

TEST REPORT

R2212HOC0957FT-03-V2

HOCK JOO TEX
ENTERPRISES PTE.LTD

11/01/2023



R2212HOC0957FT-03-V2

Determination of virucidal activity of product **MG Series Fabrics** against SARS CoV-2, Omicron Variant with a contact time of 120 minutes at 25°C according to the **ISO 18184 (2019)**.

CLIENT	<p>HOCK JOO TEX ENTERPRISES PTE.LTD 42 Kaki Bukit Place 416220 Singapore – Singapore</p>
SERVICE PROVIDER / PLACE OF TESTING	<p>SAS VirHealth 321 Avenue Jean Jaurès Centre d’Innovation Bâtiment Domilyon 69007 Lyon – France</p>
TECHNICAL CONTRIBUTION	<p>Léa Szpiro, Head of Laboratory Department Quentin Ascenzi, Surface Laboratory Technician</p>

Quality Approval	Technical Approval
<p>Name: Elena Giaufret Function: System Quality Manager</p> <p>Done at: Lyon Date: 12/01/2023</p> <p>Signature:</p> <p>.....</p>	<p>Name: Damien Poizat Function: Technical Quality Manager</p> <p>Done at: Lyon Date: 12/01/2023</p> <p>Signature:</p> <p>.....</p>

This report contains 10 pages

SUMMARY

- I. CONCLUSION4
 - 1. SARS CoV-2, Omicron Variant, 120 minutes of contact time.....4
- II. CONTRACTUAL DOCUMENTS5
- III. DATA ON SAMPLES AND TEST CONDITIONS6
 - 1. Samples identification (information provided by client)6
 - 2. Experimental conditions.....6
- IV. RESULTS7
 - 1. Results on SARS CoV-2, Omicron Variant.....7
 - a. Cell susceptibility7
 - b. Determination of cytotoxicity7
 - c. Inactivation of antiviral activity.....7
 - d. Test.....7
- V. APPENDICES.....9
 - 1. Materials and reagents9
 - a. Cells and viral strains9
 - b. Preparation of reagents9
 - 2. Raw data – SARS CoV-2, Omicron Variant.....10
 - a. Control and test10



I. CONCLUSION

1. SARS CoV-2, Omicron Variant, 120 minutes of contact time

Under experimental conditions (120 minutes at 25°C), the MG Series Fabrics textile shows an antiviral activity associated with a logarithmic reduction of 1.7 log₁₀ (98.00%) according to the ISO 18184 (2019) protocol.

Product	Contact time	Experimental conditions	Antiviral activity Mv (log ₁₀)	Antiviral activity (%)
MG Series Fabrics	120 minutes	25°C	1.7	98.00

II. CONTRACTUAL DOCUMENTS

The VirHealth company has been asked to carry out tests according to the standard
ISO 18184 (2019)

Addition and/or deviation from the reference method of the above-mentioned standard: None

On behalf of the company HOCK JOO TEX ENTERPRISES PTE.LTD

The test was carried out on the following combination of textiles:

Active textile: MG Series Fabrics

Non-active textile: Cotton control

The results and any conclusion in this report apply to the sample as it was provided

The present performance is defined by the following documents

Quote N°0957 from 28/07/2022

This version of the report R2212HOC0957FT-03-V2 cancels and replaces the initial version of the report R2212HOC0957FT-03-V1.

III. DATA ON SAMPLES AND TEST CONDITIONS

1. Samples identification (information provided by client)

Name of the active textile: MG Series Fabrics	
Packaging: 1 textile	Date of receipt: 08/08/2022
Composition: Tetoron 65%, Rayon 35%	
Colour: Navy Blue	
Weight: 190g/m ²	Antiviral dosage: Sanitized AG T27-22: 2%
Name of the control textile: Cotton control	
Packaging: 1 textile	Date of receipt: Not Concerned
Colour: White	
Supplier: HOCK JOO TEX ENTERPRISES PTE.LTD	
Storage conditions: 33°C +/- 1°C, less sunlight	

2. Experimental conditions

Date of testing	23/12/2022
Micro-organisms	SARS CoV-2, Omicron Variant
Inoculum volume	200µL
Contact times	120 minutes
Contact temperature	25°C ±1
Neutralization method	Submerging in 20 ml of SCDLP Medium
Quantification method	Endpoint titration on permissive cells
Number of wells / dilutions	8
Incubation temperature	37°C ±1

IV. RESULTS

1. Results on SARS CoV-2, Omicron Variant

Antiviral activity of MG Series Fabrics textile against SARS CoV-2, Omicron Variant for a contact time of 120 minutes at 25°C.

a. Cell susceptibility

Textile	log ₁₀ TCID ₅₀ / mL	
SCDLP Medium	6.7	
MG Series Fabrics Active textile	6.9	
Cotton control Control textile	6.9	
Active textile difference ≤ 0.5 log ₁₀	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Control textile difference ≤ 0.5 log ₁₀	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

b. Determination of cytotoxicity

The test textile cytotoxicity is determined by reading the cytopathic effect (CPE) on VERO E6 permissive cells and quantified by the TCID₅₀ technique.

For a viral recovery on the textile, the textiles are submerged in 20 ml of SCDLP medium (recuperation buffer). The recuperation buffer cytotoxicity is determined by reading the cytopathic effect (CPE).

Under the test conditions, the recuperation buffers from MG Series Fabrics and Cotton control textile did not show cytopathic effects on VERO E6 cells for a contact time of 120 minutes at 25°C.

c. Inactivation of antiviral activity

Textile	log ₁₀ TCID ₅₀ / mL	
MG Series Fabrics Active textile	5.0	
Cotton control Control textile	4.9	
log ₁₀ (TCID ₅₀ /ml of control textile) - log ₁₀ (TCID ₅₀ /ml of active textile) ≤ 0.5		
	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

d. Test

The raw data for activity of textile MG Series Fabrics and for control textile against SARS CoV-2, Omicron Variant under the test conditions (120 minutes at 25°C) are presented in the appendices.

