ASTM E 2149-20

Standard Test Method for Determining Antimicrobial Activity of Antimicrobial Agents Under Dynamic Contact Conditions

FINAL REPORT: R2022-268-2A
**AMENDMENT TO R2022-268-2*

Prepared for:
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TESTING CERT: #2832.01

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Objective:

To determine the antimicrobial activity of antimicrobial agents under dynamic contact conditions of four samples as seen by the ASTM E 2149-20 test method.

Test Sample Identification*:

1. HardieFlex® sample 1
2. HardieFlex® sample 2
3. HardieFlex® NexGen™ with MoldBlock™ Technology sample 142037
4. HardieFlex® NexGen™ with MoldBlock™ Technology sample 142038

Test Procedure Summary:

The test organism was adjusted and diluted to obtain a working bacterial inoculum solution. A flask for each sample and the "inoculum only" was prepared containing 50 mL of the working bacterial inoculum. Serial dilutions of the "0" contact time were performed on the "inoculum only" flask. The flask containing the test sample and the "inoculum only" flask were placed on the wrist action shaker for appropriate contact time. After shaking, serial dilutions were made and the plates incubated. After incubation, colonies of recovered bacteria are counted and used to determine percent and log reductions.

Test Variables

Test Organism:	*Escherichia coli ATCC#8739*
Sample Description:	Solid
Sample Weight/Size:	2" x 2" square cut into smaller pieces
Method of Sterilization /Pre-Cleaning:	None
Dilution Medium Used:	Sterile buffer solution per standard
Buffer/Shake Solution Used:	Sterile buffer solution per standard
Serial Dilution Medium Used:	D/E Neutralizing Broth
Untreated Control:	Inoculum Only
Working Inoculum Concentration:	*E. coli ATCC#8739:* 2.7 x 10^5
Contact Time:	24 Hours
Deviations from Standard Test Method:	None, testing performed per ASTM E2149-20 without deviation.

Test Results:

The results for the test pieces can be found in the data table below. These results pertain only to the samples tested.

Results against *E. coli ATCC#8739*:

Percent reduction of bacteria per sample against inoculum only

Time = 24	Average Number of Bacteria Recovered (CFU/ml)	Percent Reduction	Log Reduction
Inoculum Only	2.2×10^5		
HardieFlex® sample 1	<1	>99.9996	>5.35
HardieFlex® sample 2	<1	>99.9996	>5.35
HardieFlex® NexGen™ with MoldBlock™ Technology sample 142037	<1	>99.9996	>5.35
HardieFlex® NexGen™ with MoldBlock™ Technology sample 142038	<1	>99.9996	>5.35

When no bacteria are recovered, results are reported as "<1" CFU/mL and "1" is used for the calculation or the average recovered CFU/mL.

Percent reductions and log reductions are determined by comparing the sample after the contact time to the "inoculum only" after the contact. Percent reduction is translated into log reduction by the following:

90% reduction = 1 log reduction; i.e. 1,000,000 reduced to 100,000 is a 1 log reduction
99% reduction = 2 log reduction; i.e. 1,000,000 reduced to 10,000 is a 2 log reduction
99.9% reduction = 3 log reduction; i.e. 1,000,000 reduced to 1,000 is a 3 log reduction
99.99% reduction = 4 log reduction; i.e. 1,000,000 reduced to 100 is a 4 log reduction
99.999% reduction = 5 log reduction; i.e. 1,000,000 reduced to 10 is a 5 log reduction