



Rhino Shield®

TESTING BOOK



Since 2001, The Rhino Shield group has worked hard to produce the most durable coatings. This includes continuous R&D and product testing. The Goal at AmCoat Industrial is simple:

Formulate and manufacture innovative and premium coating solutions for commercial, government, and architectural markets.

Independent ASTM testing is the bedrock of our success. Utilizing top ASTM laboratories and test facilities ensures both quality and performance. As a result of our chemistry and testing, we are confident a Rhino Shield system is the best choice to protect your home and business.

Our Test Labs Include:



TABLE OF CONTENTS

- 4** Testing Data Chart
- 5** Elongation and Tensile Strength
- 7** Vapor Permeance (Aged)
- 8** Microbial Development
- 15** Flame Spread Index
- 19** Wind Driven Rain
- 22** Water Swelling
- 24** Solar Reflective Index
- 25** Salt Air Tolerance



TESTING CHART

| TEST METHOD | RESULT | LABORATORY |
|--|----------------------------|----------------------------|
| Elongation (white base) D2370/D638 | 538% | Future Labs |
| Tensile Strength D2370/D638 | 212psi | Future Labs |
| Elongation (deep base) D2370/D638 | 550% | Future Labs |
| Tensile Strength D2370/D638 | 340 psi | Future Labs |
| Mildew Testing ASTM D 5590 | No Growth | MicroStar Lab |
| Algae Testing ASTM D 5590 | No Growth | MicroStar Lab |
| Adhesion (wood) ASTM D 4541 | 567psi | DRM |
| Adhesion (Concrete) ASTM D 4541 | 533 psi | DRM |
| Solar Reflective Index ASTM E 1980 | Matte 105.3 Satin 107.4 | Ace Laboratories |
| Salt Tolerance ASTM B117-19 | 10 (no blisters) | Q-LAB |
| Wind Driven Rain ASTM D6904-O3 | Pass | KTA |
| Flame Spread Index ASTM E84-21a | "5" Class A | Commercial Testing Company |
| Smoke Developed Index ASTM E84-21a | "0" No Smoke | Commercial Testing Company |
| Vapor Permeance ASTM D 1653 | 15.1 US Perms | DRM |
| Water Swelling ASTM D 471 | Pass - 17.1% | Ace Laboratories |

*Most tests performed on the Rhino Shield system of APS primer and white base topcoat unless otherwise noted.



DATE: May 25, 2022

REPORT: The scope of this report covers testing, of the product received, under the test methods listed.

PRODUCT: DFC WB

SAMPLE: A premade film sample was received from **AmCoat Industrial, LLC** via DRM Consulting on **April 25, 2022**. The sample was labeled as weathered for 1058 hours UVA QUV.

PROCEDURE: Premade samples of the PRODUCT were conditioned separately at 75°F ± 2°F. For tensile testing the samples were cut into 6 in. x 1 in. strips with a die cutter.

RESULTS:

| DFC WB | | |
|---|----------------------|----------------|
| <u>Test Property</u> | <u>Method</u> | <u>RESULTS</u> |
| Tensile Strength, psi (6 in. x 1 in. sample: 1 in./min, 1 in. grip separation) | ASTM D638 (Modified) | 212 psi avg. |
| Tensile Elongation at Break, % (6 in. x 1 in. sample: 1 in./min, 1 in. grip separation) | ASTM D638 (Modified) | 538% avg. |

Tested By:

Anthony DuBose, Product Testing Specialist
[DRM Consulting FL#3784-3788-M \(RPT-A\) E2](#)

Approved By:

Alex Hamilton, Coatings Laboratory Manager

E1: Adding additional product information in the sample section. (5/12/2022)

E2: Changing sample section to received from AmCoat Industrial, LLC. Previously DRM Consulting. (5/25/2022)

Date: 5/25/2022



DATE: May 25, 2022

REPORT: The scope of this report covers testing, of the product received, under the test methods listed.

PRODUCT: L-DB

SAMPLE: A premade film sample was received from **AmCoat Industrial, LLC** via DRM Consulting on **April 25, 2022**. The sample was labeled as weathered for 1058 hours UVA QUV.

PROCEDURE: Premade samples of the PRODUCT were conditioned separately at 75°F ± 2°F. For tensile testing the samples were cut into 6 in. x 1 in. strips with a die cutter.

