BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 17486/ 1	DATE: 18/02/2019

NAME OF CUSTOMER : JSW PAINTS PRIVATE LIMITED

ADDRESS : Jindal Mansion, 5A, Dr G. Deshmukh marg
Mumbai - 400026

REFERENCE : Your letter Ref. No. Nil dated January 11, 2019
Kind Attention: Anirudh Neswankar

DATE OF RECEIPT : 11/01/2019

DATE OF INITIATION : 11/01/2019 & 06/02/2019

DATE OF COMPLETION : 04/02/2019 & 18/02/2019

SAMPLE DESCRIPTION : PAINT FILM SAMPLE LABELED AS: –

Sample Description
Halo Majestic Interiors Silk
Lab. Control Film

Name of Test:

Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated four week Agar Plate Assay

Test Method:

ASTM D 5590: 2017

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Procedure:

Paint is applied by brush coating to 4.2 cm filter paper. Care is taken to apply a thin, even coating, with the same thickness for all coating. After application, it is kept suspend to air dry for 72 hrs at room temperature. The samples are cut into 38 mm discs/ squares. These are placed on the center of pre-poured agar plates. A thin coat of fungal suspension is applied to each specimen using a sterile atomizer making sure the surface is covered, but not to over saturated. A set of positive and negative growth control is included. A set of Whatman #2 (or equivalent) filter papers or the drawdown papers without coating may be suitable growth control/ viability control. Incubate all plates at 28°C under 85 to 90 % relative humidity for 4 weeks.

Experimental conditions:

Size of sample	: 38 mm disc
Test fungus	: Mixed spore suspension of Aspergillus niger ATCC 9642, Penicillium funicolosum ATCC 11797 and Aurobasidium pullulans ATCC 15233
Incubation	: 28°C ± 90 % humidity

Results:

Visual/ Microscopic Assessment Report

Sample Description	Zone of Inhibition	Rating in Terms of Growth
Halo Majestic Interiors Silk	No zone	**0**
Whatman Filter paper - Viability control	No zone	**4**

Note: A large zone of inhibition indicates good biocidal effectiveness against the test organism(s), but it also suggests that the biocide is rapidly migrating out of the coating or has high potential for leaching.

Observation for Visible Effects:

Growth on specimen	Rating
None	0
Trace of Growth (< 10 %)	1
Light Growth (10 to 30 %)	2
Medium Growth (30 to 60 %)	3
Heavy Growth (60% to complete coverage)	4

INTERPRETATION:

Paint Film labeled as Halo Majestic Interiors Silk is **Resistant to fungal attack** at the end of 28 days of incubation when tested as per **ASTM: 5590: 2017** test method.

For BIOTECH TESTING SERVICES

BIOTECH TESTING SERVICES BTS MUMBAI

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

17486/1

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RGCB
DISCOVERIES FOR A BETTER TOMORROW

Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram 695014, Kerala State, India.
An Autonomous National Institute for Discovery, Innovation & Translation in Biotechnology and Disease Biology,
Government of India, Ministry of Science & Technology, Department of Biotechnology.

राजीव गाँधी जैव प्रौद्योगिकी केन्द्र, तिरुवनन्तपुरम 695 014, केरल, भारत.
जैवप्रौद्योगिकी और रोग जीवविज्ञान में आविष्कार, नवीनता एवं अनुवाद की स्वायत्त राष्ट्रीय संस्थान,
भारत सरकार विज्ञान एवं प्रौद्योगिकी मंत्रालय, जैवप्रौद्योगिकी विभाग.

Determination of inhibition of inactivated Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by Halo Majestic Interiors Silk

Rajiv Gandhi Centre for Biotechnology (RGCB)
Bio-Innovation Centre, KINFRA Film & Video Park, Sainik School Post,
Trivandrum – 695585, Kerala, India

Customer Name: JSW Paints Private Ltd.
Contact Name: Mr. Sandeep Kokane | V P Research and Development |
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Address: Vasind Works, Mumbai Nashik Highway,
Village Vasind, Tal. Shahapur, Dist. Thane Pin: 421 604
Maharashtra -INDIA

Sample's Information: Halo Majestic Interiors Silk
Sample Submission Date: 01/09/2020
Study date: 03/09/2020
Report date: 11/09/2020

1. Brief Note on Test Virus SARS-CoV-2

SARS-CoV-2 is a positive-sense, single-stranded RNA (ssRNA), group IV virus. It comprises of four structural proteins, namely, spike (S), nucleocapsid (N) envelope (E), and membrane (M). The S protein is responsible for virus attachment to the receptor and fusion with cell membrane. The N protein interacts with the viral RNA to form the ribonucleoprotein. The E protein helps in virions assembly and comprises ion channel actions; the M protein shares in the assembly of new virus particles. The structural genes of SARS-CoV-2 comprises the S, E, M, and N genes, while the nonstructural genes include the RNA-dependent RNA polymerase (RdRP) and main protease (Mpro) genes

