

### Project Details

**Test Facility:**

West Texas A&M University Microbiological Laboratory  
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**Testing Performed By:** C. Bouma

**Study Complete:** Jan 11, 2019

**Test Method:** ASTM E2149 Standard Test Method for Determining the Antimicrobial Activity of Antimicrobial Agents Under Dynamic Contact Conditions

### General Information:

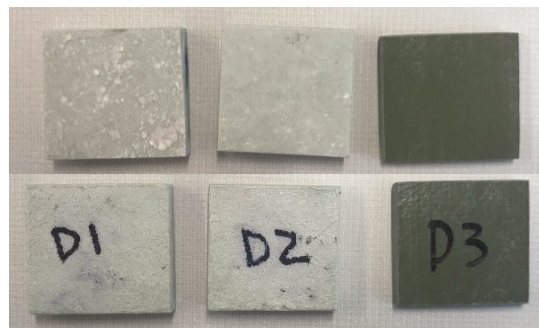
This test method is designed to evaluate the antimicrobial activity of antimicrobial-treated specimens under dynamic contact conditions with a fluid. This dynamic shake flask test was developed for routine quality control and screening tests in order to overcome difficulties in using classical antimicrobial test methods to evaluate substrate-bound antimicrobials. These difficulties include ensuring contact of inoculum to treated surface (as in AATCC 100), flexibility of retrieval at different contact times, use of inappropriately applied static conditions (as in AATCC 147), sensitivity, and reproducibility.

### Background:

*Escherichia coli*: *Facultative anaerobic proteobacteria* found in the environment, foods, and intestines of people and animals. These organisms are a large and diverse group of bacteria and the most prevalent infecting organism in the family of gram-negative bacteria known as enterobacteriaceae.

### Sample Procedure:

The testing sample contain BTG Products antimicrobial agent bound within a fiberglass molded substrate supplied by AIMS for preliminary testing against gram-negative bacteria in a dynamic fluid condition. The test the performance of the MIC-GUARD enhanced fiberglass resistance to *Escherichia coli* against standard fiberglass. All samples were shaped into 1.25 x 1.25 x 0.25 inch pieces and labeled according to composition. D1 and D2 are fiberglass molded substrates that contain MIC-GUARD and D3 is molded fiberglass not containing any MIC-GUARD



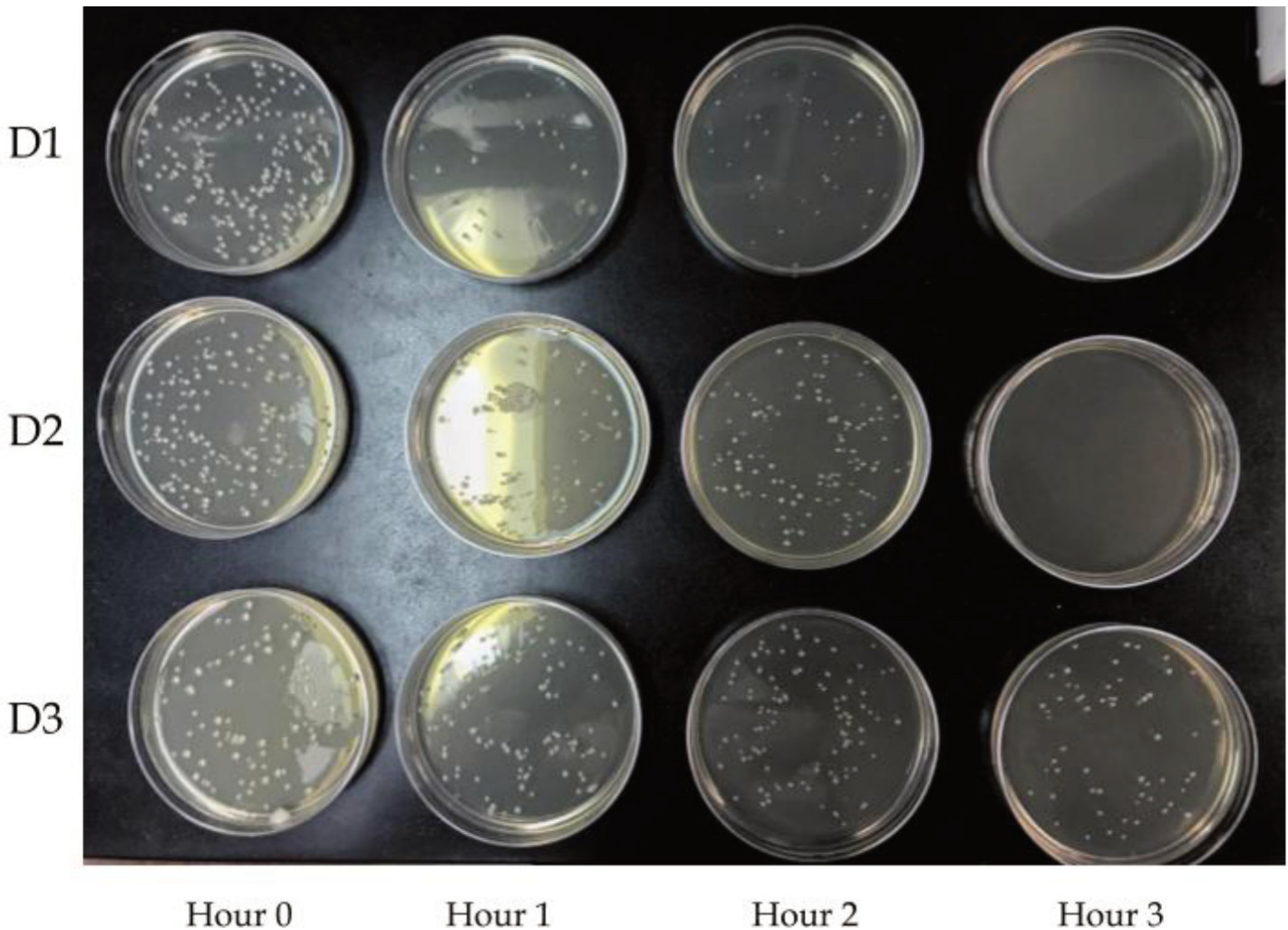
Fiberglass molded samples D1, D2, and D3

