TEST REPORT

REPORT NO. : BTS2401505-02	**DATE : 13-08-2024**
ULR NO. : TC848424100000674F	

NAME OF CUSTOMER	:	JSW PAINTS PRIVATE LIMITED
ADDRESS	:	Village - Vasind Taluka - Shahapur, Thane-421604 MAHARASHTRA, INDIA
REFERENCE	:	Reference Letter No. JSWP/ BTS/02/2024-25dated June 07, 2024 Kind Attention: Anirush Neswankar
DATE OF RECEIPT	:	10-06-2024
DATE OF INITIATION	:	15-06-2024
DATE OF COMPLETION	:	15-06-2024
SAMPLE DESCRIPTION	:	Leneta sample labeled as

Sample No.	Sample Details	
2401505/S01	**Sample-1**	
	Description	*Halo Majestic Interiors Luxglo*
2401505/S02	**Sample-2**	
	Description	*Control*
Untreated Lab Control		

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Name of Test :

JIS Z 2801: 2010; Amendment 1: 2012
Antibacterial products - Test for antibacterial activity & efficacy.

Test Organisms :

1. Staphylococcus aureus ATCC 6538
2. Escherichia coli ATCC 8739

Experimental Conditions

Sample Size	: 5cm x 5cm
No. of sets	: Triplicates
Pre-treatment of sample	: ETO Sterilisation
Inoculum Carrier	: 1:500 Nutrient Broth
Cover Film	: LDPE Film (4cm x 4cm)
Lab Control	: LDPE Film (5cm x 5cm)
Contact Time	: 24 hours at 35°C
Media and Reagent	: Soyabean-casein digest agar
Incubation Temperature	: 37°C for 48 hours
Neutrailiser Used	: SCDLP Broth

Compliance for Conditions of Valid test:

Test Organism	Logarithmic value of number of viable bacteria untreated sample at 0 hours (Lmax- Lmin)/ Lmean	Average number of viable bacteria recovered immediately after inoculation from the Untreated specimen	The number of viable bacteria recovered from each Untreated specimen after incubation at specified contact duration
Staphylococcus aureus ATCC 6538	0.002	Confirms	Confirms
Escherichia coli ATCC 8739	0.021	Confirms	Confirms
Acceptance	≤ 0.2	6.2×10^3 - 2.5×10^4 cells/cm^2	Shall not be less than 6.2×10^2 cells/cm ^{2} (ISO 22196: 6.2×10^1 cells/cm ^{2})

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Results:

ANTIBACTERIAL ACTIVITY

1. Test Organism : Staphylococcus aureus ATCC 6538

Quantitative Assessment of Activity : JIS Z 2801: 2010; Amendment 1: 2012			Av. Count	Log
Untreated Lab Control : Inoculum on untreated sample at 0 hours (U_0) CFU/cm²			11625	4.07
Untreated Lab Control : Inoculum on untreated sample at 24 hours (U_t) CFU/cm²			51875	4.71
Sample Identification	**No. of Bacteria on treated Sample (A_t) CFU/cm²**	**Log of Bacteria on treated sample (A_t)**	**Antimicrobial Activity R=(U_t-U_0) - (A_t-U_0)**	
2401505/S01 Sample-1	<6.25	<0.80	**>3.94 (>99.99%)**	**PASSES**
2401505/S02 Sample-2	38750	4.59	**0.13 (25.30%)**	**FAILS**

2. Test Organism : Escherichia coli ATCC 8739

Quantitative Assessment of Activity : JIS Z 2801: 2010; Amendment 1: 2012			Av. Count	Log
Untreated Lab Control : Inoculum on untreated sample at 0 hours (U_0) CFU/cm²			6875	3.84
Untreated Lab Control : Inoculum on untreated sample at 24 hours (U_t) CFU/cm²			214583	5.33
Sample Identification	**No. of Bacteria on treated Sample (A_t) CFU/cm²**	**Log of Bacteria on treated sample (A_t)**	**Antimicrobial Activity R=(U_t-U_0) - (A_t-U_0)**	
2401505/S01 Sample-1	<6.25	<0.80	**>4.55 (>99.99%)**	**PASSES**
2401505/S02 Sample-2	101875	5.01	**0.32 (52.06%)**	**FAILS**
The Standard Bacterial Effectiveness R > 2 log reduction				