The results have been determined by a visual reading of the cytopathic effects (CPE) and quantified by the TCID₅₀ technique on VERO E6 cells.

See Table 1 – Results by cytopathic reading

Table 1 – Results by cytopathic reading

Control Textile	Cytotoxicity (log ₁₀ TCID ₅₀)	Specimen	V _a (log ₁₀ TCID ₅₀)	V _b ₁₂₀ (log ₁₀ TCID ₅₀)
Cotton control	0.5	L1	4.8	3.8
		L2	4.8	3.8
		L3	4.8	3.8
		Average	4.8	3.8
		M (log ₁₀ TCID ₅₀)	/	1.0

Active Textile	Cytotoxicity (log ₁₀ TCID ₅₀)	Specimen	V _a ' (log ₁₀ TCID ₅₀)	V _c ₁₂₀ (log ₁₀ TCID ₅₀)
MG Series Fabrics	0.5	L1	4.9	3.2
		L2	4.8	2.8
		L3	4.8	3.2
		Average	4.8	3.1
		M _v (log ₁₀ TCID ₅₀)	/	1.7

Explanations

- M is the reduction value (V_a-V_b₁₂₀)
- log (V_a) is the average of the common logarithm of the number of TCID₅₀ recovered from three untreated test specimens immediately after inoculation
- log (V_b) is the average of the common logarithm of the number of TCID₅₀ recovered from three untreated test specimens
- M_v is the antiviral activity value (V_a-V_c₁₂₀)
- log (V_a') is the average of the common logarithm of the number of TCID₅₀ recovered from three treated test specimens immediately after inoculation
- log (V_c) is the average of the common logarithm of the number of TCID₅₀ recovered from three treated test specimens

The logarithmic reduction value M of the number of TCID₅₀ recovered immediately after inoculation from untreated test specimen satisfies the requirement below: (V_a – V_b) ≤ 1.0

The minimal quantification of the suspension test is 10⁷ TCID₅₀/mL



V. APPENDICES

1. Materials and reagents

a. Cells and viral strains

	Name	Number of passages	Batch number	Quantification
Cell	VERO E6 (ATCC® CRL-1586TM)	6	090821	N.A.
Viral strain	SARS CoV-2, Omicron Variant (BA.5)	N.A.	OM1122-1	10 ⁸ TCID ₅₀ /mL

b. Preparation of reagents

Preparation	Source product used	Batch number	Expiration date	Final solution	Internal batch number	Expiration date
Medium & Complements	DMEM 4.5 g/L	MS01GL	07/07/2024	N.A.	N.A.	N.A.
	Antibiotics	MS01FL	08/12/2023	N.A.	N.A.	N.A.
	L-Glutamine	MS01GD	03/07/2024	N.A.	N.A.	N.A.
	FCS	S73136	09/04/2024	Complemented medium	251122-DMEM	25/12/2022



2. Raw data – SARS CoV-2, Omicron Variant

a. Control and test

Product	Contact time	Dilutions (-log)							
		P	1	2	3	4	5	6	7
Cytotoxicity									
Cotton control	120 minutes	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
MG Series Fabrics	120 minutes	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
Cell susceptibility									
SCDLP Medium	/	44444444	44444444	44444444	44444444	44444444	40400000	00000000	00000000
Cotton control	/	44444444	44444444	44444444	44444444	44444444	00440040	00000000	00000000
MG Series Fabrics	/	44444444	44444444	44444444	44444444	44444444	04440000	00000000	00000000
VA/VA'									
Cotton control	0	44444444	44444444	11111111	00000000	00000000	00000000	00000000	00000000
	0	44444444	44444444	11111111	00000000	00000000	00000000	00000000	00000000
	0	44444444	44444444	11111111	00000000	00000000	00000000	00000000	00000000
MG Series Fabrics	0	44444444	44444444	44444444	04000000	00000000	00000000	00000000	00000000
	0	44444444	44444444	44444444	00000000	00000000	00000000	00000000	00000000
	0	44444444	44444444	44444444	00000000	00000000	00000000	00000000	00000000
Suppression of product's activity									
Cotton control	/	44444444	44444444	44444444	40000000	00000000	00000000	00000000	00000000
	/	44444444	44444444	44444444	40404000	00000000	00000000	00000000	00000000
	/	44444444	44444444	44444444	40401000	00000000	00000000	00000000	00000000
MG Series Fabrics	/	44444444	44444444	44444444	04000000	00000000	00000000	00000000	00000000
	/	44444444	44444444	44444444	00000000	00000000	00000000	00000000	00000000
	/	44444444	44444444	44444444	00104000	00000000	00000000	00000000	00000000
Test									
Cotton control	120 minutes	44444444	44444444	44411111	00000000	00000000	00000000	00000000	00000000
	120 minutes	44444444	44444444	44411111	00000000	00000000	00000000	00000000	00000000
	120 minutes	44444444	44444444	44411111	00000000	00000000	00000000	00000000	00000000
MG Series Fabrics	120 minutes	44444444	12400000	00000000	00000000	00000000	00000000	00000000	00000000
	120 minutes	44444444	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	120 minutes	44444444	02200001	00000000	00000000	00000000	00000000	00000000	00000000

Explanations:

- 1-4: degrees of CPE in 8 cell culture unit (microtiter plate)
- 0: no virus present
- N.A.: not applicable
- N.D.: not done

END OF REPORT