds €2,500.00 converted into Indian Rupees at the prevailing exchange rates TÜV Rheinland (India) Pvt Ltd may demand payments on account or in instalments.
- 8. Payment terms**
 8.1 All invoice amounts shall be due for payment on receipt of the invoice, subject only to statutory deductions as per applicable tax laws. No discounts shall be granted.
- 8.2 Payments shall be made to the bank account of TÜV Rheinland (India) Pvt Ltd as indicated on the invoice, stating the invoice and customer numbers.
- 8.3 In cases of default of payment, TÜV Rheinland (India) Pvt Ltd shall be entitled to claim default interest at a rate of 18% p.a. At the same time, TÜV Rheinland (India) Pvt Ltd deserves the right to claim further damages.
- 8.4 Should the client default in payment of the invoice despite being granted a reasonable grace period, TÜV Rheinland (India) Pvt Ltd shall be entitled to cancel the contract, withdraw the certificate, claim damages for non-performance and refuse to continue performance of the contract. TÜV Rheinland (India) Pvt Ltd also reserves the right to publish the names of defaulting clients in public domain as may be fit and also meet any other requirements as prescribed by accreditation agencies/bodies.
- 8.5 The provisions set forth in article 8.4 shall also apply in cases involving returned cheques, cessation of payment, commencement of insolvency proceedings against the client's assets or cases in which the commencement of insolvency proceedings has been dismissed due to lack of assets.
- 8.6 Objections to the invoices of TÜV Rheinland (India) Pvt Ltd shall be submitted in writing within two weeks of receipt of the invoice.
- 8.7 TÜV Rheinland (India) Pvt Ltd shall be entitled to demand appropriate advance payments.
- 8.8 TÜV Rheinland (India) Pvt Ltd shall be entitled to raise its fees at the beginning of a month if overheads and/or purchase costs have increased. In this case, TÜV Rheinland (India) Pvt Ltd shall notify the client in writing of the rise in fees. This notification shall be issued one month prior to the date on which the rise in fees shall come into effect (period of notice of changes in fees). If the rise in fees remains under 5% per contractual year, the client shall not have any special right of termination. If the rise in fees exceeds 5% per contractual year, the client shall be entitled to terminate the contractual relationship by the end of the period of notice of changes in fees. If the contract is not terminated, the changed fees shall be deemed to have been agreed upon expiry of the above period.
- 8.9 Only legally established and undisputed claims may be offset against claims by TÜV Rheinland (India) Pvt Ltd.
- 9. Acceptance**
 9.1 Any part of the work ordered which is complete in itself may be presented by TÜV Rheinland (India) Pvt Ltd, for acceptance as an instalment. The client shall be obliged to accept it immediately.
- 9.2 If the client fails to fulfil its acceptance obligation immediately, acceptance shall be deemed to have taken place 4 calendar weeks after performance of the work if TÜV Rheinland (India) Pvt Ltd has specifically made the client aware of the aforementioned deadline upon performance of the service.
- 10. Confidentiality**
 10.1 For the purpose of this agreement, "confidential information" means all information, documents, images, drawings, know-how, data, samples and project documentation which one party (the "disclosing party") hands over, transfers or otherwise discloses to the other party (the "receiving party"). Confidential information also includes paper copies and electronic copies of such information.
- 10.2 The disclosing party shall mark all confidential information disclosed in written form as confidential before passing it on to the receiving party. The same applies to confidential information transmitted by e-mail. If confidential information is disclosed orally, the receiving party shall be appropriately informed in advance.
- 10.3 All confidential information which the disclosing party transmits or otherwise discloses to the receiving party in accordance with this agreement:
 a) may only be used by the receiving party for the purposes of performing the purpose of the contract, unless expressly otherwise agreed in writing with the disclosing party;
 b) may not be copied, distributed, published or otherwise disclosed by the receiving party, unless this is necessary for fulfilling the purpose of the contract or TÜV Rheinland (India) Pvt Ltd ... is required to pass on confidential information, inspection reports or documentation to the authorities or third parties that are involved in the performance of the contract;
 c) must be treated by the receiving party with the same level of confidentiality as the receiving party uses to protect its own confidential information, but never with a lesser level of confidentiality than that which is objectively required.
- 10.4 The receiving party shall disclose any confidential information received from the disclosing party only to those of its employees who need this information to perform the services required for the subject matter of this contract. The receiving party undertakes to oblige these employees to observe the same level of secrecy as set forth in this confidentiality clause.
- 10.5 Information for which the receiving party can furnish proof that:
 a) it was generally known at the time of disclosure or has become general knowledge without violation of this agreement; or
 b) it was disclosed to the receiving party by a third party entitled to disclose this information; or
