

CLIENT: Flexstone Coatings, Inc.
1230 W. 75th Avenue
Vancouver, BC V6P 3G3

Test Report Number : RJ8042F-2	Date: April 20, 2021
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SAMPLE ID: The client identified the following test material as:
Flexstone deck coating system

SAMPLING DETAIL: The clients submitted the Flexstone deck coating system to QAI Laboratories. The client's roller applied the liquid coating on to the 3/4" combustable deck. This application was witness by QAI personal on September 22, 2020 - September 28, 2020 per ASTM E108 and section 7 of UL790.

DATE OF RECEIPT: Samples were received at QAI facilities on: October 22, 2020

TESTING PERIOD: 10/21/2020 - 10/22/2020

AUTHORIZATION: Testing was authorized by Jay Cruz for proposal 21MB0322.

TEST REQUESTED: Evaluate the clients Roof Covering system in accordance to ASTM E 108-2017 Edition, which outlines testing to be conducted using the procedures and methods outlined in ASTM E 108-17 "Standard Test Methods for Fire Tests of Roof Coverings".

TEST RESULTS: **TEST #1,#2:** The Flexstone deck coating system when installed at a 1/G12 test slope, **has met** the requirements of Class B Burning Brand mode for Section 7 of UL790 and Section 9 of ASTM E108 when tested and evaluated to the requirements outlined in ASTM E 108-2017 Edition.

Detailed test results are provided on the subsequent pages of this report.

Prepared By



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Test Technician

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



Jason Friedrich P.E.
Engineering Manager

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DETAILS OF THE TESTING

TEST SAMPLE DESCRIPTION

1.0 Description of Test Specimens

Table 1 outlines the Flexstone Coatings Inc. Roof Covering system evaluated by QAI.Laboratories

COMPONENT	SUPPLIER	COMMENT
Framing Type / Species	Lowe's	Moisture Content: 8-12%
Douglas Fir No.1		
Sheathing Type / Grade	Lowe's	3/4" ACX plywood
3/4" ACX plywood		
Roof Covering Material 1 / Grade:	Send directly by client	The test decks were built and coatings were applied by client here at QAI Laboratories.
Flexstone deck coating system		

Table No. 1: Details of the Flexstone Coatings Inc. Roof Covering Test Specimens.

DETAILS OF THE TESTING

2.0 Test Set Up and Procedure:

Storage of Assembled Test Decks

All test deck assemblies were stored indoors at temperatures not lower than 60F (16) nor higher than 90F (32C) for the period of time necessary to cure the assembly components prior to testing. The test decks were stored in such a manner to assure that each deck was surrounded by free circulating air.

Roof System and Deck Assembly Construction Details

Lumber: Nominal 2" X 4" Douglas Fir, moisture content between 8-12%.

Deck: 3/4" ACX Plywood, moisture content not greater than 8%.

Roof Covering: The clients submitted the Flexstone deck coating system to QAI Laboratories. The Flexstone primer #3 was first applied at 300 sq. ft. per gallon. Flexstone Solvent-free "Base" was properly mixed with water and then mixed with Flexstone FR powder. This detail coating mixture was applied over all deck seams and fiberglass fabric was embedded. Flexstone Solvent-free "Base" coating was applied after at 3 gallons per 100 sq. ft. After curing a coat of Flexstone Color-Coat AR (mixed with Flexstone "FR" powder) is applied at 1 ¼ gallons per 100 sq. ft. then the Flexstone Vinyl-Acrylic chips are broadcast into the wet coating. After curing a seal coat of Flexstone Multi-Glaze MCU clear is applied at 100 sq.ft per gallon. This application was witness by QAI personal on September 26, 2019 – September 27, 2019 per ASTM E108 and section 7 of UL790.

Test Procedure

Burning Brand

Two test deck was constructed by the client in accordance with Section 4 of UL790 and Section 6 of ASTM E108 with final measurements of 40-inch wide by 52-inch long and were individually mounted onto the test chamber compliant with Section 5 of ASTM E108 and UL 790. The burning brand was ignited following the sequence outlined in the method and the test was run in accordance to Section 8 of UL790 and Section 10 of ASTM E108. Observations were made and recoded during a 90 minute test period and recorded on the individual test data sheets in the Appendix A of this report.

2.1 Test Requirements

At no time during or after the intermittent flame, spread of flame or burning brand tests shall:

- 1 Any portion of the roof covering material be blown or fall off the test deck in the form of flaming or glowing brands that continue to glow after reaching the floor, or
- 2 The roof deck be exposed, or
- 3 Portions of the roof deck fall away in the form of particles that continue to glow after reaching the chamber floor.
- 4 At no time during the Class B intermittent flame or burning brand tests shall there be sustained flaming of the underside of the test assembly deck.
- 5 At the conclusion of the spread of flame tests, the flaming shall not have spread beyond 8 feet for Class B.
- 6 There shall have been no significant lateral spread of flame from the path directly exposed to the test flame during spread of flame tests.