RESULTS:

| L-DB | | |
|---|----------------------|----------------|
| <u>Test Property</u> | <u>Method</u> | <u>RESULTS</u> |
| Tensile Strength, psi (6 in. x 1 in. sample; 1 in./min, 1 in. grip separation) | ASTM D638 (Modified) | 340 psi avg. |
| Tensile Elongation at Break, % (6 in. x 1 in. sample; 1 in./min, 1 in. grip separation) | ASTM D638 (Modified) | 550% avg. |

Tested By:

Anthony DuBose, Product Testing Specialist
DRM Consulting FL#3784-3788-M (RPT-A) E2

Approved By:

Alex Hamilton, Coatings Laboratory Manager

E1: Adding additional product information in the sample section. (5/12/2022)

E2: Changing sample section to received from AmCoat Industrial, LLC. Previously DRM Consulting. (5/25/2022)

Date: 5/25/2022

DRM Consulting
217 Mikes Lane
Sharpsburg, GA 30277
678-313-5999
www.drmconsulting.net

To: Terry Andre
Date: 8/29/2019
From: Dave Miller
Subject: Permeability Log
Cc: Mike Moore

Gentlemen; The Permeability log below is a compilation of testing conducted by DRMC and some comparison testing done by Specialty Polymers. ASTM D 1653, wet cup method, condition A, was used as a guideline by all.

| Product | Result |
|------------------------|--------|
| DFC Current Production | 15.1 |
| PFC Current Production | 16.7 |

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: Amcoat
Industrial
4100 Legendary
Drive Destin, FL
32541

Accredited Testing Provided by:



130 Erick Street
Crystal Lake, IL 60014
815-526.0954
TESTING CERT: #2832.01

*Testing Initiated: September 19, 2018
Testing Completed: October 17, 2018
Report Issued: October 22, 2018*

Performed By: Marcy Aaron
Title: Staff Scientist

Approved By: Debbie Koester
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

| | | |
|--|--|--------------------------------------|
| Test Organisms: | <i>Aspergillus niger</i> <i>Talaromyces pinophilus</i> ¹ <i>Aureobasidium pullulans</i> | ATCC 6275 ATCC 11797 ATCC 9348 |
| Sample Description: | White liquid material | |
| Sample Preparation | 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. | |
| Number of Replicates: | Three | |
| Positive Growth Control: | Sterile Filter Paper | |
| Negative Growth Control: | Sterile Nutrient Salts Agar | |
| Media Used: | Potato Dextrose Agar | |
| Environmental Conditions: | 28 ± 2°C; ≥85% relative humidity | |
| Incubation Duration: | 28 days | |
| Deviations from Standard Test Method: | None, testing performed per ASTM D5590 without deviation. | |

¹ *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 $W = (T - D)/2$.



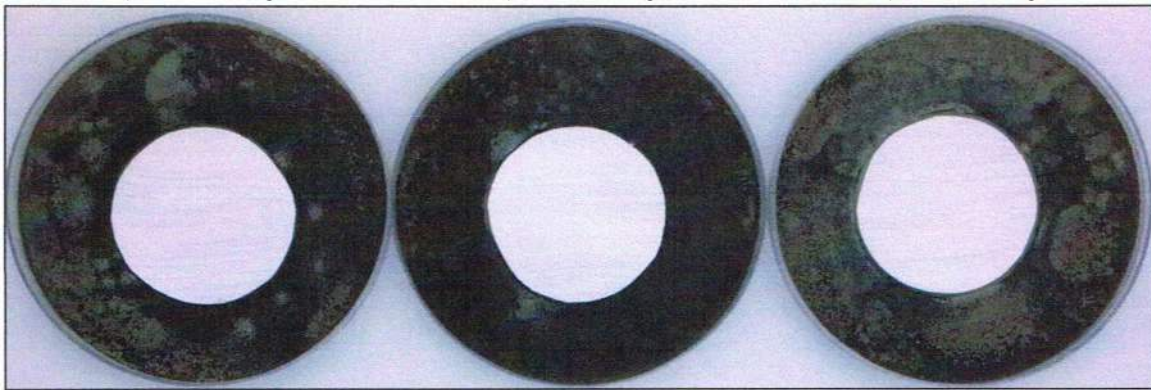
| Sample Identification | Organism | Rep | Week 1 | Week 2 | Week 3 | Week 4 | Zone of Inhibition |
|-----------------------|------------------------------------|-----|--------|--------|--------|--------|--------------------|
| 851-18 (Leached) | <i>A. pullulans</i> | 1 | 0 | 0 | 0 | 0 | 1 |
| | | 2 | 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