 c) the receiving party already possessed this information prior to disclosure by the disclosing party; or
- d) the receiving party developed it itself, irrespective of disclosure by the disclosing party, shall not be deemed to constitute "confidential information" as defined in this agreement.
- e) It is mandated by law or by an order of the Courts to disclose such information.
- 10.6 All confidential information shall remain the property of the disclosing party. The receiving party hereby agrees to immediately (i) return all confidential information, including all copies, to (ii) destroy all confidential information, including all copies, and confirm the destruction of this confidential information to the disclosing party in writing, at any time if so requested by the disclosing party but at the latest and without special request after termination or expiry of this contract. This does not extend to include reports and certificates prepared for the client solely for the purpose of fulfilling the obligations under this contract, which shall remain with the client. However, TÜV Rheinland (India) Pvt Ltd is entitled to make file copies of such reports, certificates and confidential information that forms the basis for preparing these reports and certificates in order to evidence the correctness of its results and for general documentation purposes.
- 10.7 From the start of this contract and for a period of three years after termination or expiry of this contract, the receiving party shall maintain strict secrecy of all confidential information and shall not disclose this information to any third parties or use it for itself.
- 11. Copyrights**
 11.1 TÜV Rheinland (India) Pvt Ltd shall retain all exclusive and joint copyrights in the expert reports, test results, calculations, presentations etc. prepared by TÜV Rheinland (India) Pvt Ltd.
- 11.2 The client may only use expert reports, test results, calculations, presentations etc. prepared within the scope of the contract for the contractually agreed purpose.
- 11.3 The client may use test reports, test results, expert reports, etc. only complete and unshortened. Any publication or duplication for advertising purposes needs the prior written approval of TÜV Rheinland (India) Pvt Ltd.
- 12. Liability of TÜV Rheinland (India) Pvt Ltd**
 12.1 Irrespective of the legal basis and in particular in the event of a breach of contractual obligations and tort, the liability of TÜV Rheinland (India) Pvt Ltd for all damage, loss and reimbursement of expenses caused by legal representatives and/or employees of TÜV Rheinland (India) Pvt Ltd shall be limited to: (i) in the case of contract with a fixed overall fee, an amount equal to the overall fee for the entire contract; (ii) in the case of contracts for annually recurring services, an amount equal to the agreed annual fee; (iii) in the case of contracts expressly charged on a time and material basis to a maximum of Rs10,00,000/- (Rupees Ten Lacs only), and (iv) in the case of framework agreements that provide for the possibility of placing individual orders, to an amount equal to three times the fee for the individual order under which the damage occurred. The maximum liability of TÜV Rheinland (India) Pvt Ltd is limited in any event of damage or loss to the contract value/Rs. 10,00,000/- (Rupees Ten Lacs) whichever is lower.
- 12.2 The maximum liability of TÜV Rheinland (India) Pvt Ltd is limited in any event of damage or loss to the contract value/Rs. 10,00,000/- (Rupees Ten Lacs) whichever is lower.
- 12.3 TÜV Rheinland (India) Pvt Ltd shall not be liable for personnel made available by the client to support TÜV Rheinland (India) Pvt Ltd in the performance of its services regulated under this contract. The client shall indemnify TÜV Rheinland (India) Pvt Ltd against any claims made by third parties for all loss that may be caused to or suffered by TÜV Rheinland (India) Pvt Ltd due to acts of omission and commission by the client.
- 12.4 The limitation periods for claims for damages shall be based on statutory provisions.
- 12.5 None of the provisions of this article 12 changes the burden of proof to the disadvantage of the client.
- 13. Partial invalidity, written form, place of jurisdiction**
 13.1 No ancillary agreements to this contract have been concluded.
- 13.2 All amendments and supplements must be in writing in order to be effective; this also applies to amendments and supplements to the requirement for the written form.
- 13.3 Should one or several of the provisions under this contract be or become ineffective, the contracting parties shall replace the invalid provision with a legally valid provision that comes closest to the content of the invalid provision in legal and commercial terms.
- 13.4 The place of jurisdiction for all disputes arising in connection with this contract shall be Bangalore. This contract is governed by Indian substantive law.
- 13.5 All claims, disputes, differences, etc., arising out of and / or connected with the contract between TÜV and the client shall be resolved through arbitration to be conducted under the provisions of the Arbitration and Conciliation Act, 1996. The seat of arbitration shall be Bangalore, India. The Arbitral Tribunal shall comprise of a Sole Arbitrator to be nominated by the mutual consent of TÜV and the client. The arbitration proceedings shall be conducted in the English language only.
- 13.6 Subject to resolution of disputes through arbitration, only the Courts in Bangalore, India, shall be exclusive jurisdiction over all matters arising out of and / or connected with the contract between TÜV and the Client.