****** *End of Report* ******

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For Biotech Testing Services LLP

Quality Manager
(Authorized Signatory)

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Annexure

2401505/S01	2401505/S02
	

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TEST REPORT

REPORT NO. : BTS2401506-02	**DATE : 17-08-2024**

NAME OF CUSTOMER	:	JSW PAINTS PRIVATE LIMITED
ADDRESS	:	Village - Vasind Taluka - Shahapur, Thane-421604 MAHARASHTRA, INDIA
REFERENCE	:	Reference Letter No. JSWP/BTS/02/2024-25 dated June 07, 2024 Kind Attention: Anirudh Neswankar
DATE OF RECEIPT	:	10-06-2024
DATE OF INITIATION	:	10-06-2024
DATE OF COMPLETION	:	12-07-2024
SAMPLE DESCRIPTION	:	Sample Labeled as:-

Sample No.	**Sample Details**	
2401506/S01	**Sample-1**	
	Description	*Halo Majestic Interiors Luxglo*
Whatman Filter paper - Viability control		

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Name of Test :

ASTM D 5590: 2017
Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated four weeks Agar Plate Assay

Experimental Conditions

Test Fungus	:	Mixed spore suspension (density adjusted to 0.8-1.2 x 10^6 spores/ ml) of Aspergillus niger ATCC 9642, Penicillium funicolosum ATCC 11797 Aurobasidium pullulans ATCC 15233 individually
Size of sample	:	28 x 28 mm square pieces
Media used	:	Potato Dextrose agar
Incubation	:	28°C/ ≥ 85% humidity for 4 weeks

Preparation of Test Specimen:

1. Paint was applied to a Whatman # 2 filter paper strip using a brush in triplicate.
2. After application, it was allowed to dry or cured at room temperature for 3 days.
3. After drying, sample was cut into 28 x 28 mm square pieces.

Note - The above instructions apply only if the sample is in liquid/paint form.

Procedure:

1. Spores of A. niger & P. funiculosum were mixed and A. pullulans was used separately.
2. Sample was placed in the centre of the plate and a thin coating of fungal suspension was applied by spraying onto the surface of the sample and the agar plate.
3. Plates were incubated at 280C under ≥ 85% RH for 4 weeks.
4. Plates were examined weekly for fungal growth.
5. Fungal growth on sample was rated based on following evaluation criteria.

Evaluation Criteria:

Development of fungus on the specimen and viability control is rated on a weekly basis for four weeks according to the rating scale.

Rating scale for evaluation of Results:

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

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Results:

Sample Description	Test Organism	Observations							
		1 week		2 weeks		3 weeks		4 weeks	
		Zone of Inhibition	Rating	Zone of Inhibition	Rating	Zone of Inhibition	Rating	Zone of Inhibition	Rating
2401506/S01	Mixed Spores	No zone	0	No zone	0	No zone	0	No zone	0
	Spores of A. pullulans	No zone	0	No zone	0	No zone	0	No zone	0
Whatman Filter paper - Viability control	Mixed Spores	No zone	4	No zone	4	No zone	4	No zone	4
	Spores of A. pullulans	No zone	3	No zone	4	No zone	4	No zone	4

****** *End of Report* ******

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Annexure

2401506/S01


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BIOTECH TESTING SERVICES LLP

TEST REPORT

REPORT NO. : BTS2401505-01	**DATE : 13-08-2024**

NAME OF CUSTOMER	:	JSW PAINTS PRIVATE LIMITED
ADDRESS	:	Village - Vasind Taluka - Shahapur, Thane-421604 MAHARASHTRA, INDIA
REFERENCE	:	Reference Letter No. JSWP/ BTS/02/2024-25dated June 07, 2024 Kind Attention: Anirush Neswankar
DATE OF RECEIPT	:	10-06-2024
DATE OF INITIATION	:	10-06-2024
DATE OF COMPLETION	:	15-06-2024
SAMPLE DESCRIPTION	:	Leneta sample labeled as

