

CLIENT: **Artesian Home Products**
3415 Swetzer road
Loomis, CA 95650

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| Test Report Number : RJ8844F-1 | Date: January 18, 2023 |
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SAMPLE ID: The client identified the following test material as:
Artesian Extreme Rail Gutter Guard

SAMPLING DETAIL: Test Samples were submitted to the Laboratory directly by the client. No sampling or sample preparation were observed by QAI staff.

DATE OF RECEIPT: Samples were received at QAI facilities on: January 11, 2023

TESTING PERIOD: January 11, 2023

AUTHORIZATION: Testing was authorized by Slate Bryer for proposal 22MB12092R1 signed January 11, 2023.

TEST REQUESTED: Testing in accordance with the following:

- a) Section 2303.2 of 2021 International Building Code, referencing ASTM E84, Extended 20 minutes.
- b) ASTM E2768-11(2018) Standard Test Method for Extended Duration Surface burning characteristics of Building Materials (30 min Tunnel Test).
- C) Test method to UBC No. 8-1 and SFM 12-7A-5 per Chapter 7A of the 2019 California Building Code, ignition- Resistant Material 30 minute test.

| | | |
|----------------------|----------------------------|-------------------------------|
| TEST RESULTS: | <u>Flame Spread</u> | <u>Smoke Developed</u> |
| | 0 | 20 |

When tested in accordance to Section 2303.2 of 2021 International Building Code, referencing ASTM E84, Extended 20 minutes, and ASTM E2768-11-(2018) the tested material resulted in a Class A during the first 10 minutes of the test and achieved a flame spread of less than 10.5 feet from the center line of the burners during the 30-minute flame exposure. The product met the above specification for Ignition Resistant Material. Detailed results are presented in the subsequent pages of this report.

Prepared By



Victor Peinado
Fire Lab Supervisor

**Signed for and on behalf of
QAI Laboratories, Inc.**



Jason Friedrich P.E.
Engineering Manager



SCOPE: This fire-test-response standard ASTM E2768-11 (2018) is used for the comparative surface burning behavior of building materials is applicable to exposed surfaces such as walls, ceilings and others. The test is conducted with the specimen in the ceiling position with the surface to be evaluated exposed face down to the ignition source. The material, product, or assembly shall be capable of being mounted in the test position during the test. Thus, the specimen 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. The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke developed index are reported. However, there is not necessarily a relationship between these two measurements.

USE: The use of supporting materials on the underside of the test specimen has the ability to lower the flame spread index from those which might be obtained if the specimen could be tested without such support. These test results do not necessarily relate to indices obtained by testing materials without such support.

Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place.

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.

PROCEDURE: The test is conducted in accordance with 2021 IBC Section 2303.2 following ASTM E84 and ASTM E2768-11 (2018), extended an additional 20 minutes. A brief overview of the method is as follows: The test specimen, a material between 20 and 24 inches in width by 24 feet +/- 12 inches in length is loaded onto the water cooled ledge of the fire test chamber. The fire test chamber is a rectangular horizontal duct with a removable lid. The inside dimensions are 17 3/4 inches +/- 1/4" wide by 12 inches +/- 1/2" deep by 25 feet long. The sides and base of the chamber are lined with an insulated firebrick with pressure tight observation windows down one side for a technician to observe flame progression during the duration of the 10-minute test period. The chamber lid is lowered into test position with non combustible concrete board placed between the specimen and chamber lid. A draft of 240 feet per minute which is maintained inside the test chamber throughout the test period by the means of an electronic fan afterburner and an electronically controlled damper door system located downstream of the test chamber in the exhaust ducting. The test is started when the test flame is ignited at the front of the test chamber. An electronic photocell system located in the exhaust system downstream from the test chamber is used to plot the smoke developed for use in calculating the smoke developed index while a technician plots the flame spread distance used in determining the flame spread index. The test is run for the 10 minute duration to determine the Flame Spread and Smoke Developed Index then the test is continued for an additional 20 minute period with Maximum flame spread recorded. Testing was extended an additional 20 minutes, and observations made regarding significant progressive combustion and flame spread through extended duration.

CONDITIONS OF CLASSIFICATION:

13.1 The test method has the following conditions of classification for a material or product to be classified as Meeting the requirements of this standard:

13.1.1 The flame spread index shall be 25 or less as determined for the initial 10 min test period,

13.1.2 The flame front shall not progress more than 10.5 ft (3.2 m) beyond the centerline of the burners at any time during the 30 min test period. This is considered evidence of no significant progressive combustion in this test method.

CBC 2019-IGNITION-RESISTANT MATERIAL.

A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in Section 704A and SFM Standard 12-7A-5, Ignition-Resistant Material.