Revised: July 2012

TEST REPORT

LAB NO. : 2001052/ 2

DATE: 30/04/2020

NAME OF CUSTOMER : M/s. SAREX CHEMICALS

ADDRESS : 501, Waterford Building, 5th Floor,
C Wing, C. D. Barfiwala Marg (Juhu Gally),
Andheri (W), Mumbai 400 058

REFERENCE : Letter No. Nil dated April 27, 2020
Kind Attention: Dr Sanket Walia

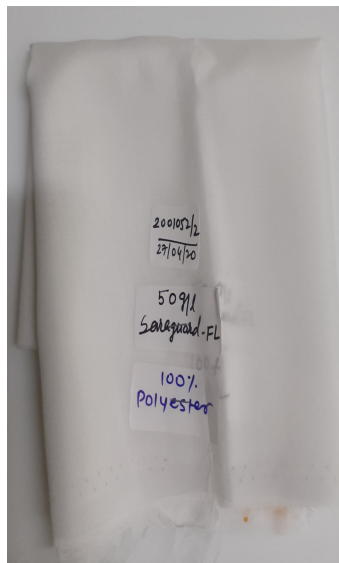
DATE OF RECEIPT : 27/04/2020

DATE OF INITIATION : 27/04/2020

DATE OF COMPLETION : 30/04/2020

SAMPLE DESCRIPTION : 100% Polyester Fabric labeled as:-

Sr. No.	Description
2.	50 gpl Saraguard - FL
-	Lab. Control Untreated



Purpose of Test:

Antiviral Activity of Fabric

Name of Test:

Evaluation of Antimicrobial Activity by AATCC Test Method 100-2012

Test Microorganism Information:

MS2 Bacteriophage (MS2) is an RNA virus of the family Leviviridae. Escherichia coli 15597 are the hosts for bacteriophages. Due to its environmental resistance, MS2 bacteriophages are used as a surrogate virus (particularly in place of Picornaviruses such as Poliovirus and human Norovirus) in water quality and Antimicrobial studies.