Sample No.	Sample Details	
2401505/S01	**Sample-1**	
	Description	*Halo Majestic Interiors Luxglo*
2401505/S02	**Sample-2**	
	Description	*Control*
Untreated Lab Control		

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Name of Test :

ISO 21702: 2019*
Measurement of Antiviral activity on plastics and other non-porous surfaces and coating materials

Scope of Method:

This test specifies a method for measuring antiviral activity on plastic and other non-porous surface of antiviral-treated products against specified virus. Due to individual sensitivities, the results of one test virus might not be applicable for other viruses.

Test Procedure:

Pre-sterilized samples were loaded with diluted viral suspension to 10^6 PFU/ ml. Virus suspension 0.4 ml was added to 50 mm x 50 mm of Test substrate. It was covered with 40 mm x 40 mm LDPE film. Following exposure time, Virus was eluted and neutralized by serial tenfold dilution and assayed to determined surviving Viruses in comparison with Control without test product in sq. cms. The virus assay was quantitative as Plaque forming unit (PFU) visible as area of Clearance.

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

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, tests should be conducted specifically with that virus.

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Experimental Conditions

Sample Size	: 5cm x 5cm
No. of sets	: Triplicates
Pre-treatment of sample	: ETO Sterilisation
Inoculum Carrier	: 1:500 Nutrient Broth
Cover Film	: LDPE Film (4cm x 4cm)
Lab Control	: LDPE Film (5cm x 5cm)
Contact Time	: 24 hours at 35°C
Media and Reagent	: Soyabean-casein digest agar
Incubation Temperature	: 37°C for 48 hours
Neutrailiser Used	: SCDLP Broth

Validation and Records:
Neutralizer Validation and Records:

Validation Test			
Test Organism	Experimental Condition Control (A) (PFU/ml)	Neutralizer Toxicity Control (B) (PFU/ml)	Dilution-neutralization Control (C) (PFU/ml)
MS2 Bacteriophage	52	54	56

Where –
A=No. of PFU/ml of Test organism in Experimental condition validation
B=No. of PFU/ml of Test organism in Neutralizer Toxicity validation
C=No. of PFU/ml of Test organism in Dilution Neutralization validation

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Results:

Antiviral activity at 2 hours

Quantitative Assessment of Antiviral Activity –ISO 21702: 2019			Av. Count	Log
Untreated Lab Control : Average No. of plaques recovered at 0 hrs (U_0) PFU/cm²			6.20 x 10^4	4.79
Untreated Lab Control : Average No. of plaques recovered at 2 hrs (U_t) PFU/cm²			7.20 x 10^4	4.85
Sample Identification	**Average No. of Plaques recovered from Treated (A_t) PFU/cm²**	**Log of Plaques recovered from Treated (A_t)**	**Antiviral Activity (R) (Log U_t - A_t)**	**Virus Percentage Reduction %**
2401505/S01 Sample-1	70	1.84	**3.01**	**99.90**
2401505/S02 Sample-2	41000	4.61	**0.24**	**43.05**

Antiviral activity at 24 hours

Quantitative Assessment of Antiviral Activity –ISO 21702: 2019			Av. Count	Log
Untreated Lab Control : Average No. of plaques recovered at 0 hrs (U_0) PFU/cm²			6.20 x 10^4	4.79
Untreated Lab Control : Average No. of plaques recovered at 24 hrs (U_t) PFU/cm²			8.50 x 10^4	4.92
Sample Identification	**Average No. of Plaques recovered from Treated (A_t) PFU/cm²**	**Log of Plaques recovered from Treated (A_t)**	**Antiviral Activity (R) (Log U_t - A_t)**	**Virus Percentage Reduction %**
2401505/S01 Sample-1	20	1.30	**3.62**	**99.97**
2401505/S02 Sample-2	38000	4.57	**0.35**	**55.29**
The Standard Bacterial Effectiveness R > 2 log reduction				

****** *End of Report* ******

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