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PREPARATION AND CONDITIONING:

The Sample Gutter Guard material was delivered to QAI in 6 inches wide X 48 inches long X 0.5 Inch thick Pieces. 24 of these Pieces were used for the test.. The specimen was placed in the conditioning room (maintained at 72 ± 5° F and a relative humidity of 50 ± 5%) for a minimum of 48 hours prior to testing.

MOUNTING METHOD:

The test ready sample consisting of 24 pieces measuring 6 inches wide X 48 inches long and an overall test thickness of 0.5 Inch were supported with metal rods spaced at 24 inch intervals to fulfill the chamber requirements for testing. Prior to testing the samples were covered with 1/4 inch cement board as required in the test method.

Section 2303.2 of 2021 International Building Code, referencing ASTM E84, Extended 20 minutes, and ASTM E2768-11-(2018)

TEST RESULTS:

CLIENT NAME: Artesian Home Products **TEST DATE:** January 11, 2023

SAMPLE ID: Artesian Extreme Rail Gutter Guard

SAMPLE IGNITION: 00:00 Minutes / Seconds

MAX FLAME FRONT: During 10-minute test 0.0 Feet From 4.5' Mark.

MAX FLAME FRONT: During 30-minute test. 0.0 Feet From center line of Burner.

TIME TO MAXIMUM SPREAD: 00:00 Minutes / Seconds

TEST DURATION: 30:00 Minutes / Seconds

SUMMARY: FLAME SPREAD: 0 0 Unrounded
SMOKE DEVELOPED: 20 19 Unrounded

OBSERVATIONS:

Warping was observed at 03:15. Charring was observed at 09:50. A Maximum Flamefront of 0 feet was observed. The Test was terminated at 30:00.



SUMMARY OF ASTM E84 / UL 723 RESULTS:**ASTM E2768-11 (2018)-E84-extended 20:00 (During 30:00 test, flame progression less than 10 1/2' Feet from centerline of burners.**

Because of the possible variations in reproducibility, the results are adjusted to the nearest figure divisible by 5.

Smoke Density values over 200 are rounded to the nearest figure divisible by 50.

In order to obtain the Flame Spread Classification, the above results should be compared to the following table:

| <u>NFPA CLASS¹</u> | <u>IBC CLASS²</u> | <u>FLAME SPREAD</u> | <u>SMOKE DEVELOPED</u> |
|--------------------------------------|-------------------------------------|----------------------------|-------------------------------|
| A | A | 0 through 25 | Less than or equal to 450 |
| B | B | 26 through 75 | Less than or equal to 450 |
| C | C | 76 through 200 | Less than or equal to 450 |

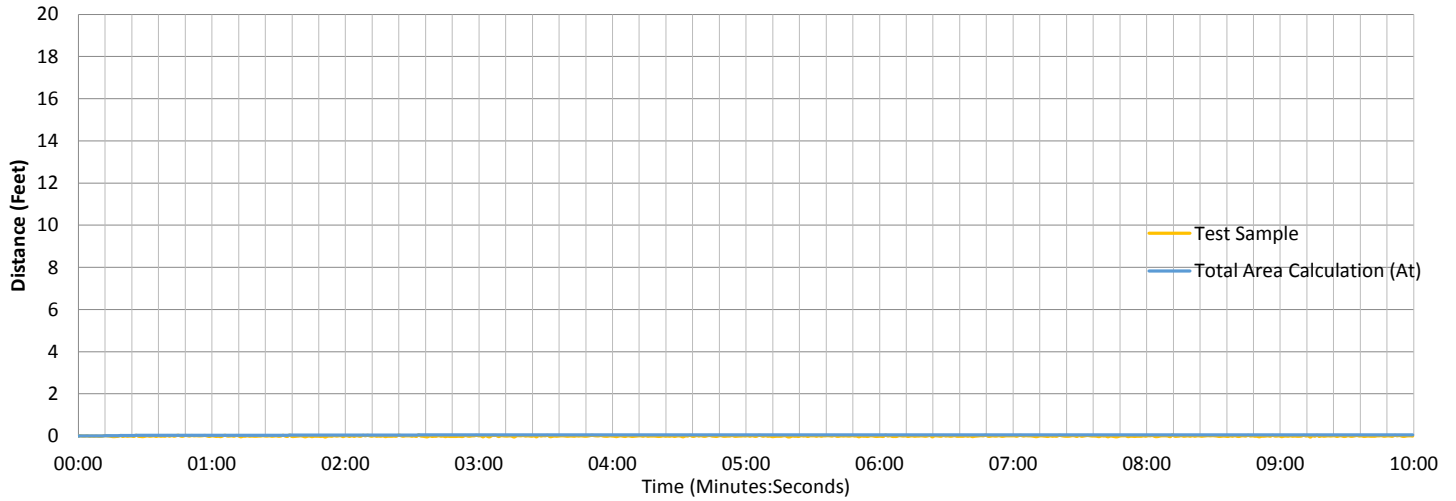
BUILDING CODES CITED:

