

**TEST REPORT**

**REPORT NUMBER: 3175731MID-002**  
ORIGINAL ISSUE DATE: APRIL 30, 2009

**EVALUATION CENTER**  
Intertek Testing Services NA Inc.  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**SOFSURFACES, INC.**  
**4393 DISCOVERY LINE**  
**PETROLIA, ON N0N1R0**  
**CANADA**

**CONTACT:**  
**MR. JEREMY MORNINGSTAR**  
**morningj@sofsurfaces.com**

PRODUCT EVALUATED:  
SofTILE AP Pavers

EVALUATION PROPERTY:  
CAN/ULC S107-M (2003)  
"Fire Tests of Roof Coverings".

**Report of Testing Sofsurfaces Inc's SofTILE AP Pavers for compliance with the applicable requirements of: ASTM E108 (2007) "Standard Test Methods for Fire Tests of Roof Coverings", UL 790 (2004) and CAN/ULC S107-M (2003)**

*This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.*

# 1 Table of Contents

---

1	Table of Contents .....	2
2	Introduction.....	3
3	Test Samples .....	4
4	Testing and Evaluation Methods .....	6
5	Tests Results.....	6
5.1.	Results and Observations .....	6
6	Conclusion.....	12

---

## 2 Introduction

---

Intertek Testing Services NA (Intertek) Fire Testing Laboratory in Middleton, Wisconsin conducted an investigation of the external fire resistance characteristics of Sofsurfaces Inc's SofTILE AP Pavers, for a class "A" application. Samples were submitted to Intertek directly from the client. The samples were received at the laboratory March 13, 2009 in good condition.

The tests were conducted in accordance with the criteria of CAN/ULC S107-M (2003) "*Fire Tests of Roof Coverings*".

The systems consists of 2" SofTile pavers, a water repellent 60 mil Duro-Last membrane, ¼" GP Dens-Deck prime, optional 2" isocyanurate foam over combustible wood deck.

The testing was performed as follows to qualify the system.

Two of the Spread of Flame Tests were conducted with 2" Atlas AC foam II isocyanurate foam, to determine if the additional combustible material added by the foam will increase the flame spread. One deck was tested without the foam. This testing was conducted to qualify isocyanurate foam as an optional component.

The penetration tests, Intermittent Flame and Burning Brand test were conducted without isocyanurate foam since the thickness of the foam will decrease the penetration effects of the flame and brand. The decks will be disassembled to determine the amount of damage to the deck materials.

Additional testing with isocyanurate foam on the Intermittent Flame and Burning Brand tests will not be conducted unless significant damage to the plywood (combustible deck) does occur.

### 3 Test Samples

The plywood decks were constructed by Intertek employees according to the specifications of test standard CAN/ULC S107-M (2003) "Fire Tests of Roof Coverings".

1. The sample material was selected by an agent of Intertek.
2. The test material was submitted by the client.
3. The test materials were applied by Intertek employees at the Middleton lab.

The samples are described in more detail in the table below.

Deck#	Deck Type	Deck material	System
1	SOF Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
2	SOF Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer 2" Atlas Isocyanurate foam, (1) layer Duro-Last, SofTILE AP Pavers
3	IF Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
4	IF Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
5	BB Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
6	BB Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
7	BB Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
8	BB Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer Duro-Last, SofTILE AP Pavers
9	SOF Class A	½" AC plywood	(1) layer ¼" GP DensDeck, (1) layer 2" Atlas Isocyanurate foam, (1) layer Duro-Last, SofTILE AP Pavers

**Product:** The tile is a 28.1 lb, 2" thick, 24" wide by 24" long rubber composite panel with 0.250" thick wear layer of virgin EPDM rubber granules. The tile interlocks with other tiles using an interlock edge, half on each tile.

The Decks were assembled as follows:

1. ½" AC fir plywood sheathing,
2. 2.0 in. Atlas AC-Foam II isocyanurate insulation mechanically fastened to decks using ring shank 1" cap nails. Decks 2 and 9 only.
3. ¼" GP Dens-Deck prime mechanically fastened 8" perimeter 12" field with ring shank 1" cap nails.
4. 60 mil Duro-Last membrane adhered with Pliobond 1744 Bonding adhesive made by Ashland applied at 5-7 mils thick.
5. The tiles were then sized and adhered with Sikaflex uni-pac polymer caulk. One ½" wide bead was across each bonding site circle.
6. After all the tiles were in place the joints between the panels were caulked with Sikaflex.



