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SIGMADEK
TEST REPORT

SCOPE OF WORKs
Testing of SigmaDek Deck Tiles in general accordance with the following:

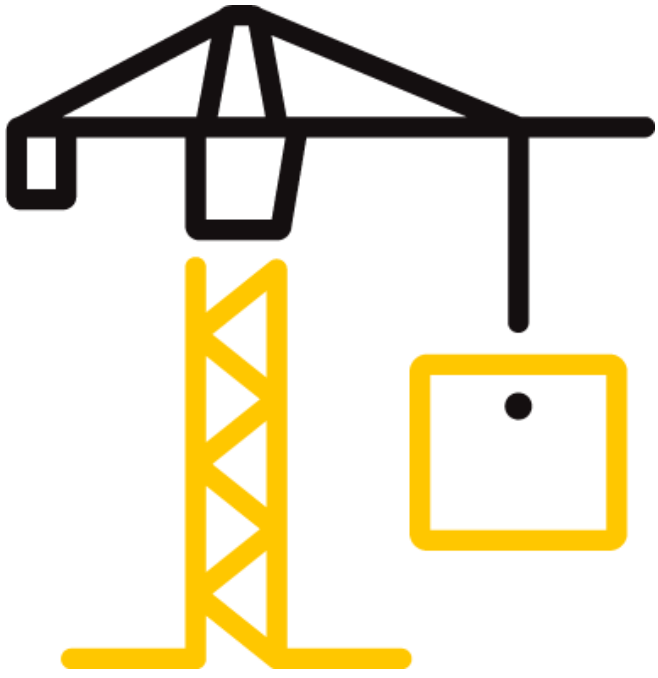
- UL1738-14, *Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*, Section 24 *Rain Test*
- ASTM D1970/D1970M-17a, *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection,* Section 7.9 *Capability to Seal Around Nail (Head of Water Test)*

REPORT NUMBER
103483464COQ-001

ISSUE DATE
22-May-2018

PAGES
Report 8 Pages
Appendix A 3 Pages

DOCUMENT CONTROL NUMBER
GFT-OP-10b (13-March-2017)



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TEST REPORT FOR SIGMADEK

Report No.: 103483464COQ-001
Revision Date: May 22, 2018

REPORT ISSUED TO

SIGMADEK
Suite 260, 600 Crowfoot Crescent NW
Calgary, AB T3G 0B4
Canada

CONCLUSION

The Sigmadek Deck Tiles product identified and evaluated in this report has been tested per the selected sections of the following:

- UL1738-14, *Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*, Section 24 *Rain Test*
- ASTM D1970/D1970M-17a, *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection,* Section 7.9 *Capability to Seal Around Nail (Head of Water Test)*

The test results are presented in Section 6 of this report.

COMPLETED BY:	Chris Chang	**REVIEWED BY:**	Baldeep Sandhu
TITLE:	Senior Tech – Building & Construction	**TITLE:**	Manager – Building & Construction
SIGNATURE:		**SIGNATURE:**	
DATE:	05/22/18	**DATE:**	05/22/18

SECTION 1
INDEX

SECTION 2
OBJECTIVE

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Sigmadek on a deck tile system. The evaluation was carried out in accordance with selected sections of the following:

- UL1738-14, *Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*, Section 24 *Rain Test*
- ASTM D1970/D1970M-17a, *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection,* Section 7.9 *Capability to Seal Around Nail (Head of Water Test)*

This evaluation was completed during the month of May 2018.

SECTION 3
SAMPLE SELECTION

The client submitted one (1) deck assembly to the Evaluation Center on April 17, 2018 (Coquitlam ID# VAN1804171051-001). Samples were not independently selected for testing.

SECTION 4
SAMPLE AND ASSEMBLY DESCRIPTION

The product was identified as Sigmadek Deck Tiles. The tile inserts are made of natural solid porcelain which are fixed to an aluminum extrusion tray, and are intended for use as an exterior deck board placed over wood or aluminum floor joists.

SECTION 5
TESTING AND EVALUATION METHODS

CONDITIONING

Before testing, the test specimen materials were held in standard laboratory conditions for at least 24 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 5%.

RAIN TEST

Rain test was conducted in accordance with Section 24 – *Rain Test* of UL1738-14. The rain test apparatus consisted of a water supply pipe rack with three spray heads with water pressure maintained at 5psig (34.5 kPa) for each spray head. The average rate of simulated rainfall in inches per hour over an area 12 in. (305 mm) in diameter with the water pressure at 5psig (34.5 kPa) was determined using a 12 in. (305 mm) diameter cylindrical container. The container was open at one end and approximately 20 in. (508 mm) deep. The depth of rainfall collected in 30 minutes was multiplied by two to determine the rainfall per hour.

The spray was then directed toward the top surface of the deck assembly. The test assembly was centrally located within the spray pattern and was at least 3 feet (0.9 m) below the plane of the lower spray head outlet The water spray was maintained for an hour. Any water that leaked through the test deck was collected. Upon completion of the rain test, the underside of the test sample was inspected for any sign of water droplets or leakage.