3.0 Test Results

The following summarizes testing conducted by QAI during testing of the Flexstone Coatings Inc. Flexstone deck coating system Roof Covering when tested to ASTM E 108-17.

Client Name:	Flexstone Coatings Inc.	Criteria:	ASTM E 108	Framing Type / Species	Douglas Fir No.1
Job No.:	RJ8042F-2	Criteria Version:	2017 Edition.	Sheathing Type / Grade	3/4" ACX plywood
Test Method:	ASTM E 108			Underlayment 1: Grade / Type:	N/A
Version / Publication of Method:	17			Underlayment 2: Grade / Type:	N/A
System Type	Covering			Joint Compound?	N/A
Test Slope	1/ :12			Insulation Type / Grade	N/A
Test Degree	1.2 Degrees			Roof Covering Material 1 / Grade:	Flexstone deck coating system
Burning Brand	No			Roof Covering Material 2 / Grade:	
Intermittant Flame	No				
Spread of Flame	Yes				
Roofing Class	B				

Sample ID: Flexstone deck coating system

Test Conditions	Class B Requirement	Average Recorded
Wind Speed (ft/min)	1012 – 1100 ft/min	1053 (ft/min)
Flame Temperature (°F)	1400 ± 50 (°F)	1369 (°F)
Burning Brand Weight (grams)	500 ± 50 (grams)	532.81 (grams)

Conclusion:

The Flexstone deck coating system when installed at a 1/G12 test slope, has met the requirements of Class B Burning Brand mode for Section 7 of UL790 and Section 9 of ASTM E108 when tested and evaluated to the requirements outlined in ASTM E 108-2017 Edition.

Burning Brand Test							
Test Date	Test Assembly	Brand Weight (g)	Sustained Under Deck Ignition Time (MM:SS)	Test Termination (MM:SS)	Condition @ Start of Test		Result:
					Temp. (°F)	RH (%)	
10/21/2020	1	535.62	0:00:00	1:03:00	73.0	29	Pass
10/22/2020	2	530.00	0:00:00	1:24:00	70.0	35	Pass

Appendix A: Burning Brand-Test Specimen #1

Client Name:	Flexstone Coatings Inc.	Criteria:	ASTM E 108	Framing Type / Species	Douglas Fir No.1
Job No.:	RJ8042F-2	Criteria Version:	2017 Edition.	Sheathing Type / Grade	3/4" ACX plywood
Test Method: Version 7	ASTM E 108			Underlayment 1: Grade / Type:	N/A
Publication of	17			Underlayment 2: Grade / Type:	N/A
System Type	Roof Covering			Joint Compound?	N/A
Test Slope	1/G12			Insulation Type / Grade	N/A
Test Degree	1.2 Degrees			Roof Covering Material 1 / Grade:	Flexstone deck coating system
Burning Brand	No			Roof Covering Material 2 / Grade:	
Intermittant Flame	No			Test Temperature (°F)	73
Spread of Flame	Yes			Test Humidity (%)	29
Roofing Class	B			Test Date	10/21/2020

Sample Id: **Flexstone Coatings Inc. Flexstone deck coating system Burning Brand - Specimen #1**

Critical Standard Observations	
Test Duration	1:03:00
Sustained Flaming on Underside of Roof Deck	0:00:00
Production of Flaming Brands of roof covering material	0:00:00
Production of Glowing Brands of roof covering material	0:00:00
Displacement of the Test Sample	0:00:00
Exposure of Portions of the deck	0:00:00
Falling away of portions of the deck	0:00:00
Result	Pass

Brand #	Brand Weight (grams)	Correct?	CC Number
1	532.77	Yes	4
2	538.46	Yes	5
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		

General Test Observations	
ignition	0:00:04
surface under brand started to bubble	
smoking at the seam	
charring at the seam	
Burning brand stopped flaming	0:18:00
burning brand stopped glowing	0:21:00
Second brand IG	0:00:04
smoking at the seam	
charring at the seam	
Burning brand stopped flaming	0:15:00
burning brand stopped glowing	0:28:00

Asset Number	Description	Equipment Functional Range	Calibration Date	Calibration Due Date
RF0029	Stop Watch	N/A	10/2/2020	10/2/2021
RF0005	Anemometer	30 FPM to 5000 FPM +14/-	2/25/2020	2/25/2021
TU8124	Digital Thermometer	-328°F - 2498°F	11/4/2020	11/4/2021
RP0072	Calibrated Tape Measure	0-25 Feet	10/6/2020	10/6/2021
RP0138	Temperature and Humidity Data Logger	-4°F to 158°F +/-0.8°F / 60	11/4/2019	11/4/2020
RE0039	Digital Angle Gauge	0° to 90°	11/4/2019	11/4/2020
RF0031	ASTM E108 UL790 Test Chamber	ASTM E108/ PER UL790	10/21/2020	Per USE