Virus: MS2 Bacteriophage

Permissive Host Cell: Escherichia coli ATCC 15597

Test Parameters used in Study:

Sample size	: 48 mm discs
No. of swatches used	: 0.75 grams
Method of Sterilization of sample	: Autoclaving
Viral Inoculum Volume	: 0.5 ml; 1.30×10^5 PFU/ ml
Host Cell Line	: Escherichia coli 15597
Dilution Medium	: Phosphate Buffered Saline (PBS)
Contact Time	: 2 hours and 24 hours at 35°C
TSA Neutralizer	: 10 ml D/E broth
Assay Medium	: 50% TSA agar
Incubation Period	: 48 hours

Procedure:

1. Test and control fabrics are cut into appropriately-sized swatches of 50 mm diameter and stacked. The numbers of swatches taken are 2 – 6 in order to absorb the entire liquid inoculum of 1 ml quantity.
2. Stock virus is standardized to prepare a test inoculum. The test inoculum supplemented with an organic soil load, if required.
3. Test and control materials are inoculated with the test virus, and incubated in a humid environment at 35⁰C temperature for the 2 hours and 24 hours contact time.
4. The viral concentration is determined at “Time Zero” to verify the target inoculum using standard cell culture (e.g. TCID₅₀) or plaque assay techniques. Assay plates are incubated for 48 hours for the virus-host cell system.
5. After the incubation period, following neutralization, the carrier suspensions are quantified to determine the levels of infectious virus survived and the assay is scored for titre of test virus.
6. Adequate control is implemented to verify neutralization effectiveness of the antimicrobial agent with Neutralizer used.
7. Percent reductions are computed for test fabric relative to the Time Zero enumeration(s), and reported.

Results:

Fabric swatches in contact with test organism for 2 hours & 24 hours at 35⁰ C showed the following results:-

Sample Identification	Test Organism: MS2 Bacteriophage				Log Reduction of Virus at 2 hours	Percentage Reduction of Virus at 2 hours	MS2 Bacteriophage		Log Reduction of Virus at 24 hours	Percentage Reduction of Virus at 24 hours
	Average PFU/Carrier at 0 hours (B)		Average PFU/Carrier at 2 hours (A)				Average PFU/Carrier at 24 hours (A)			
	PFU	log	PFU	log			PFU	log		
50 gpl Saraguard-FL	7.00x10 ⁴	4.84	20	1.30	3.54	99.97	<10	<1	>3.84	>99.98
Lab Control Untreated Fabric			9.00x10 ⁴	4.95	0.00	0.00	1.20x10 ⁵	5.07	0.00	0.00

REMARKS:

1. PFU: Plaque Forming Unit = No. of Microorganisms
2. Percentage Reduction = $(B - A / B) \times 100$
3. Log reduction Log (B/A)

Where:

B = Number of viable test microorganisms on the control carriers immediately after inoculation

A = Number of viable test microorganisms on the test carriers after the contact time

INTERPRETATION:

100% Polyester fabric labeled as **50 gpl Saraguard-FL** has shown **99.97%** and **>99.98%** reduction of Virus in 2 hours and 24 hours respectively when analyzed as per AATCC 100 - 2012 test Method using MS2 Bacteriophage as surrogate virus.

For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

TEST REPORT

LAB NO. : 2002604/ 2

DATE: 12/08/2020

NAME OF CUSTOMER : M/s. SAREX CHEMICALS

ADDRESS : 501, Waterford Building, 5th Floor,
C Wing, C. D. Barfiwala Marg (Juhu Gally),
Andheri (W), Mumbai 400 058