DEVIATION FROM STANDARD METHOD

As UL 1738 is a test specification for venting systems, the amount of water collected during the test was through the test deck, and not the vent gas conduit or ventilation air passageway.

SEALABILITY AROUND NAIL (HEAD OF WATER TEST)

Sealability around nail (head of water test) was conducted as per Section 7.9 of ASTM D1970/D1970M-17a with reference to ASTM D7349/D7349M-15, *Standard Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal around Fasteners*. A 4 in. PVC pipe was centered over a joint between two aluminum extrusion trays. Silicone sealant was applied around the outside of the pipe to bond to the deck tiles. The pipe, after 24 h at ambient temperature, was filled with water to a depth of 305 mm (12 in.) with distilled water. The water head was maintained for a period of 72 ± 0.25 hours. The test sample was kept at 23 ± 2°C and relative humidity of 50 ± 5%. Upon completion of the testing, the underside of the test assembly was inspected for any sign of water droplets or leakage.

DEVIATION FROM STANDARD METHOD

As ASTM D1970 and ASTM D7349 are test standards for roofing underlayments and waterproofing membranes, the substrate, intervening material, and fasteners were not used in the test as they were not applicable to the Sigmadek product. Additionally, per the client's request, a water head of 305 mm (12 in.) was used instead of 5 in. (127 mm).

SECTION 6
RESULTS AND OBSERVATIONS

The product test results are shown in Table 1 below (refer to Appendix A for a full set of test results).

Table 1. Test Data	
Description	**Result**
Rain Test	No sign of any water leakage; no water collected under test deck
Sealability Around Nail (Head of Water Test)	No sign of any water leakage

SECTION 7
CONCLUSION

The Sigmadek Deck Tiles product identified and evaluated in this report has been tested per selected sections of the following:

- UL1738-14, *Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*, Section 24 *Rain Test*
- ASTM D1970/D1970M-17a, *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection,* Section 7.9 *Capability to Seal Around Nail (Head of Water Test)*

The test results are presented in Section 6 of this report.

SECTION 8
APPENDIX A: TEST DATA

Company	Sigmadek	Technician(s)	Chris Chang / Frank Gadea-Lopez
Project No.	G103483464	Reviewer	Baldeep Sandhu
Models	Deck Tiles	Start/End Date	May 9 - 16, 2018
Product Name	Same as above	Sample ID	VAN1804171051-001
Standard	**ASTM D1970/D1970M-17a,** ***Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection, Section 7.9 Capability to Seal Around nail (Head of Water Test)*** ***UL1738-14, Standard for Safety: Venting Systems for Gas-Burning Appliances, Categories II, III, and IV, Section 24 - Rain Test***		

Test Data Package

Table of Contents

Test:	**Rain Test**	Project No:	G103483464
Date:	10-May-18	Eng/Tech:	Frank Gadea-Lopez / Chris Chang
Client:	Sigmadek	Reviewer:	Baldeep Sandhu
Product:	**Deck Tiles**	Location:	Coquitlam, BC

Test Method: UL1738-14, *Venting Systems for Gas-Burning Appliances, Categories II, III, and IV*

Conditioning: 48 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 5%

Equipment: Digital Floor Scale (Intertek ID# P60635, cal due January 17, 2019)
Dwyer 0-30 psi Pressure Gauge (Intertek ID# P60827, cal due January 9, 2019)
Dwyer 0-30 psi Pressure Gauge (Intertek ID# P60817, cal due December 12, 2018)
Dwyer 0-30 psi Pressure Gauge (Intertek ID# P60828, cal due January 9, 2019)
Vaisala Temperature and Humidity Indicator (Intertek ID# 9-0176, cal due January 24, 2019)

Time/Temp/RH: 8:30AM / 23.0°C / 50.0%

Simulated Rainfall			
		39.8	lb / 30 mins
	=	18052.9616	g / 30 mins
	=	18052.9616	mL / 30 mins
	=	1101.658513	in³ / 30 mins

Diameter:	11.75	in.
Area:	108.4	in²

Rate of simulated rainfall: 20.32 in/hr

Water Collected Under Test Deck: None

Observations: No sign of any water leakage

Test:	**Head of Water Test**	Project #:	G103483464
Date:	16-May-18	Eng./Tech:	Chris Chang
Client:	Sigmadek		Frank Gadea-Lopez
Product:	**Deck Tiles**	Reviewer:	Baldeep Sandhu
Specimen ID:	**As Received**	Location:	Coquitlam, BC

Test Standard(s) ASTM D1970/D1970M-17a, *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection*

ASTM D7349/D7349M-15, *Standard Test Method for Determining the Capability of Roofing and Waterproofi Materials to Seal around Fasteners*

Conditioning: Minimum 24 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 5%

Test Duration: Maintained for 72 hours

Water Head: 12 in.

Equipment: Fluke 52 Series II Temperature Probe (Intertek ID# D2679, cal due September 5, 2018)

Time/Temp/RH: 9:00AM / 22.9°C / 49.0%

Specimen	Test Condition	Pass/Fail
1	As Received	**Pass**

Observations: No water leakage was observed during the test.