Appendix A: Burning Brand-Test Specimen #2

Client Name:	Flexstone Coatings Inc.	Criteria:	ASTM E 108	Framing Type / Species	Douglas Fir No.1
Job No.:	RJ8042F-2	Criteria Version:	2017 Edition.	Sheathing Type / Grade	3/4" ACX plywood
Test Method: Version 7	ASTM E 108			Underlayment 1: Grade / Type:	N/A
Publication of	17			Underlayment 2: Grade / Type:	N/A
System Type	Roof Covering			Joint Compound?	N/A
Test Slope	1/G12			Insulation Type / Grade	N/A
Test Degree	1.2 Degrees			Roof Covering Material 1 / Grade:	Flexstone deck coating system
Burning Brand	No			Roof Covering Material 2 / Grade:	
Intermittant Flame	No			Test Temperature (°F)	70
Spread of Flame	Yes			Test Humidity (%)	35
Roofing Class	B			Test Date	10/22/2020

Sample Id:

Flexstone Coatings Inc. Flexstone deck coating system Burning Brand - Specimen #2

Critical Standard Observations	
Test Duration	1:24:00
Sustained Flaming on Underside of Roof Deck	0:00:00
Production of Flaming Brands of roof covering material	0:00:00
Production of Glowing Brands of roof covering material	0:00:00
Displacement of the Test Sample	0:00:00
Exposure of Portions of the deck	0:00:00
Falling away of portions of the deck	0:00:00
Result	Pass

Brand #	Brand Weight (grams)	Correct?	CC Number
1	540.00	Yes	2
2	520.00	Yes	7
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		
	0.00		

General Test Observations

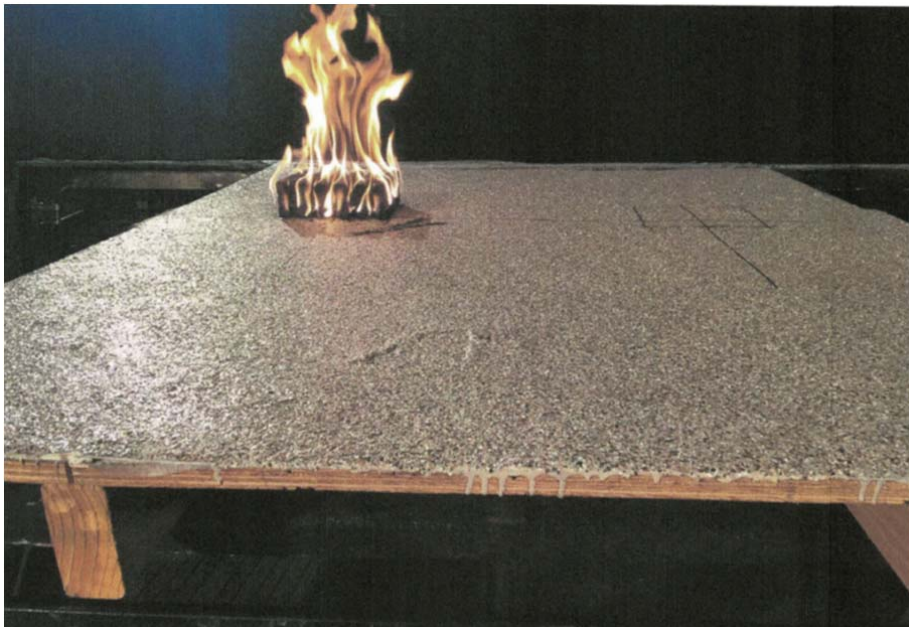
ignition	0:00:04
surface under brand started to bubble	
smoking at the seam	
charring at the seam	
Burning brand stopped flaming	0:17:00
burning brand stopped glowing	0:29:00
Second brand IG	0:00:04
smoking at the seam	
charring at the seam	
Burning brand stopped flaming	0:20:00
burning brand stopped glowing	0:26:00

Asset Number	Description	Equipment Functional Range	Calibration Date	Calibration Due Date
RF0029	Stop Watch	N/A	10/2/2020	10/2/2021
RF0005	Anemometer	30 FPM to 5000 FPM +14/-	2/25/2020	2/25/2021
TU8124	Digital Thermometer	-328°F - 2498°F	11/4/2020	11/4/2021
RP0072	Calibrated Tape Measure	0-25 Feet	10/6/2020	10/6/2021
RP0138	Temperature and Humidity Data Logger	-4°F to 158°F +/-0.8°F / 60	11/4/2019	11/4/2020
RE0039	Digital Angle Gauge	0° to 90°	11/4/2019	11/4/2020
RF0031	UL790 Test Chamber	AS PER UL790	10/22/2020	Per USE

Appendix B: Photographs



Photograph 1: Class B Burning Brand test Specimen prior to test.
Flexstone Pedestrian Deck Coating System



Photograph 2: Class B Burning Brand Test Specimen during test.

Appendix B: Photographs (Continued)



Photograph 3: Class B Burning brand after test.
Flexstone Pedestrian Deck Coating System

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