

# *ASTM E 2180 – 07 (2012)*

*Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials*

*FINAL REPORT: R2017-515*

Prepared for:  
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### **Objective:**

To evaluate both surfaces of one sample for antimicrobial effectiveness against *Staphylococcus aureus* ATCC #6538 as demonstrated by ASTM E 2180 test method.

### **Test Sample Identification:**

1. SCREEN ULTIMETAL – Silver surface
2. SCREEN ULTIMETAL – White surface

### **Test Procedure Summary:**

The test organism was adjusted and diluted to obtain the starting inoculum concentration of  $1-5 \times 10^6$  CFU/mL. The untreated control was tested in triplicate at Time = 0 and Time = 24 hours. The treated samples were tested in triplicate at Time = 24 hours. Each sample piece was placed in a sterile Petri dish, inoculated and then incubated at  $35 \pm 2^\circ\text{C}$  and a relative humidity of at least 75%. At the appropriate time the samples were placed in sterile sample bags and the neutralizing broth was added to each sample. The sample was then sonicated for 1 minute followed 1 minute of massage to facilitate the release of the agar slurry to the neutralizing broth. Serial dilutions of the neutralizing broth containing the inoculum were plated. All plates were incubated at  $35 \pm 2^\circ\text{C}$  for 48 hours. After incubation, bacterial colonies were counted and recorded.

#### **Test Variables**

<b>Test Organism:</b>	<i>Staphylococcus aureus</i> ATCC #6538
<b>Sample Size:</b>	3 cm x 3 cm
<b>Method of Sterilization /Pre-Cleaning:</b>	None
<b>Untreated Control:</b>	Untreated plastic control supplied by MicroStar
<b>Dilution Medium Used:</b>	Agar slurry per standard
<b>Neutralizing Broth Used:</b>	D/E neutralizing broth
<b>Amount of Neutralizing Broth:</b>	10 mL
<b>Starting Concentration Untreated Control:</b>	$8.2 \times 10^5$ ; Log value 5.91
<b>Amount of Inoculum:</b>	1.0 mL
<b>Contact Time:</b>	24 hours
<b>Deviations from Standard Test Method:</b>	None, testing performed per ASTM E2180 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.

Percent reduction is determined by comparing the treated sample after the contract time to the untreated plastic control after the contact time using the geometric mean and antilog as indicated by the standard test method.

Percent reduction is translated into log reduction by the following:

90% reduction = 1 log reduction; i.e. 1,000,000 (Log Value 6.00) reduced to 100,000 (Log Value 5.00)

99% reduction = 2 log reduction; i.e. 1,000,000 (Log Value 6.00) reduced to 10,000 (Log Value 4.00)

99.9% reduction = 3 log reduction; i.e. 1,000,000 (Log Value 6.00) reduced to 1,000 (Log Value 3.00)

99.99% reduction = 4 log reduction; i.e. 1,000,000 (Log Value 6.00) reduced to 100 (Log Value 2.00)

99.999% reduction = 5 log reduction; i.e. 1,000,000 (Log Value 6.00) reduced to 10 (Log Value 1.00)

### **Results against *S. aureus* ATCC#6538**

<b>Sample</b>	<b>Geometric Mean of Recovered Bacteria (Log Value)</b>	<b>Log Reduction at Time = 24 Hours (Log Value)</b>	<b>Percent Reduction at Time = 24 Hours</b>
MicroStar Control	6.05		
SCREEN ULTIMETAL Silver Surface	1.13	4.91	99.998
SCREEN ULTIMETAL White Surface	1.48	4.56	99.997