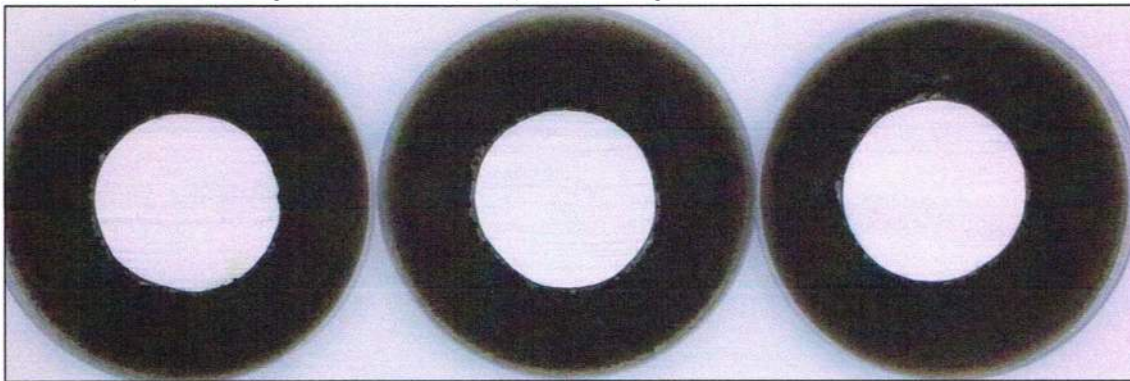


A. niger/T. pinophilus

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

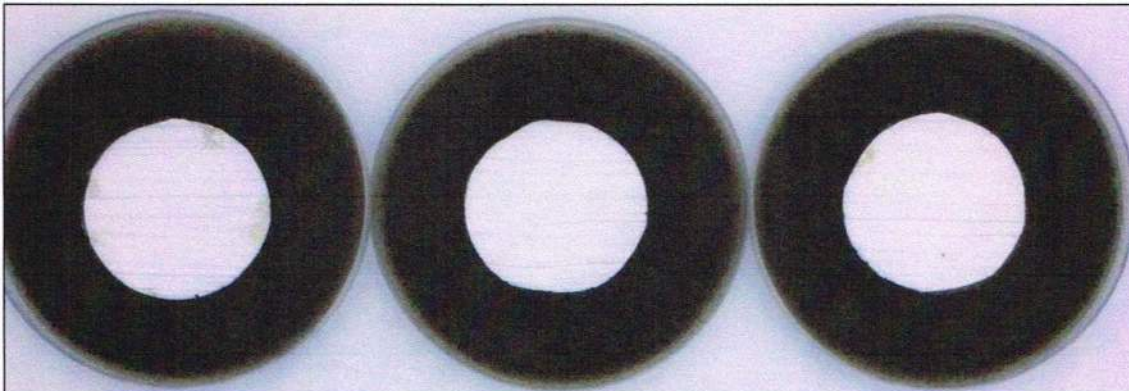


A. niger/T. pinophilus

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

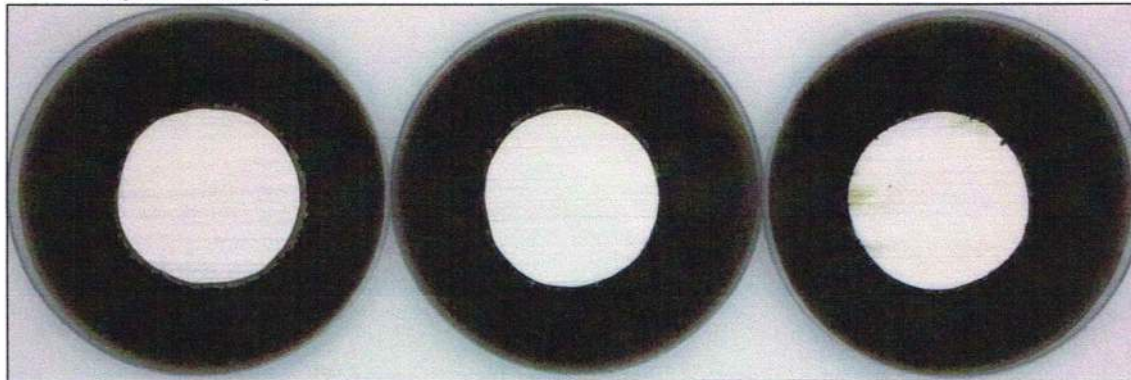


A. niger/T. pinophilus

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

Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0

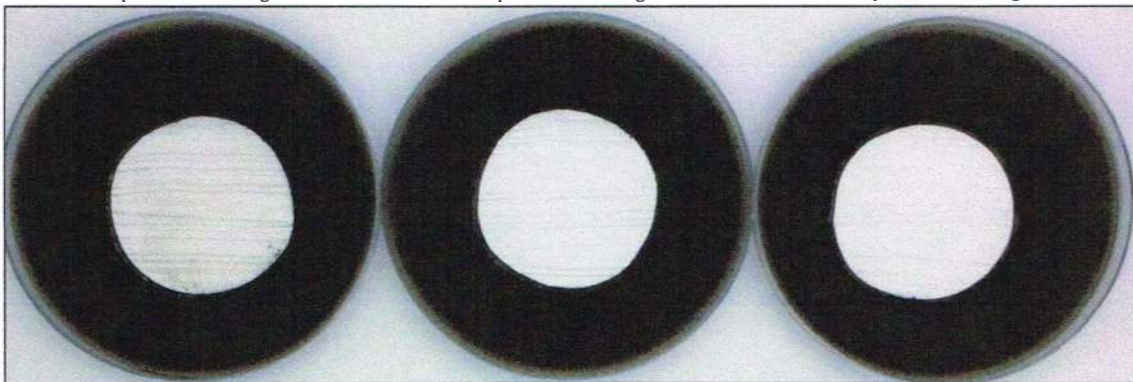


A. niger/T. pinophilus

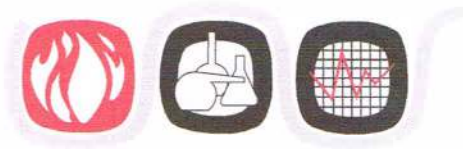
Replicate 1 - Rating: 0

Replicate 2 - Rating: 0

Replicate 3 - Rating: 0



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



COMMERCIAL TESTING COMPANY

1215 South Hamilton Street • Dalton, Georgia 30720
Telephone (706) 278-3935 • Facsimile (706) 278-3936

Standard Method of Test for
Surface Burning Characteristics of Building Materials

ASTM E84-21a

Rhino Shield Coating System (APS + DFC)

Report Number 22-01127

Test Number 5741-9877
January 18, 2022

AmCoat Industrial
Destin, Florida

Commercial Testing Company

(Authorized Signature)

This report is provided for the exclusive use of the client to whom it is addressed. It may be used in its entirety to gain product acceptance from duly constituted authorities. The test results presented in this report apply only to the samples tested and are not necessarily indicative of apparent identical or similar materials. Sample selection and identification were provided by the client. A sampling plan, if described in the referenced test procedure, was not necessarily followed. This report, or the name of Commercial Testing Company, shall not be used under any circumstance in advertising to the general public.

TESTED TO BE SURE®
Since 1974

INTRODUCTION

This report is a presentation of results of a surface flammability test on a material submitted by AmCoat Industrial, Destin, Florida.