2. Study protocol

- Test panel (20mmX 20mm square) was obtained by punching a hole in the sheet.
- 50 µl of virus (SARS-CoV-2- RGCB Isolate) was spotted on the sheet (Δ Ct 20).
- The samples were incubated for 120 minutes.
- 150 µl of neutralization buffer (1X) was added to retrieve the virus.
- RNAase treatment performed as per manufacturers instruction (Genelink,40-5101-01)
- RNA was isolated as per manufacturers instruction (ADT Biotech-Malaysia,811801/811803)
- qRT-PCR was performed to quantify the RNA content using Kit (Real Star SARS-CoV-2 RT-PCR kit 1.0, altona Diagnostics GmbH-Germany, 023005) as per manufacturers instruction.

3. Sample and experimental details

Sl. No.	Sample Number	Product Code	Batch Number	Identification marks
1	Blank	--	AN/2020/P11	
2	Halo Majestic Interiors Silk	D10010020	20H1005	

Note: Generally, in antiviral efficacy determination protocols, the virus post exposure to the test samples are allowed to grow on mammalian cells and the plaques are counted. This step is modified in the above protocol as growing COVID-19 wouldn't be safe.

4. Study result

In the present study SARS-CoV-2 specific RNA (E&S target gene) was not detected after 30 minutes (Halo Majestic Interiors Silk - D10010020) of treatment indicating rupturing of viral envelope whereas Blank panel shows non-significant reduction. It has significantly enhanced the antiviral log reduction and reduces viral infectivity by 99% reduction of virus in 30 minutes. The study was performed as per modified ISO18184:2019 protocol.

Sl. No.	Time (min)	Halo Majestic Interiors Silk – D10010020						Blank					
		SARS-CoV-2											
		E Gene			S Gene			E Gene			S Gene		
		Ct Value*	Delta Ct**	%Reduction in Viral load	Ct Value	Delta Ct	%Reduction in Viral load	Ct Value	Delta Ct	%Reduction in Viral load	Ct Value	Delta Ct	%Reduction in Viral load
1	BE	-	-	-	-	-	-	-	-	-	-	-	-
2	0	22	-	-	19	-	-	19	-		15	-	
3	5	25	3	>95	24	4	>95	19	0		15	0	
4	30	27	2	99	27	3	99	19	0		15	0	
5	45	ND	-	End point	ND	-	End point	20	1	NS	15	0	NS
6	60	ND	-	End point	ND	-	End point	20	0		16	1	
7	120	ND	-	End point	ND	-	End point	21	1		16	0	
8	PC	27	-	-	26	-	-	29	-		24	-	
9	NC	-	-	-	-	-	-	-	-	-	-	-	-

* mean of triplicates. ** Delta Ct of 3-4 corresponds to 1 log difference. ND-Not detected NS- non-significant PC-Positive control NC-Negative control

BE-Before expose

5. Quality Control

In accordance with the ISO15189:2012-certified Quality Management System, each lot of SARS-CoV-2 RT-PCR assay is tested against predetermined specifications to ensure consistent product quality

Dr. Radhakrishnan R. Nair
HOD

Dr. S. Dayakar
Program Scientist

Ms Heera R. Pillai
Quality Manager

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TEST REPORT

LAB NO. : 17348/ 1	DATE: 28/02/2019

NAME OF CUSTOMER : JSW PAINTS PRIVATE LIMITED

ADDRESS : Vasind, Shahapur,
Thane - 421604

REFERENCE : Your letter Ref. No. Nil dated December 26, 2018
Kind Attention: Anirudh Neswankar

DATE OF RECEIPT : 26/12/2018

DATE OF INITIATION : 26/12/2018

DATE OF COMPLETION : 28/02/2019

SAMPLE DESCRIPTION : Paint Sample labeled as : –

Sr. No.	Description
1.	Halo Majestic Interiors Silk
-	Untreated - Lab. Control

Name of Test:

Evaluation of Antimicrobial Activity of paint specimen

Name of Test Protocol:

JIS Z 2801: 2010

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Test Organisms used for evaluating Antimicrobial activity:

