

# ASTM D5590-17

*Standard Test Method for Determining the Resistance of  
Paint Films and Related Coatings to Fungal Defacement by  
Accelerated Four-Week Agar Plate Assay*

*FINAL REPORT: R2018-503*

Prepared for:  
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*Accredited Testing Provided by:*



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TESTING CERT: #2832.01

*Testing Initiated: September 19, 2018*

*Testing Completed: October 17, 2018*

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Title: Quality Manager



**Objective:**

To evaluate the mold and mildew resistance properties of two samples (leached and not leached) as seen in the ASTM D5590 test.

**Test Sample Identification:**

1. 851-18 (Leached)
2. 851-18 (Not Leached)
3. 851-30 (Leached)
4. 851-30 (Not Leached)

**Test Procedure Summary:**

Samples are tested against two separate fungal spore suspensions: one containing equal volumes of *A. niger* and *T. pinophilus* and the other containing *A. pullulans* only. Samples are prepared and placed onto the center of an agar plate. The spore suspensions are evenly sprayed onto the sample and agar surface. The samples are incubated for 4 weeks and evaluated weekly.

**Test Variables**

<b>Test Organisms:</b>	<i>Aspergillus niger</i>	ATCC 6275
	<i>Talaromyces pinophilus</i> <sup>1</sup>	ATCC 11797
	<i>Aureobasidium pullulans</i>	ATCC 9348
<b>Sample Description:</b>	White liquid material	
<b>Sample Preparation</b>	The liquid samples were evenly applied to both sides of sterile inert polyester panels and allowed to dry. Half of the dried panels were leached for 24 hours. The leached panels were allowed to dry overnight. 42mm discs were cut from the prepared panels.	
<b>Number of Replicates:</b>	Three	
<b>Positive Growth Control:</b>	Sterile Filter Paper	
<b>Negative Growth Control:</b>	Sterile Nutrient Salts Agar	
<b>Media Used:</b>	Potato Dextrose Agar	
<b>Environmental Conditions:</b>	28 ± 2°C; ≥85% relative humidity	
<b>Incubation Duration:</b>	28 days	
<b>Deviations from Standard Test Method:</b>	None, testing performed per ASTM D5590 without deviation.	

<sup>1</sup> *Talaromyces pinophilus* formerly identified as *Penicillium funiculosum*



**Results:**

The results for the test pieces can be found in the data table below. The filter paper control pieces had copious fungal growth at Day 7. The negative growth control did not support fungal growth. Temperature and relative humidity were maintained for the duration of the test. These results pertain only to the samples tested.

The rating scale for this test is as follows:

Rating	Observed Growth
0	No Growth
1	Trace of Growth (<10%)
2	Light Growth (10-30%)
3	Moderate Growth (30-60%)
4	Heavy Growth (60+%)

A zone of inhibition may be observed where no organisms grow on the agar adjacent to the sample. This indicates the antimicrobial may be leaching from the specimen. Zone of inhibition is measured and reported if present. The Zone of Inhibition is calculated by measuring the total diameter of the test specimen and the zone ( $T$ ) and the diameter of the test specimen ( $D$ ). The average width of the zone of inhibition ( $W$ ) is then calculated by  $W = (T - D)/2$ .



Sample Identification	Organism	Rep	Week 1	Week 2	Week 3	Week 4	Zone of Inhibition
851-18 (Leached)	<i>A. pullulans</i>	1	0	0	0	0	1
		2	0	0	0	0	1
		3	0	0	0	0	2
	<i>A. niger/ T. pinophilus</i>	1	0	0	0	0	No Zone
		2	0	0	0	0	No Zone
		3	0	0	0	0	No Zone

*A. pullulans*

Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0



*A. niger/T. pinophilus*

Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0





Sample Identification	Organism	Rep	Week 1	Week 2	Week 3	Week 4	Zone of Inhibition
851-18 (Not Leached)	<i>A. pullulans</i>	1	0	0	0	0	2
		2	0	0	0	0	2
		3	0	0	0	0	3
	<i>A. niger/ T. pinophilus</i>	1	0	0	0	0	No Zone
		2	0	0	0	0	No Zone
		3	0	0	0	0	No Zone

*A. pullulans*

Replicate 1 – Rating: 0

Replicate 2 – Rating: 0

Replicate 3 – Rating: 0



*A. niger/T. pinophilus*

Replicate 1 – Rating: 0

Replicate 2 – Rating: 0

Replicate 3 – Rating: 0



The dark areas visible on Replicates 1 and 3 are non-viable inoculum.



Sample Identification	Organism	Rep	Week 1	Week 2	Week 3	Week 4	Zone of Inhibition
851-30 (Leached)	<i>A. pullulans</i>	1	0	0	0	0	3
		2	0	0	0	0	2
		3	0	0	0	0	2
	<i>A. niger/ T. pinophilus</i>	1	0	0	0	0	2
		2	0	0	0	0	1
		3	0	0	0	0	1

*A. pullulans*

Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0



*A. niger/T. pinophilus*

Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0



The dark areas visible on Replicate 3 are non-viable inoculum.

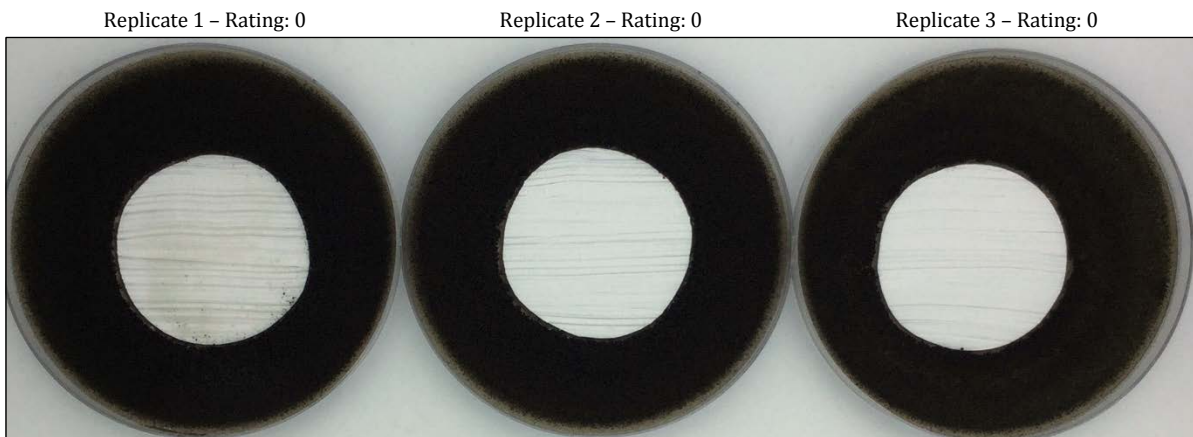


Sample Identification	Organism	Rep	Week 1	Week 2	Week 3	Week 4	Zone of Inhibition
851-30 (Not Leached)	<i>A. pullulans</i>	1	0	0	0	0	3
		2	0	0	0	0	3
		3	0	0	0	0	3
	<i>A. niger/ T. pinophilus</i>	1	0	0	0	0	2
		2	0	0	0	0	2
		3	0	0	0	0	2

*A. pullulans*



*A. niger/T. pinophilus*



The dark areas visible on Replicate 1 are non-viable inoculum.