The test was conducted in accordance with the ASTM International fire-test-response standard E84–21a, *Surface Burning Characteristics of Building Materials*, sometimes referred to as the Steiner tunnel test. ASTM E84 is an American National Standard (ANSI) and has been approved for use by agencies of the Department of Defense. The ASTM E84 test method is the technical equivalent of UL No. 723. The test is applicable to exposed interior surfaces such as walls and ceilings. The test is conducted with the specimen in the ceiling position with the surface to be evaluated face down toward the ignition source. Thus, specimens shall either be self-supporting by its own structural quality, held in place by added supports along the test surface, or secured from the back side.

This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire-hazard or fire-risk assessment of the materials, products, or assemblies under actual fire conditions.

PURPOSE

The purpose of the test is to provide only the comparative measurements of surface flame spread and smoke development of materials with that of select grade red oak and fiber-reinforced cement board, Grade II, under specific fire exposure conditions with the smoke area of heptane used to establish the smoke-developed index. The test exposes a nominal 24-foot long by 20-inch wide test specimen to a controlled air flow and flaming fire adjusted to spread the flame along the entire length of a red oak specimen in 5½ minutes. During the 10-minute test duration, flame spread over the specimen surface are measured and recorded. Test results are calculated relative to red oak, which has an arbitrary rating of 100, and fiber-reinforced cement board, Grade II, which has a rating of 0. The 100 smoke-developed index is calculated using the smoke area of heptane.