1. Staphylococcus aureus ATCC 6538
2. Escherichia coli ATCC 8739
3. Acinetobacter baumanii ATCC 19606
4. Shigella flexneri ATCC 9199
5. Serratia marcescens ATCC 14756
6. Pseudomonas aeruginosa ATCC 9027
7. Pseudomonas Stutzeri MTCC 101
8. Pseudomonas Putida ATCC 12633
9. Salmonella typhi ATCC 10749
10. Klebsiella pneumoniae ATCC 4352
11. Enterobacter aerogenes ATCC13048
12. Proteus mirabilis ATCC 14153
13. Bacillus cereus ATCC 6633
14. Vibrio cholerae 01 MTCC 3904
15. Streptococcus faecalis ATCC 9790
16. Enterococcus faecalis NCIM 5443
17. Bacillus subtilis ATCC 6633
18. Meticillin Resistant Staphylococcus aureus ATCC 43300
19. Nocardia rugosa NCIM 2290
20. Listeria moncytogenes ATCC 23074
21. Klebsiella pneumoniae ATCC 2146 - MBL strain
22. Salmonella enterica sub enterica ATCC 14028
23. Enterobacter sakazakii ATCC 51329
24. Escherichia coli ATCC 25922
25. Shigella flexneri ATCC 9199
26. Staphylococcus epidermidis ATCC 7919
27. Alkaligenes faecalis ATCC 8750
28. Corynebacterium minutissumum ATCC 23348
29. Streptococcus mutans ATCC 25175
30. Vancomycin Resistant Enterococcus AATCC 51299
31. Vancomycin Resistant Enterococcus ATCC 2006
32. Citrobacter freundii ATCC 8090
33. Sarcina MTCC 2210
34. Serratia marcescens ATCC 14756
35. Corynebacterium xerosis ATCC 7711
36. Enterococcus hirae ATCC 10541
37. Proteus vulgaris ATCC 13315
38. Clostridium perfringens ATCC 13124
39. Micrococcus luteus ATCC 10240
40. Klebsiella pneumoniae ATCC 700603 ESBL strain

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Test Conditions:

Neutralizer used : Buffered Saline with Tween 80 - 0.01 %

Contact Time : 24 hours at 37^0 C

Incubation Temperature : 37^0 C

Media and Reagent : Soyabean-casein digest agar

RESULTS: ANTIBACTERIAL ACTIVITY

1. Test Bacteria: **Staphylococcus aureus ATCC 6538**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			209000	5.32
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			254000	5.40
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.40**	**>99.99**

2. Test Bacteria: **Escherichia coli ATCC 8739**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			185000	5.27
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			205000	5.31
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1.00	**>4.31**	**>99.99**

3. Test Bacteria: **Acinetobacter baumanii ATCC 19606**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			440000	5.64
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			750000	5.88
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	1120	3.05	**2.83**	**99.85**

4. Test Bacteria: **Shigella flexneri ATCC 9199**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			570000	5.76
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			740000	5.87
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.87**	**>99.99**

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5. Test Bacteria: **Serratia marcescens ATCC 14756**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			790000	5.90
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			790000	5.90
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.90**	**>99.99**

6. Test Bacteria: **Pseudomonas aeruginosa ATCC 9027**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			96000	4.98
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			470000	5.67
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.67**	**>99.998**

7. Test Bacteria: **Pseudomonas Stutzeri MTCC 101**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			108000	5.03
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			124000	5.09
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	1240	3.09	**2.00**	**99.00**

8. Test Bacteria: **Pseudomonas Putida ATCC 12633**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			85000	4.93
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			147000	5.17
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<10	**>4.17**	**>99.99**

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9. Test Bacteria: **Salmonella typhi ATCC 10749**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			21300	4.33
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			127000	5.10
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.10**	**>99.99**

10. Test Bacteria: **Klebsiella pneumoniae ATCC 4352**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			430000	5.63
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			580000	5.76
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.76**	**>99.99**

11. Test Bacteria: **Enterobacter aerogenes ATCC13048**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			430000	5.63
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			570000	5.76
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.76**	**>99.99**

12. Test Bacteria: **Proteus mirabilis ATCC 14153**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			104000	5.02
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			201000	5.30
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	360	2.56	**2.75**	**99.82**

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13. Test Bacteria: **Bacillus cereus ATCC 6633**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			151000	5.18
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			178000	5.25
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	260	2.41	**2.84**	**99.854**

14. Test Bacteria: **Vibrio cholerae 01 MTCC 3904**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			224000	5.35
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			830000	5.92
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	>1	**>4.92**	**>99.99**

15. Test Bacteria: **Streptococcus faecalis ATCC 9790**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			178000	5.25
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			390000	5.59
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.59**	**>99.99**

16. Test Bacteria: **Enterococcus faecalis NCIM 5443**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			116000	5.06
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			500000	5.70
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.70**	**>99.99**

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17. Bacteria: **Bacillus subtilis ATCC 6633**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			11000	4.04
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			72000	4.86
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>3.86**	**>99.99**