REFERENCE : Letter No. Nil dated July 31, 2020
Kind Attention: Dr Sanket walia

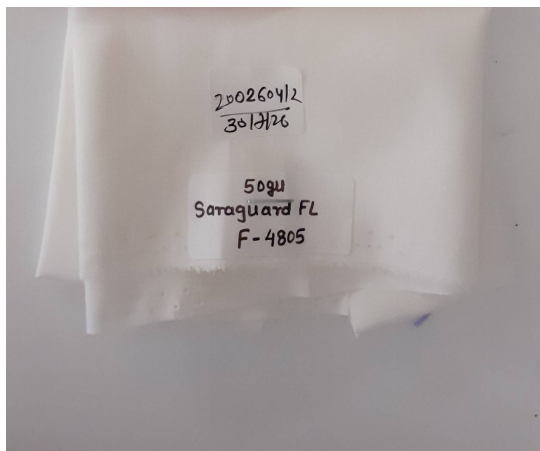
DATE OF RECEIPT : 31/07/2020

DATE OF INITIATION : 03/08/2020

DATE OF COMPLETION : 10/08/2020

SAMPLE DESCRIPTION : Fabric Sample Labeled as: -

Sr. No.	Description
2.	50 gpl Saraguard - FL



Name of Test and Test Standard:

Invitro Cytotoxicity test

Test Standard:

1. ISO 10993-5:2009 (E)- Biological evaluation of medical devices; Tests for in vitro cytotoxicity
2. ISO 10993-12:2004 (E) - Biological evaluation of medical devices; Sample preparation and reference materials.

Scope of test:

Test for cytotoxicity are designed to determine the biological response of mammalian cells to the test material/ Extract of test material. At the end of the exposure time, the evaluation of the presence and the extent of Cytotoxic effect is assessed. It signifies Biological compatibility of the test material and its potential to cause cell damage.

Cells line and Experimental details:

Cell line	:	L929 – Mouse Connective tissue; Used for assay for the below stated reasons
		<ul style="list-style-type: none">• Low maintenance• high correlation with specific animal assay• First cell types that attach to implanted medical devices.• Better reproducibility and accuracy of the cytotoxic response.
Passage No.	:	Cells from PN 168
Cell Culture Medium	:	Complete MEM medium with 10% FBS
Positive Control	:	0.001% SDS (Sodium Dodecyl sulphate) solution
Medium Control / Blank	:	Complete MEM medium with 10% FBS
Diluent	:	Complete MEM medium
Concentration used	:	10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% and 100% (neat)

Incubation Condition:

37°C with 5% Carbon dioxide atmosphere

Sample Preparation:

Representative portion of the supplied test sample was used for the assay.

Sample extraction:

1gm sample was sterilized at 121°C for 15mins to which 10 ml Complete MEM medium was added (0.01g/ml) and incubated at 37°C for 24 hrs.

Assay Principle:

MTT (3-(4, 5 dimethylthiazol-2-yl)-2,5 diphenyl tetrazolium bromide Cytotoxicity assay. Test procedure is based on measurement of viability of cells via metabolic activity. Yellow water soluble MTT is metabolically reduced in viable cells to a blue violet insoluble Formazan. The number of viable cells co-relates to the colour intensity determined by photometric measurement after dissolving the formazan in DMSO.

Assay Procedure:

L929 cells seeded in 96 well plates at a concentration of 10,000 cells per 100 µl of MEM culture medium per well were maintained in culture for 24 hours to form a semi confluent layer and were exposed to the test material over a range of concentration. After 24 hours exposure, Formazan formation is determined for each treatment concentration and compared to that determined in growth control.

For each treatment the percentage inhibition of growth is calculated by Viability of cells as per formula –

$$\text{Viability Percentage} = \frac{100 \times \text{O. D. 570 nm for extract}}{\text{O. D. 570 nm for blank}}$$

Evaluation criteria:

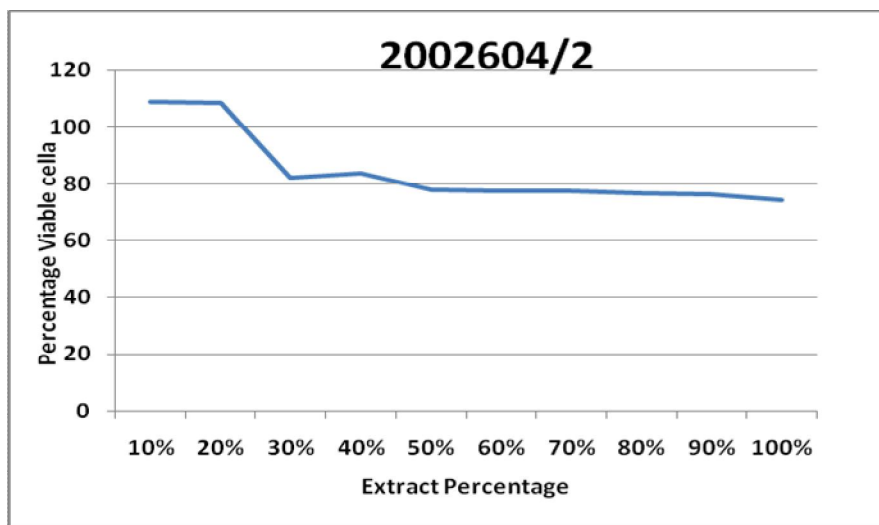
The lower the viability percentage value, the higher the cytotoxic potential.

The percentage viability of 100% test sample is < 70%, it has cytotoxic potential.

The percentage viability of 100% test sample is ≥ 70%, it is non cytotoxic.

Results:

2002604/2	Neg. control	Pos. control	Growth control	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
% cell viability	-	1.250	100	108.8	108.6	81.91	83.80	77.87	77.56	77.19	76.76	76.18	74.2
P value	-	-	-	0.35	0.35	0.31	0.32	0.22	0.22	0.22	0.21	0.21	0.21



INTERPRETATION:

1. For the assay, a concentration range from **10%- 100%** was maintained.
2. At all concentration set in the assay the sample was found to be Non toxic to the cells
3. The values obtained were statistically significant with a p-value <0.05.

CONCLUSION:

Test product labeled as **50 gpl Saraguard - FL** under the extract testing conditions is found to be **Non toxic** for the cells of cellular culture.

Disclaimer:

Any cytotoxic effect can be of concern. However, it is primarily an indication of potential for invivo toxicity and test material cannot necessarily be considered unsuitable for a given clinical application based solely on cytotoxicity data.

For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

ISO 18184:2019 Textiles- Determination of antiviral activity of textile products

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

Angela Davies, CEO

Customer: Sarex Chemicals

Contact name: Sanket Valia

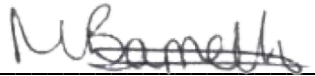
Email: sanket.valia@sarex.com

Address: 501 Waterford, C Wing C, D Barfiwala, Marg, Zalawad Nagar, Juhu Lane, Andheri West, Mumbai, Maharashtra 400058. India

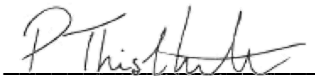
PO/Quote number: Q002802/1

Report Date: 05/08/2020

Issue Number: 1



Megan Barrett
Laboratory Manager



Peter Thistlethwaite
Technical Projects Manager

Test information		Deviation
Name of Product	Control – Unfinished Polyester 50gu Saraguard FL (Polyester)	/
Batch Number & Expiry Date	N/S	
Date of Delivery	N/S	
Period of Analysis	02/07/2020	
Manufacturer / Supplier	Sarex Chemicals	
Storage Conditions	Ambient	
Appearance of the Product	White fabric	
Neutralisation Method	Dilution	
Test Concentrations	As supplied	
Test Temperature	25°C ± 1°C	
Temperature of Incubation	37°C ± 1°C	
Identification of the Viral Strains:	Feline corona virus, Strain Munich Influenza H1N1 ATCC VR-1683	
Contact Times	2 hours ± 10s	

Test Result Summary

The test fabric showed the following log reductions when tested under the conditions stipulated in this report:

H1N1 2.00 log (99.00%), Feline coronavirus 2.07 log (99.15%)

The test results on this report refer only to the items tested as supplied by the customer. This report shall not be reproduced except in full and with written approval of Microbiological Solutions Ltd. All reports are archived for a minimum of 2 years.