The test results are expressed as Flame Spread Index and Smoke-Developed Index. The Flame Spread Index is defined in ASTM E176 as “a number or classification indicating a comparative measure derived from observations made during the progress of the boundary of a zone of flame under defined test conditions.” The Smoke-Developed Index, a term specific to ASTM E84, is defined as “a number or classification indicating a comparative measure derived from smoke obscuration data collected during the test for surface burning characteristics.” There is not necessarily a relationship between the two measurements.

The method does not provide for measurement of heat transmission through the surface tested, the effect of aggravated flame spread behavior of an assembly resulting from the proximity of combustible walls and ceilings, or classifying a material as noncombustible solely by means of a Flame Spread Index.

The zero reference and other parameters critical to furnace operation are verified on the day of the test by conducting a 10-minute test using 1/4-inch fiber-reinforced cement board, Grade II. Periodic tests using NOFMA certified 23/32-inch select grade red oak flooring provide data for the 100 flame spread reference with heptane providing data for calculating the 100 smoke-developed index. These procedures are more fully described in Section 7 of the E84 Standard.

TEST SAMPLE

The test sample, selected by the client, was identified as **Rhino Shield Coating System (APS + DFC)**, a water based acrylic-urethane elastomeric wall coating with primer. Three test panels, each measuring two feet wide by eight feet in length, were prepared by applying the primer onto a 1/4-inch thick fiber-reinforced cement board, Grade II substrate using a 3/8-inch napped paint roller at the recommended dry finish rate of 2-3 mils. After allowing the primer sample to dry overnight, the finish coat was applied with a 3/8-inch napped paint roller at the recommended dry finish thickness rate of 8-9 mils. The prepared panels were transferred to storage racks and conditioned in an atmosphere with the temperature maintained at $71 \pm 2^\circ\text{F}$ and the relative humidity at 50 ± 5 percent. For testing, the panels

were placed end-to-end on the ledges of the tunnel furnace and tested with no auxiliary support mechanism. This method of sample preparation is described in Annex 9.1 Coating Materials of the E84 standard, Guide to Cementitious Mixtures and Sprayed Fibers of the E84 standard, Section A9.4.

TEST RESULTS

The test results, calculated on the basis of observed flame propagation and the integrated area under the recorded smoke density curve, are presented below. The Flame Spread Index obtained in E84 is rounded to the nearest number divisible by five. Smoke-Developed Indices are rounded to the nearest number divisible by five unless the Index is greater than 200. In that case, the Smoke-Developed Index is rounded to the nearest 50 points. The rounding procedures are more fully described in Sections 9.1, 9.2, and X3 of the E84 Standard. The flame spread and smoke development data are presented graphically at the end of this report.

| Test Specimen | Flame Spread Index | Smoke-Developed Index |
|--|--------------------|-----------------------|
| Fiber-Reinforced Cement Board, Grade II | 0 | 0 |
| Red Oak Flooring | 100 | — |
| Heptane, (HPLC) Grade | — | 100 |
| Rhino Shield Coating System (APS + DFC) | 5 | 0 |

OBSERVATIONS

Specimen ignition over the burners occurred at 2.75 minutes. Surface flame spread was observed to a maximum distance of 1.45 feet beyond the zero point at 7.48 minutes. The maximum temperature recorded during the test was 581°F. For information purposes, the actual (unrounded) Flame Spread and Smoke-Developed Indices were 4.5 and 0.0 respectively.

CLASSIFICATION

The Flame Spread Index and Smoke-Developed Index values obtained by ASTM E84 tests are frequently used by code officials and regulatory agencies in the acceptance of interior finish materials for various applications. The most widely accepted classification system is described in the National Fire Protection Association publication *NFPA 101 Life Safety Code*, where:

| | | |
|---------|-----------------------------|-------------------------------|
| Class A | 0 – 25 Flame Spread Index | 0 – 450 Smoke-Developed Index |
| Class B | 26 – 75 Flame Spread Index | 0 – 450 Smoke-Developed Index |
| Class C | 76 – 200 Flame Spread Index | 0 – 450 Smoke-Developed Index |

Class A, B, and C correspond to Type I, II, and III respectively in other codes. They do not preclude a material being otherwise classified by the authority of jurisdiction.