18. Test Bacteria: **Meticillin Resistant Staphylococcus aureus ATCC 43300**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			290000	5.46
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			960000	5.98
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.98**	**>99.99**

19. Test Bacteria: **Nocardia rugosa NCIM 2290**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			730000	5.86
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			830000	5.92
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.92**	**>99.99**

20. Test Bacteria: **Listeria moncytogenes ATCC 23074**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			259000	5.41
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			274000	5.44
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.44**	**>99.99**

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21. Test Bacteria: **Klebsiella pneumoniae ATCC 2146 - MBL strain**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			217000	5.34
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			530000	5.72
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1.00	**>4.72**	**>99.99**

22. Test Bacteria: **Salmonella enterica sub enterica ATCC 14028**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			320000	5.51
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			650000	5.81
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.81**	**>99.99**

23. Test Bacteria: **Enterobacter sakazakii ATCC 51329**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			190000	5.28
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			205000	5.31
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.31**	**>99.99**

24. Test Bacteria: **Escherichia coli ATCC 25922**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			197000	5.29
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			510000	5.71
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.71**	**>99.99**

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25. Test Bacteria: **Shigella flexneri ATCC 9199**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			186000	5.27
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			570000	5.76
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.76**	**>99.99**

26. Test Bacteria: **Staphylococcus epidermidis ATCC 7919**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			300000	5.48
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			571000	5.76
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.76**	**>99.99**

27. Test Bacteria: **Alkaligenes faecalis ATCC 8750**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			298000	5.47
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			330000	5.52
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1.00	**>4.52**	**>99.99**

28. Test Bacteria: **Corynebacterium minutissumum ATCC 23348**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			150000	5.18
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			162000	5.21
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.21**	**>99.99**

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29. Test Bacteria: **Streptococcus mutans ATCC 25175**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			600000	5.78
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1230000	6.09
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>5.09**	**>99.99**

30. Test Bacteria: **Vancomycin Resistant Enterococcus AATCC 51299**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			610000	5.79
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1720000	6.24
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>5.24**	**>99.99**

31. Test Bacteria: **Vancomycin Resistant Enterococcus ATCC 2006**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			244000	5.39
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			580000	5.76
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.76**	**>99.99**

32. Test Bacteria: **Citrobacter freundii ATCC 8090**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			100000	5
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			120000	5.08
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R)** (Log B-C)	**Microbial Kill** (% Reduction)
Halo Majestic Interiors Silk	<10	<1	**>4.08**	**>99.99**

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33. Test Bacteria: **Sarcina MTCC 2210**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			150000	5.18
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			180000	5.26
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.26**	**>99.99**

34. Test Bacteria: **Serratia marcescens ATCC 14756**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			200000	5.30
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			250000	5.40
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>4.40**	**>99.99**

35. Test Bacteria: **Corynebacterium xerosis ATCC 7711**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			160000	5.20
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			172000	5.24
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	50	1.70	**3.54**	**99.97**

36. Test Bacteria: **Enterococcus hirae ATCC 10541**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			306000	5.49
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1050000	6.02
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	< 1	**5.02**	**>99.99**

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37. Test Bacteria: **Proteus vulgaris ATCC 13315**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			830000	5.92
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1300000	6.11
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	< 1	**5.11**	**>99.99**

38. Test Bacteria: **Clostridium perfringens ATCC 13124**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			73000	4.86
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1290000	6.11
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk Test - **Treated**	<10	<1	**>5.11**	**>99.99**

39. Test Bacteria: **Micrococcus luteus ATCC 10240**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			700000	5.85
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1350000	6.13
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1.00	**>5.13**	**>99.99**

40. Test Bacteria: **Klebsiella pneumoniae ATCC 700603 ESBL strain**

Quantitative Assessment of Activity - JIS Z 2801: 2010				
			CFU/ sample	Log
Lab Control: Conc. of Inoculum on untreated sample at 0 hours (A)			660000	5.82
Lab Control: Conc. of Inoculum on untreated sample after 24 hour (B)			1310000	6.12
Sample Identification	**No. Bacteria on treated sample (C)**	**Log of Bacteria on treated sample**	**Antimicrobial Activity (R) (Log B-C)**	**Microbial Kill (% Reduction)**
Halo Majestic Interiors Silk	<10	<1	**>5.12**	**>99.99**

The Standard Antimicrobial value of Evaluation R ≥ 2.0

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COMMENT:

Paint sample labeled as Halo Majestic Interiors Silk; PASSES the Quantitative Assessment of activity for Bacterial strains used in the present study conducted as per **JIS Z 2801: 2010 Test Method.**

For BIOTECH TESTING SERVICES

BIOTECH TESTING SERVICES BTS MUMBAI

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