The sample will be retained for 1 month unless otherwise requested in writing.

	Feline coronavirus	COVID-19 (SARS—CoV2)
Realm	Riboviria	Riboviria
Order	Nidovirales	Nidovirales
Family	Coronaviridae	Coronaviridae
Genus	Alphacoronavirus	Betacoronavirus
Species	Alphacoronavirus 1	COVID-19

The members of the family Coronaviridae are enveloped and have a positive sense RNA genome. Coronaviruses have a distinct morphology with an outer ‘corona’ of embedded envelope spikes. These viruses cause a broad spectrum of animal and human disease.

Andrew M.Q. King, Michael J. Adams, Eric B. Carstens, and Elliot J. Lefkowitz ‘Virus Taxonomy, Classification and Nomenclature of Viruses, Ninth Report of the International Committee on Taxonomy of Viruses’ 2012 ISBN 9780123846846

Scope

This standard outlines the test method for the determination of the antiviral activity of the textile products against specified viruses.

Method

A 20mmx20mm sample of test material is cut (overall mass should be 0.40g and can be made up with extra material if required). 9 control pieces are required and 6 test pieces.

3 pieces of each material are used to test the effect of the fabric on cells without virus (cytotoxicity), 3 control pieces are used to recover the starting titre of virus. The remaining pieces are inoculated with 200µl of virus at a concentration of $\sim 10^7$ TCID₅₀ (giving a final concentration of 10^5) and left for the contact time.

Following the contact time, the fabric is recovered in 20ml of cell culture media and enumerated onto an appropriate cell line. TCID₅₀ is calculated following the appropriate incubation time. Antiviral activity is calculated by comparison of the antiviral test material to the immediate recover from the control fabric.

Test Results Influenza H1N1

0 hours		
Sample	Log recovery	Average
Control 1	5.25	5.03
Control 2	5.04	
Control 3	4.79	

Controls		
Initial inoculum	7.04	Valid
Cytotoxicity Test 1	3.83	Valid
Cytotoxicity Test 2	3.88	Valid
Cytotoxicity Control 1	4.17	Valid
Cytotoxicity Control 2	4.13	Valid

50gu Saraguard FL (Polyester)

Contact time:2 hour				
Sample	Log recovery	Average	Reduction	Percentage
Control 1	4.25	4.32	0.71	80.43%
Control 2	4.33			
Control 3	4.38			
Test 1	3.00	3.03	2.00	99.00%
Test 2	3.08			
Test 3	3.00			

*Control fabric must not show >1 log reduction

Test Results Feline coronavirus

0 hours		
Sample	Log recovery	Average
Control 1	5.75	5.60
Control 2	5.58	
Control 3	5.46	

Controls		
Initial inoculum	7.42	Valid
Cytotoxicity Test 1	4.08	Valid
Cytotoxicity Test 2	4.00	Valid
Cytotoxicity Control 1	4.17	Valid
Cytotoxicity Control 2	4.17	Valid

50gu Saraguard FL (Polyester)

Contact time:2 hour				
Sample	Log recovery	Average	Reduction	Percentage
Control 1	4.38	4.67	0.93	88.27%
Control 2	5.13			
Control 3	4.50			
Test 1	4.04	3.53	2.07	99.15%
Test 2	3.21			
Test 3	3.33			

*Control fabric must not show >1 log reduction

ISO 18184:2019 Textiles- Determination of antiviral activity of textile products

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

Angela Davies, CEO

Customer: Sarex Chemicals

Contact name: Sanket Valia

Email: sanket.valia@sarex.com

Address: 501 Waterford, C Wing C, D Barfiwala, Marg, Zalawad Nagar, Juhu Lane, Andheri West, Mumbai, Maharashtra 400058. India

