



FINAL REPORT

PROTOCOL

Modified ASTM D3273-00: Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

EMSL ORDER NUMBER

152202687

TESTING LABORATORY

EMSL Analytical, Inc.
5950 Fairbanks North Houston Rd.
Houston TX 77040
Phone: (713) 686-3635
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SPONSOR

Dendritics LLC
540 N. Commercial Street, 3rd Floor
Manchester, NH 03101

STUDY START DATE

April 22, 2022

STUDY COMPLETION DATE

May 26, 2022





Test Summary

Project Title: Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

Study Methods: ASTM D3273-00

Products Tested: 3 samples & 3 Controls



Sponsor: Dendritics LLC

Test Conditions: Soil chamber, 95-98% relative humidity, 32°C ±1

Challenge Fungi: *Aspergillus brasiliensis* (ATCC 6275), *Penicillium chrysogenum* (ATCC 10106), *Cladosporium cladosporioides* (ATCC 11275) and *Aureobasidium pullulans* (ATCC 15233)

Study Dates and Facilities

All analytical testing was performed at EMSL Analytical, Inc. in Houston, Texas from date 4/22/2022 to 5/26/2022.

Record Retention

All raw data and a copy of the final report will be archived and stored by EMSL Analytical, Inc. for 5 years.



Objectives

To determine the ability of the material to resist fungal growth under conditions favorable for such growth.

Test Method

Fungal species were grown separately on Malt Extract Agar (MEA) for 7 days. A spore suspension of each of the four fungi was prepared by pouring 10 mL of sterile DI water containing 0.5 g/L of Tween 20 into the culture plate. The surface growth was gently scraped from the culture of each test organism using cotton swab to remove as much spore and mycelial growth as possible without digging up the surface of the agar. The spore suspension was transferred into a flask containing 90 mL of sterile DI water. The flask was shaken gently to break up any spore clumps. The spore suspension was distributed evenly over the surface of the greenhouse soil in the chamber. The test chamber was controlled at a constant temperature ($32.5 \pm 1^{\circ}\text{C}$) and humidity (95-98%). The samples were hung vertically with the bottom approximately three inches above the surface of the inoculated soil with sufficient spacing to allow circulation of air and to prevent any contact between the samples and the chamber wall surfaces. The test samples and the control materials were incubated for four weeks in the environmental chamber. Pictures were taken before and after to show comparison of mold growth on both test and control materials each week according to ASTM D3274 which uses photographic reference standards on a 0 to 10 rating scale; whereby a 10 rating has no disfigurement (growth) and 0 has the most disfigurement (growth).



Experimental Results:

Sample 1: Side1 @ T=0



Observation @ T=0
10: No mold growth

Sample 1 Sample 1: Side1 @ 4wk



Observation @ 4 weeks
10: No mold growth

Sample 1: Side2 @ T=0



Observation @ T=0
10: No mold growth

Sample 1: Side2 @ 4wk



Observation @ 4 weeks
10: No mold growth



Sample 2: Side1 @ T=0



Observation @ T=0
10: No mold growth

Sample 2: Side1 @ 4wk



Observation @ 4 weeks
10: No mold growth

Sample 2: Side2 @ T=0



Observation @ T=0
10: No mold growth

Sample 2: Side2 @ T=0@ 4wk



Observation @ 4 weeks
10: No mold growth



Sample 3: Side 1 @ T=0



Observation @ T=0
10: No mold growth

Sample 3: Side 1 @ 4wk



Observation @ 4 weeks
10: No mold growth

Sample 3: Side 2 @ T=0



Observation @ T=0
10: No mold growth

Sample 3: Side 2 @ 4wk



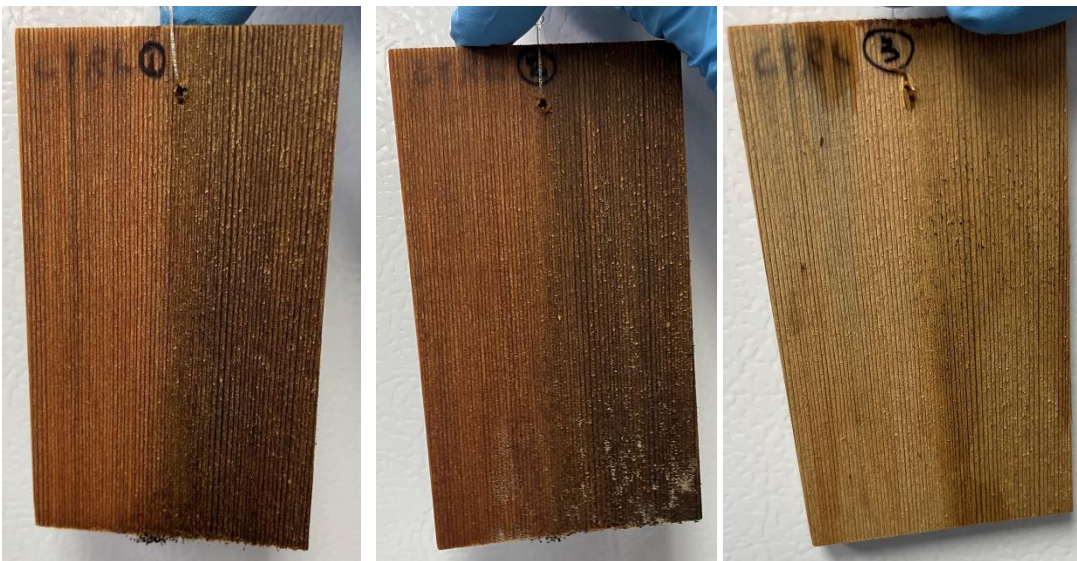
Observation @ 4 weeks
10: No mold growth



CONTROLS @ T=0



CONTROLS @ T @ 4 Wk



Observation: 0 Heavy mold growth



LAB CONTROLS @ T=0



Observation: 10 No mold growth

LAB CONTROLS @ 5 weeks



Observation: 0 Heavy mold growth



References

D 3273 – 00 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.

Signatures

Study Performed by:

A handwritten signature in black ink, appearing to read "M. Ramadi".

Mona Ramadi, Ph.D.
Microbiologist

Report Issued by:

A handwritten signature in black ink, appearing to read "Jason Dobranic".

Jason Dobranic, Ph.D.
Vice President of Microbiology & Life Sciences
Study Director