ASTM E 84 TEST DATA

Client: AmCoat Industrial

Test Number: 5741-9877

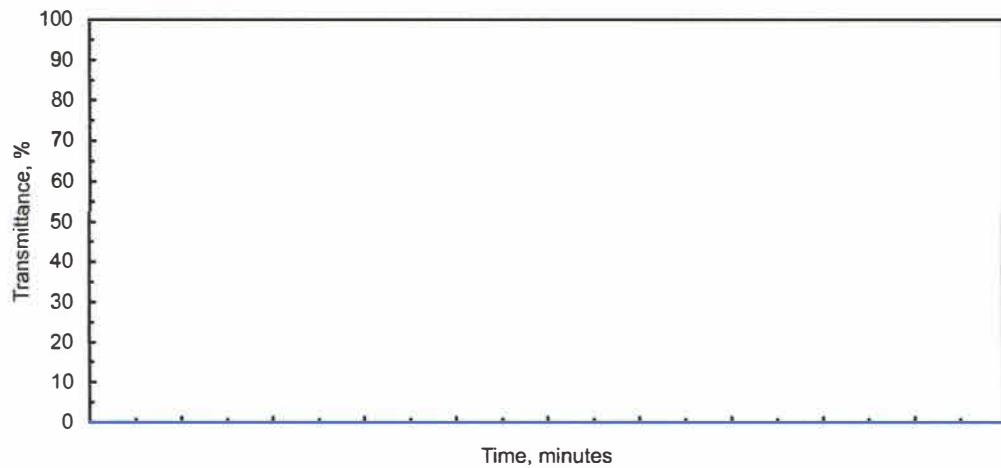
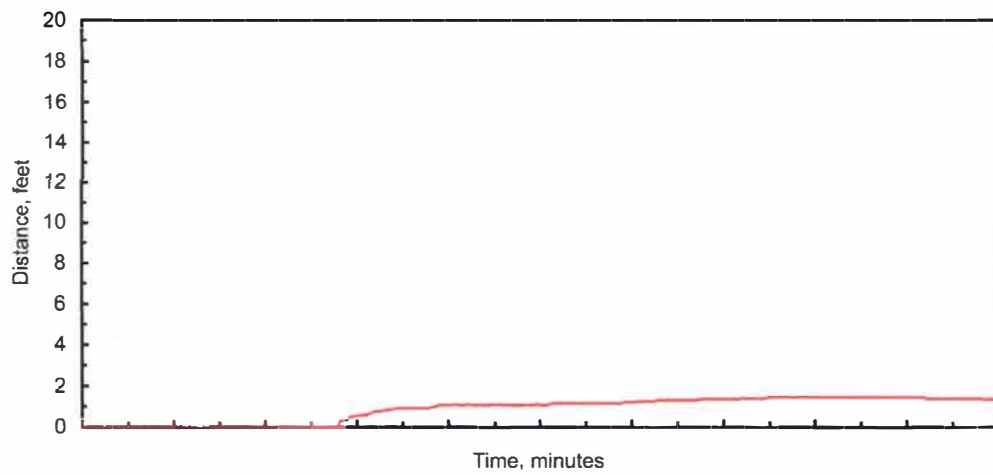
Material Tested: Rhino Shield Coating System (APS + DFC)

Date: January 18, 2022

Test Results:

Time to Ignition = 02.75 minutes
Maximum Flamespread Distance = 01.45 feet
Time to Maximum Spread = 07.48 minutes

Flame Spread Index = 5
Smoke Developed Index = 0



Mike Moore
Amcoat Industrial Inc.
4100 Legendary Drive
Unit A220
Destin, FL 32541

SUBJECT: Wind Driven Rain Results; KTA-Tator, Inc. Project No. 66074988-R1

Dear Mr. Moore:

In accordance with the authorization from David Miller of DRM Consulting and the prepayment, KTA-Tator, Inc. (KTA), KTA has completed the testing for wind driven rain. This revised report contains descriptions of the testing procedures employed and the results of the testing.

SAMPLE

Sample KTA-1 consisted of one quart can of liquid coating and is labeled, "Amcoat Industries, Inc, DFC Matte white base" was received from DRM Consulting on January 18, 2023. Sample KTA-1 was clarified as product "Rhino Shield Durable Finish Coat" by DRM. It should be noted that at no time did KTA personnel witness the acquisition or preparation of the sample.