Bottom surface



Top surface

## 4 Testing and Evaluation Methods

---

The tests were conducted in accordance with the criteria of CAN/ULC S107-M (2003) "Fire Tests of Roof Coverings"

## 5 Tests Results

---

### 5.1. Results and Observations

#### Calibration

Test Conditions (Class A)

Test Date	4/20/2009
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	1394.9°F
Ambient air temp.	63°F

Test Date	4/29/2009
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	1409.6°F
Ambient air temp.	57°F

Test Date	4/30/2009
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	1382.9°F
Ambient air temp.	65°F

---

**Spread of Flames Tests**

## Test Observations Deck 1

Test Date	4/20/2009
Slope of Test Deck	1/2:12
Ambient Temperature	64°F

Time (min:sec)	Distance (feet-inches)	Observations/Comments
00:00		Burner ignited.
01:58	1'	Surface ignition.
04:06	2'	
07:04	3'	
10:00		Test stop.

Acceptance Level: Class 'A'. Maximum spread of flame is 3'6".

## Test Observations Deck 2

Test Date	4/20/2009
Slope of Test Deck	1/2:12
Ambient Temperature	62°F

Time (min:sec)	Distance (feet-inches)	Observations/Comments
00:00		Burner ignited.
01:25	1'	Surface ignition.
02:23	2'	
04:28	3'	
08:13	4'	
10:00		Test stop.

Acceptance Level: Class 'A'. Maximum spread of flame is 4'3".

## Test Observations Deck 9

Test Date	4/30/2009
Slope of Test Deck	1/2:12
Ambient Temperature	62°F

Time (min:sec)	Distance (feet-inches)	Observations/Comments
00:00		Burner ignited.
00:48	1'	Surface ignition.
01:24	2'	
02:52	3'	
05:05	4'	
10:00		Test stop.

Acceptance Level: Class 'A'. Maximum spread of flame is 4'5".

**Intermittent Flame Tests**

Test Observations Deck 3

Test Date	4/29/09
Ambient Air Temperature	62°F
Slope of Test Deck	1/2:12

Cycle		Time To:		Observations/Comments (Include Off Cycles)
No.	Min.	Ignition (min : sec)	Flame Out (min : sec)	
1	Start	00:58	04:00	
2	4	04:00	08:00	
3	8	08:00	12:00	
4	12	12:00	16:00	
5	16	16:00	20:00	Flame in off cycle remains in first 6" of deck.
6	20	20:00	24:00	
7	24	24:00	27:57	
8	28	28:02	31:52	
9	32	32:02	36:00	
10	36	36:00	40:00	
11	40	40:00	44:00	
12	44	44:00	48:00	
13	48	48:00	52:00	
14	52	52:00	56:00	
15	56	56:00	63:01	105:30 – Light smoke and discoloration at horizontal joint, underside. Top side continues to smoke heavily. 120:00 – Test stop. Smoke continues.

Acceptance Level: Class "A" – No flaming of the underside of the deck.

\*\* Plywood showed no charring, Membrane was discolored. No through opening in membrane.



**Test Observations Deck 4**

Test Date	4/29/09
Ambient Air Temperature	57°F
Slope of Test Deck	½:12

Cycle		Time To:		Observations/Comments (Include Off Cycles)
No.	Min.	Ignition (min : sec)	Flame Out (min : sec)	
1	Start	00:56	04:00	
2	4	04:00	08:00	
3	8	08:00	12:00	
4	12	12:00	16:00	
5	16	16:00	20:00	Flame in off cycle remains in center of deck.
6	20	20:00	24:00	
7	24	24:00	28:00	
8	28	28:00	32:00	
9	32	32:00	36:00	
10	36	36:00	40:00	Flame in off cycle remains at leading edge of deck.
11	40	40:00	44:00	Surface is showing some cracks.
12	44	44:00	48:00	
13	48	48:00	52:00	
14	52	52:00	56:00	
15	56	56:00	63:01	105:30 – Light smoke and discoloration at horizontal joint, underside. Top side continues to smoke heavily. 120:00 – Test stop. Smoke continues.