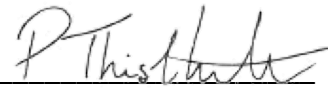
PO/Quote number: Q002802/1

Report Date: 05/08/2020

Issue Number: 1



Megan Barrett
Laboratory Manager



Peter Thistlethwaite
Technical Projects Manager

Test information		Deviation
Name of Product	Control – Unfinished Cotton Test 1 – 50gu Saraguard FL (Cotton)	/
Batch Number & Expiry Date	N/S	
Date of Delivery	N/S	
Period of Analysis	02/07/2020	
Manufacturer / Supplier	Sarex Chemicals	
Storage Conditions	Ambient	
Appearance of the Product	White fabric	
Neutralisation Method	Dilution	
Test Concentrations	As supplied	
Test Temperature	25°C ± 1°C	
Temperature of Incubation	37°C ± 1°C	
Identification of the Viral Strains:	Feline corona virus, Strain Munich Influenza H1N1 ATCC VR-1683	
Contact Times	2 hours ± 10s	

Test Result Summary

The test fabric showed the following log reductions when tested under the conditions stipulated in this report:

Test 1 – H1N1 1.93 log(98.83%), Feline coronavirus 2.50log (99.68%)

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The sample will be retained for 1 month unless otherwise requested in writing.

	Feline coronavirus	COVID-19 (SARS—CoV2)
Realm	Riboviria	Riboviria
Order	Nidovirales	Nidovirales
Family	Coronaviridae	Coronaviridae
Genus	Alphacoronavirus	Betacoronavirus
Species	Alphacoronavirus 1	COVID-19

The members of the family Coronaviridae are enveloped and have a positive sense RNA genome. Coronaviruses have a distinct morphology with an outer ‘corona’ of embedded envelope spikes. These viruses cause a broad spectrum of animal and human disease.

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Scope

This standard outlines the test method for the determination of the antiviral activity of the textile products against specified viruses.

Method

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Following the contact time, the fabric is recovered in 20ml of cell culture media and enumerated onto an appropriate cell line. TCID₅₀ is calculated following the appropriate incubation time. Antiviral activity is calculated by comparison of the antiviral test material to the immediate recover from the control fabric.

Test Results Influenza H1N1

0 hours			Controls		
Sample	Log recovery	Average	Initial inoculum	7.04	Valid
Control 1	5.04	5.06	Cytotoxicity Test 1	4.00	Valid
Control 2	4.96		Cytotoxicity Test 2	3.79	Valid
Control 3	5.17		Cytotoxicity Control 1	4.08	Valid
			Cytotoxicity Control 2	4.04	Valid

- 50gu Saraguard FL (Cotton)

Contact time:2 hour				
Sample	Log recovery	Average	Reduction	Percentage
Control 1	4.25	4.17	0.89	87.08%
Control 2	4.25			
Control 3	4.00			
Test 1	3.25	3.13	1.93	98.83%
Test 2	3.08			
Test 3	3.04			

*Control fabric must not show >1 log reduction

Test Results Feline coronavirus

0 hours		
Sample	Log recovery	Average
Control 1	5.88	5.83
Control 2	5.96	
Control 3	5.67	

Controls		
Initial inoculum	7.42	Valid
Cytotoxicity Test 1	4.08	Valid
Cytotoxicity Test 2	4.17	Valid
Cytotoxicity Control 1	4.38	Valid
Cytotoxicity Control 2	4.13	Valid

- 50gu Saraguard FL (Cotton)

Contact time:2 hour				
Sample	Log recovery	Average	Reduction	Percentage
Control 1	5.13	4.94	0.89	87.08%
Control 2	5.13			
Control 3	4.58			
Test 1	3.58	3.33	2.50	99.68%
Test 2	3.13			
Test 3	3.29			

*Control fabric must not show >1 log reduction