LABORATORY INVESTIGATION

The laboratory investigation consisted of sample preparation followed by testing of wind driven rain. The test descriptions and the results of the testing are provided below.

Wind Driven Rain Resistance

One coat of Sample KTA-1 was applied by roller brush at the recommended thickness of 15 mils wet to two 8" x 16" x 2" concrete panels. A second coat of KTA-1 was applied after approximately 24 hrs dry time between coats and allowed to cure for 7 days at laboratory conditions, 70 ± 5°F and 50 ± 5% relative humidity. The prepared concrete panels were tested for wind driven rain resistance in accordance with ASTM D6904-03(22) "Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied to Masonry". The painted concrete panels were attached to a wind driven rain test chamber, exposed for 24 hours of continuous water spray and air pressure. The test chamber sprayed a water flow rate of 60 – 70 gallons per minute by way of a fish-tail nozzle that sprayed water onto the entire test panel surface. The internal air pressure was 5 inches Hg. During the testing, the concrete panels were monitored for water

| | | |
|-----------------|--|-----------------------------|
| KTA-Tator, Inc. | 145 Enterprise Drive Pittsburgh, PA 15275 | 412.788.1300 www.kta.com |
|-----------------|--|-----------------------------|



penetration by viewing the back of the test panels. Once the testing was completed, the test panels were evaluated for any notable visual differences such as blistering. The weight of the coated panels was measured before and after exposure to the wind driven rain test chamber. One of the exposed panels had a few tiny blisters, while the second panel did not show any blisters. The weight gain was 0.51 and 0.28 lbs for the two panels. The average percent weight gain of the exposed panels was 0.40%. Sample KTA-1 meet the criteria of the ASTM method of not showing any visible water leaks during the testing on the concrete panels.

If you have any questions concerning the testing or this report, please contact me by telephone at 412.746.4262, or by email at jglover@kta.com.

Sincerely,

KTA-TATOR, INC.


Julie A. Glover
Chemist

cc: David Miller dave@drmconsulting.net

R1 – A revision was issued to include a statement that the sample meet the criteria of the ASTM method of not showing any visible water leaks during the testing on the concrete panels.

JAG/RBL:jef

NOTICE: This report represents the opinion of KTA-TATOR, INC. Laboratory activities were performed at our Pittsburgh, PA facility. This report is issued in conformance with generally accepted industry practices. While customary precautions were taken to verify the information gathered and presented is accurate, complete, and technically correct, this report is based on the information, data, time, materials, and/or samples afforded. Results relate only to the items tested. This report should not be reproduced except in full.

February 24, 2023

Technical Service Report



Revision# 0

DX28K2A



Results and Conclusion

Test #: 4

Method D 6083/D 6083M-18 Type I Environmental Condition

Test/Description: J- Water Swelling per ASTM D471

Result: Matte = 17.1%

Requirement max. 20% (mass)

Conclusion: Matte = Pass

DX28K2A



Testing Laboratory:

ACE Laboratories

6800 N. Chestnut St.
Ravenna, OH 44266
Ph: 330-577-4088

Customer:

AmCoat Industries, Inc

Jackson Valletto

4100 Legendary Dr, A220

Destin FL 32541

jvalletto@amcoatind.com

Project #:

DX28K2A

Quote #:

C22-184

Date of Report:

Monday, November 21, 2022

PO#:

Abstract: Analysis of two (2) products in accordance with the below test methods.

| MTI# | Description of Material | Receiving Date | Sample Condition | Sampled By |
|------------|---|----------------|------------------|------------|
| ACE-220173 | One (1) pint of acrylic roof coating labeled "Rhino Shield DFC Matte" | 10/24/2022 | Acceptable | Customer |
| ACE-220174 | One (1) pint of acrylic roof coating labeled "Rhino Shield DFC Satin" | 10/24/2022 | Acceptable | Customer |

DX28K2A



Results and Conclusion

Test #: 1

Method C 1549-16 Environmental Condition 23.4°C, 46.2% Rh

Test/Description: Solar Reflectance- unprepared

Result: **Matte = 0.837**
Satin = 0.852

Requirement Report Results

Conclusion: **Matte = N/A**
Satin = N/A

Test #: 2

Method C 1371-15 Environmental Condition 23.4°C, 46.2% Rh

Test/Description: Thermal Emittance- unprepared

Result: **Matte = 0.90**
Satin = 0.90

Requirement Report Results

Conclusion: **Matte = N/A**
Satin = N/A

Test #: 3

Method E 1980 Environmental Condition 23.4°C, 46.2% Rh

Test/Description: Solar Reflective Index, Convective Coefficient, Medium Wind ($12 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)

