



BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 2000302/ 1

DATE: 03/02/2020

NAME OF CUSTOMER : GREENLAM INDUSTRIES LIMITED

ADDRESS : Plot no. E - 176/179, Phase-II,
RIICO Industrial Area, P.O Behror,
Dist. Alwar

REFERENCE : Letter Ref. Nil dated January 24, 2020
K. Attention: GSRA Sharma

DATE OF RECEIPT : 24/01/2020

DATE OF INITIATION : 24/01/2020

DATE OF COMPLETION : 03/02/2020

SAMPLE DESCRIPTION : LAMINATE SAMPLE LABELED AS:-

Sr. No.	Description
1.	1.0 mm Greenlam High Pressure Decorative Laminated Sheets
Untreated – Lab Control	

Name of Test:

Evaluation of Antimicrobial Activity of Laminate specimen

Name of Test Protocol:

JIS Z 2801: 2012 (amendment 1)

Test Organisms used for evaluating Antimicrobial activity:

1. Staphylococcus aureus ATCC 6538
2. Escherichia coli ATCC 8739
3. Klebsiella pneumoniae ATCC 4352
4. Meticillin Resistant Staphylococcus aureus (MRSA) S- 129
5. Pseudomonas aeruginosa ATCC 9027
6. Salmonella*typhimurium ATCC 10749
7. Streptococcus faecalis ATCC 9790
8. Enterococcus faecalis ATCC 8459
9. Candida albicans ATCC 10231



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Test Conditions:

Neutralizer used : Buffered Saline with Tween 80 - 0.01 %
Contact Time : 24 hours at 37° C
Incubation Temperature : 37° C for Bacteria; 28° C for Fungi
Media and Reagent : Soyabean-casein digest agar for Bacteria; Sabouraud's dextrose agar for Fungi

RESULTS:

ANTIBACTERIAL ACTIVITY

1. Test Bacteria: Staphylococcus aureus ATCC 6538

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.01×10^4				Log = 4.00
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 9.20×10^4				Log = 4.96
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	20	1.30	3.66	99.97

2. Test Bacteria: Escherichia coli ATCC 8739

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 3.90×10^4				Log = 4.59
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 1.51×10^5				Log = 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)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	100	2.00	3.17	99.93

3. Test Bacteria: Klebsiella pneumoniae ATCC 4352

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.60×10^5				Log = 5.20
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 8.40×10^5				Log = 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)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	300	2.47	3.45	99.96

2000302/1
Page 2 of 4

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4. Test Bacteria: Meticillin Resistant Staphylococcus aureus (MRSA) S- 129

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 5.60×10^4				Log = 4.74
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 9.20×10^4				Log = 4.96
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	<10	<1	>3.96	>99.99

5. Test Bacteria: Pseudomonas aeruginosa ATCC 9027

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 4.60×10^4				Log = 4.66
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 8.20×10^4				Log = 4.91
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	20	1.30	3.61	99.97

6. Test Bacteria: Salmonella typhimurium ATCC 10749

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 4.90×10^4				Log = 4.69
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 7.10×10^4				Log = 4.85
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	40	1.60	3.25	99.94

7. Test Bacteria: Streptococcus faecalis ATCC 9790

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 4.10×10^4				Log = 4.61
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 3.10×10^5				Log = 5.49
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	1080	3.03	2.46	99.65



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8. Test Bacteria: Enterococcus faecalis ATCC 8459

Quantitative Assessment of Activity - JIS Z 2801: 2012				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 4.90×10^4				Log = 4.69
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 4.10×10^5				Log = 5.61
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	4100	3.61	2.00	99.00

9. Test Fungus: Candida albicans ATCC 10231

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.90×10^5				Log = 5.27
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 9.10×10^5				Log = 5.95
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
1.0 mm Greenlam High Pressure Decorative Laminated Sheets	8000	3.90	2.05	99.12

The Standard Antimicrobial value of Evaluation $R \geq 2.0$

COMMENT:

When tested as specified, laminate labeled as 1.0 mm Greenlam High Pressure Decorative Laminated Sheets; **PASSES** the Quantitative Assessment of activity for Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae, Meticillin Resistant Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhimurium, Streptococcus faecalis, Enterofococcus faecalis and Candida albicans by JIS Z 2801: 2012 Test Method.



For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

2000302/1
Page 4 of 4

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