1. National Fire Protection Association, ANSI/NFPA No. 101, "Life Safety Code"
2. International Building Code, Chapter 8, Interior Finishes, Section 803.
3. International Building Code, Chapter 23, Wood, Section 2303.2.
4. California Building Code, 2019 Edition, Chapter 7A, Section 704A and Chapter 23, section 2303.2

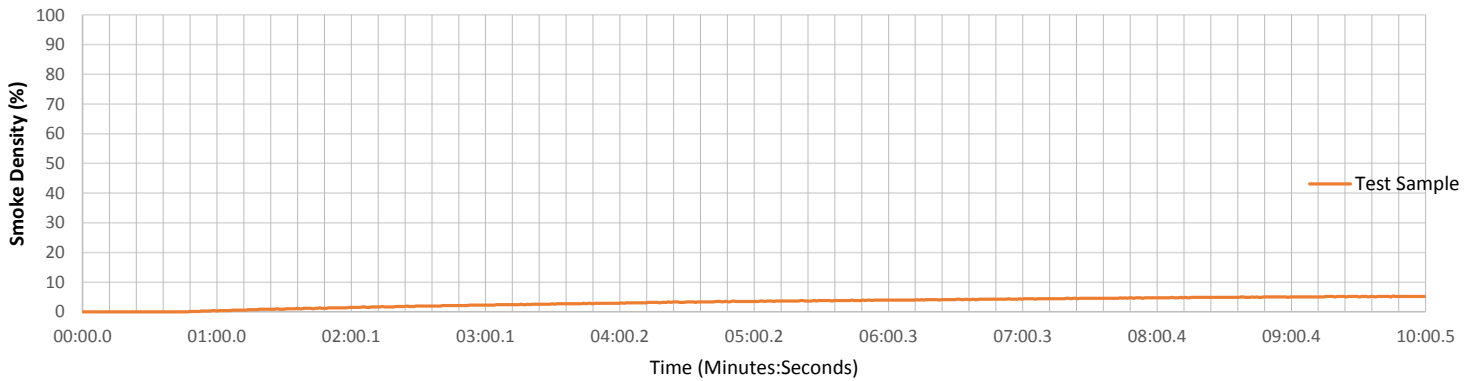


RESULTS CONTINUED:

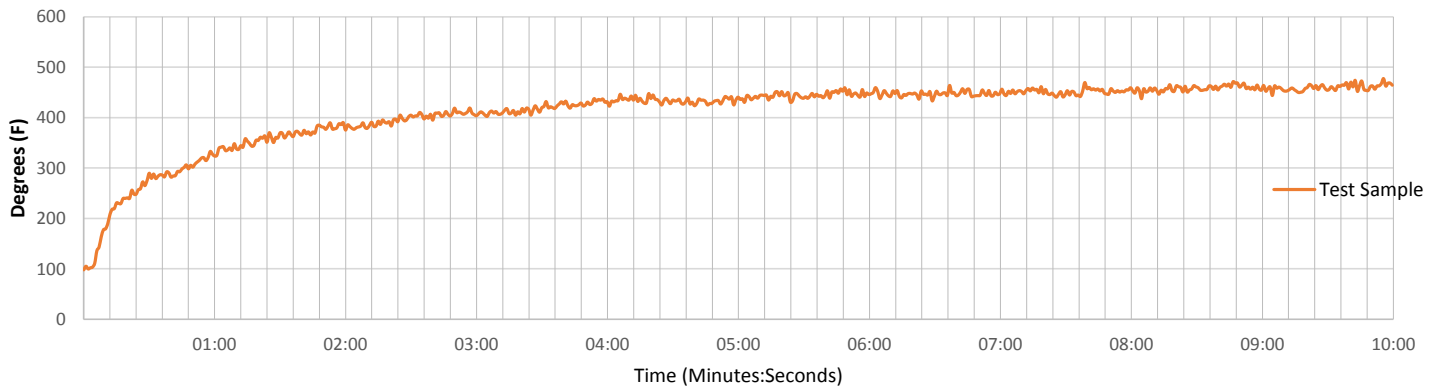
Flame Spread



Smoke Readings



Temperature



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APPENDIX

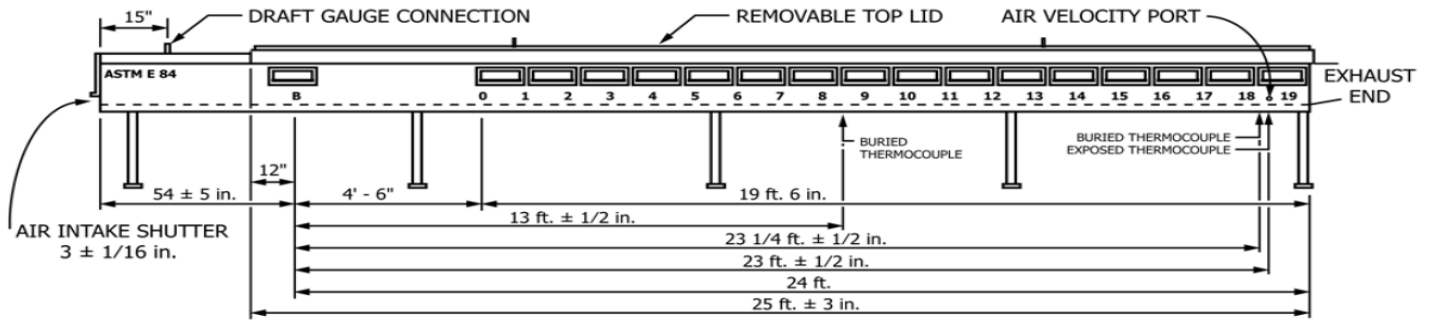


Diagram 1. Test Chamber side view showing critical dimensions.

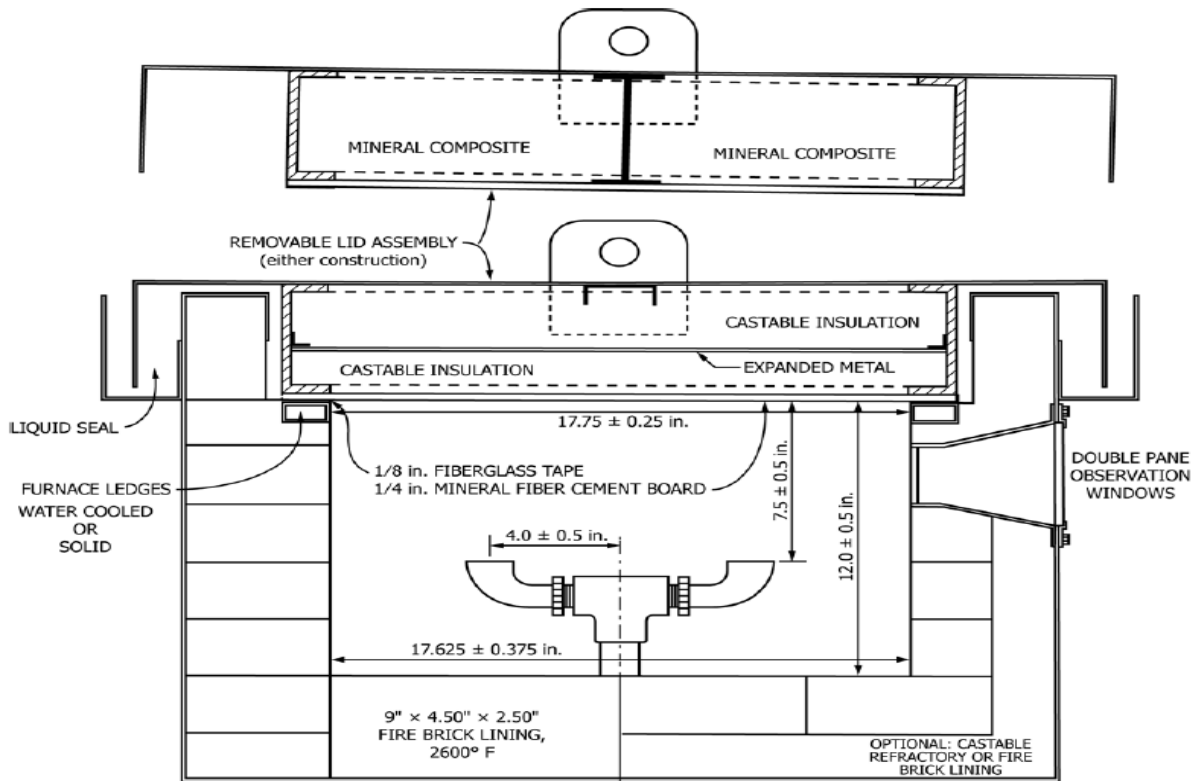


Diagram 2. Test Chamber looking down chamber showing critical dimensions.

APPENDIX

Photo 1. Surface of Specimen Tested

<<<END OF TEST REPORT>>>