Result: **Matte = 105.3**
Satin = 107.4

Requirement Report Results

Conclusion: **Matte = N/A**
Satin = N/A





Q-Lab Test Services
1005 S.W. 18 Avenue
P. O. Box 349490
Homestead, FL 33034

TEST CERTIFICATE
Laboratory Testing
3 February 2022

Test Number: DCSG-0002
Company: Amcoat Industries LLC 4012 Commons DR. Unit 116,
Address: Destin, Florida 32541

Attention: Mr. David Miller
Payment Reference: Credit Card
No. of Specimens: 5 Coated Wood, Stucco
Specimen Identification: Stucco-DFC WB
Stucco-RustoleumWhite
Wood-DFC White Base, 1
Wood-DFC White Base, 2
Wood-Rustoleum White

Test Method: ASTM B117-19
Deviations: None
Exposure Date: 12 January 2022
Completion Date: 3 February 2022
Exposure Duration: 500 Hours
Exposure Type: Accelerated corrosion
Continuous fog @ 35°C, 5% NaCl solution

Test Equipment Used: Tester Model Q-FOG CCT-1100

By: Susan C. Manak
Susan Manchester
Laboratory Technician

Approved By: Thomas M. Allie
Thomas Allie
Laboratory Manager

October 20, 2010

FLORIDA

150 Azalea, Ste. A
Destin, FL 32541

Michael D. Moore
AmCoat Industries, Inc.
4012 Commons Drive, Unit 116
Destin, FL 32541

Dear Mr. Moore:

Pursuant to your request, R. Hinojosa, PE performed and observed "field" tests in order to determine a U-value calculation based on an R-equivalent value for the **RhinoShield Durable Finish Coat** coating product. The testing was performed on October 20, 2010 at the AmCoat Industries facility in Destin, FL.

An R-value is a measure of thermal resistance used in the building and construction industry. Under uniform conditions it is the ratio of the temperature difference across an insulator and the heat flux through it. U-value is the reciprocal of R-value. The field testing was conducted in order to determine an R-equivalent value for the coating and then using that R-equivalent value to calculate the U-value.

The coating was applied to a pane, with a know R-value of 1.28, at a dry film milage (DFM) thickness of 9 - 10 mils. The same heat source was applied under uniform conditions at an equivalent distance of five and one quarter (5-¼") inches away from the coating, and three other materials with a known R-value. The other materials were [1] an R-4 pane of glass, [2] one and three-quarters of an inch of Dow fiberglass insulation with a known R value equal to R-6.5, and [3] three and one-half inch of Dow fiberglass insulation with a known R value equal to R-13.

Temperature readings on the surface of the materials opposite the heat source were taken at the beginning of the test, and at five minute intervals up to fifteen minutes. Heat from the source, by means of conduction, transferred through each of the materials at a different rate based on the different R values of the materials. The temperature readings were taken via an infrared thermometer and the temperature of the sample was compared to the temperature of the know R-value materials. The initial temperatures at Time = 0 minutes and final temperatures at Time = 15 minutes was as follows:

| <u>Material</u> | <u>Temp. °F at T₀</u> | <u>Temp. °F at T_i</u> |
|------------------|----------------------------------|----------------------------------|
| R-4 Glass | 77.5 | 110.5 |
| R-6.5 Insulation | 78.5 | 102.5 |
| R-13 Insulation | 76.5 | 88.0 |
| RhinoShield | 76.5 | 97.5 |

As you can see, the temperature of the RhinoShield was slightly less than the R-6.5 Insulation. It should be noted, however that the coating was applied on an R-1.28 pane of glass. As such, the glass must be taken into consideration. Based on the results of the testing, the R-equivalent of the **RhinoShield Durable Finish Coat** as applied at a DFM of 9-10 mils is 6.89 (ft²•°F•h)/Btu. As such, the **U-value is .145 Btu/(h•°F•ft²).**

I appreciate the opportunity to provide service to your company in this practical field U-value calculation for the **RhinoShield Durable Finish** coating product. Let me know if there is any other assistance I can be to your company with regard to this product.

Respectfully Submitted,



Robért Hinojosa, PE
Florida PE No. 64095