



BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 18161/ 1

DATE: 26/03/2019

NAME OF CUSTOMER : M/S AIROLAM LIMITED
ADDRESS : Dalpur Village, Nanapur Approach Road,
Ta. : Prantij, Dist.: S.K., Gujarat - 383120, India.
REFERENCE : Letter Ref. Nil dated March 19, 2019
K. Attention: Yash Patel
DATE OF RECEIPT : 19/03/2019
DATE OF INITIATION : 19/03/2019
DATE OF COMPLETION : 26/03/2019
SAMPLE DESCRIPTION : Laminate sample
Untreated – Lab Control

Name of Test:

Evaluation of Antimicrobial Activity of Laminate specimen

Name of Test Protocol:

JIS Z 2801: 2010

Test Organisms used for evaluating Antimicrobial activity:

1. Staphylococcus aureus ATCC 6538
2. Escherichia coli ATCC 8739
3. Staphylococcus epidermidis ATCC 7919
4. Klebsiella pneumoniae ATCC 4352
5. Salmonella typhimurium ATCC 13311
6. Meticillin Resistant Staphylococcus aureus ATCC 43300
7. Enterococcus faecalis NCIM 5443
8. Streptococcus pneumoniae ATCC 6330

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: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.24×10^5				Log = 5.09
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 2.20×10^5				Log = 5.34
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	<10	<1	>4.34	>99.99

2. Test Bacteria: Escherichia coli ATCC 8739

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.42×10^5				Log = 5.15
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 4.20×10^5				Log = 5.62
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	200	2.30	3.32	99.95

3. Test Bacteria: Staphylococcus epidermidis ATCC 7919

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.05×10^5				Log = 5.02
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 2.10×10^5				Log = 5.32
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	<10	<1	>4.32	>99.99

4. Test Bacteria: Klebsiella pneumoniae ATCC 4352

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.38×10^5				Log = 5.13
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 2.00×10^5				Log = 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)
Laminate sample	90	1.95	3.35	99.95

5. Test Bacteria: Salmonella typhimurium ATCC 13311

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 9.80×10^4				Log = 4.99
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 2.40×10^5				Log = 5.38
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	<10	<1	>4.38	>99.99

6. Test Bacteria: Meticillin Resistant Staphylococcus aureus ATCC 43300

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 1.00×10^5				Log = 5.00
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 2.90×10^5				Log = 5.46
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	120	2.07	3.39	99.95

7. Test Bacteria: Enterococcus faecalis NCIM 5443

Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 8.20×10^4				Log = 4.19
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 3.00×10^5				Log = 5.47
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	<10	<1	>4.47	>99.99

8. Test Bacteria: Streptococcus pneumoniae ATCC 6330

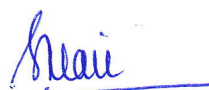
Quantitative Assessment of Activity - JIS Z 2801: 2010				
Untreated: Conc. of Inoculum on untreated sample at 0 hours (A): 9.80×10^4				Log = 4.99
Untreated: Conc. of Inoculum on untreated sample after 24 hour (B): 1.90×10^5				Log = 5.27
Sample Identification	No. Bacteria on treated sample (C)	Log of Bacteria on treated sample	Antimicrobial Activity (R) (Log B-C)	Microbial Kill (% Reduction)
Laminate sample	<10	<1	>4.27	>99.99

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

COMMENT:

When tested as Laminate Sample, **PASSES** the Quantitative Assessment of activity for Staphylococcus aureus, Escherichia coli, Staphylococcus epidermidis, Klebsiella pneumoniae, Salmonella typhimurium, Meticillin Resistant Staphylococcus aureus, Enterococcus faecalis and Streptococcus pneumoniae by JIS Z 2801: 2010 Test Method.

For BIOTECH TESTING SERVICES

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)