## Microbiological Procedure:

- 100 ml sterile dH<sub>2</sub>O was inoculated with *E. coli* to approximately  $1 \times 10^6$  cells/mL.
- Aliquots were removed (0.25 mL), diluted in a 10-fold series in 20% glycerol (10<sup>1</sup> to 10<sup>3</sup>), and plated w/EddyJet 2 (0.1 mL linear) on TSA.
- Plates were incubated overnight at 37°C and colonies were counted with Sphere Flash.

## Results:

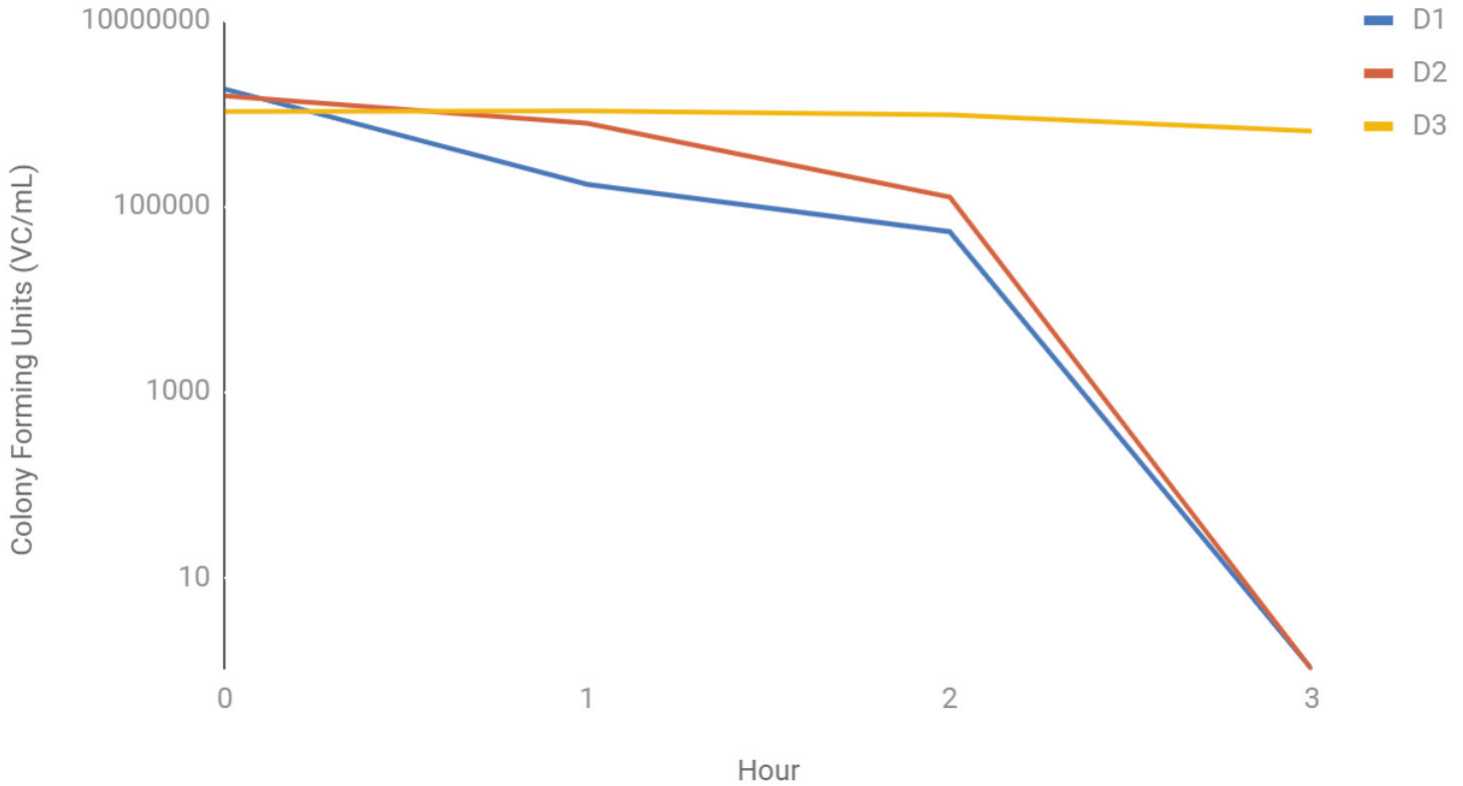
Plated samples of the aliquots revealed a statistically significant trend of decreased viable colonies as treated time progressed in comparison to the control.



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## MIC-GUARD ENHANCED FIBERGLASS



### Discussion:

The testing of MIC-GUARD bound in the fiberglass substrate was successful over all the testing intervals. The plate counts of viable cells demonstrated all three samples beginning with the same colony count of approximately  $1 \times 10^6$  VC/mL of E.Coli. Samples D1 and D2 behaved very similarly, creating decreased viable cell counts throughout the timeframe of the test; achieving complete mitigation of viable E. Coli cells by the third hour. From these results it is evident that MIC-GUARD enhanced fiberglass resists the growth of bacteria in dynamic fluid conditions.

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