Acceptance Level: Class "A" – No flaming of the underside of the deck.

\*\* Plywood showed no charring, Membrane was discolored. No through opening in membrane.

**Burning Brand Tests**

**Test Observations Deck 5**

Test Date	4/29/2009
Ambient Air Temperature	59°F
Brand Type	Class A, 4.15 lbs
Slope of Test Deck	½:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	01:18	Surface ignition.
	05:15	Brand ¼ consumed.
	09:09	Brand ½ consumed.
	11:38	Brand ¾ consumed.
	54:57	Flame continues on surface of deck.
	68:14	Flame out, top side. Brand fully consumed.
	90:00	Test stop.

Acceptance Level: Class "A" – No flaming of the underside of the deck, No deck penetration. Membrane and plywood were undamaged. No discoloration of membrane.

**Test Observations Deck 6**

Test Date	4/29/2009
Ambient Air Temperature	61°F
Brand Type	Class A, 4.30 lbs
Slope of Test Deck	½:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	01:19	Surface ignition.
	05:07	Brand ¼ consumed.
	08:18	Brand ½ consumed.
	12:49	Brand ¾ consumed.
	49:54	Flame out, top side. Brand fully consumed.
	90:00	Test stop.

Acceptance Level: Class "A" – No flaming of the underside of the deck, No deck penetration. Membrane and plywood were undamaged. No discoloration of membrane.

**Test Observations Deck 7**

Test Date	4/29/2009
Ambient Air Temperature	61°F
Brand Type	Class A, 4.19 lbs
Slope of Test Deck	½:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	02:21	Surface ignition.
	05:51	Brand ¼ consumed.
	09:00	Brand ½ consumed.
	15:00	Brand ¾ consumed.
	26:00	Flame continues on surface of deck. Brand fully consumed.
	40:00	Small flame continues on top side.
	74:29	Flame out, top side.
	90:00	Test stop.

Acceptance Level: Class "A" – No flaming of the underside of the deck, No deck penetration. Membrane and plywood were undamaged. No discoloration of membrane.

**Test Observations Deck 8**

Test Date	4/29/2009
Ambient Air Temperature	61°F
Brand Type	Class A, 4.20 lbs
Slope of Test Deck	½:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	01:05	Surface ignition.
	05:33	Brand ¼ consumed.
	08:40	Brand ½ consumed.
	11:23	Brand ¾ consumed.
	53:48	Flame out, top side. Brand fully consumed.
	81:31	Smoke out, top side.
	90:00	Test stop.

Acceptance Level: Class "A" – No flaming of the underside of the deck, No deck penetration. Membrane and plywood were undamaged. No discoloration of membrane.

## 6 Conclusion

---

The Sofsurfaces Inc's SofTILE AP Pavers, with a single layer of ¼" GP DensDeck and single layer of Duro-Last results per CAN/ULC S107-M (2003) "Fire Tests of Roof Coverings" are summarized in the table below.

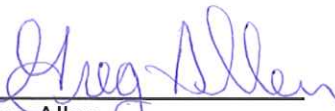
Deck #	Test	Rating
1	Spread of Flames	Class "A"
2	Spread of Flames	Class "A"
3	Intermittent Flame	Class "A"
4	Intermittent Flame	Class "A"
5	Burning Brand	Class "A"
6	Burning Brand	Class "A"
7	Burning Brand	Class "A"
8	Burning Brand	Class "A"
9	Spread of Flames	Class "A"

The Sofsurfaces Inc's SofTILE AP Pavers, with a single layer of ¼" GP DensDeck and single layer of 60 mil Duro-Last met the criteria per ASTM E108 (2007) "Standard Test Methods for Fire Tests of Roof Coverings" and CAN/ULC S107-M (2003) for a Class "A" system at ½:12 slope.

The system can be used with or with the optional 2" isocyanurate roofing foam.

This report does not automatically imply product certification. Products must be under a certification program and bear the Warnock Hersey registered certification mark to demonstrate compliance.

### INTERTEK TESTING SERVICES NA

Reported by:   
Greg Allen  
Lead Technician  
Building Products Group  
Intertek

Reviewed by:   
Kent Kelsey  
Project Manager, Fire  
Building Products Group  
Intertek

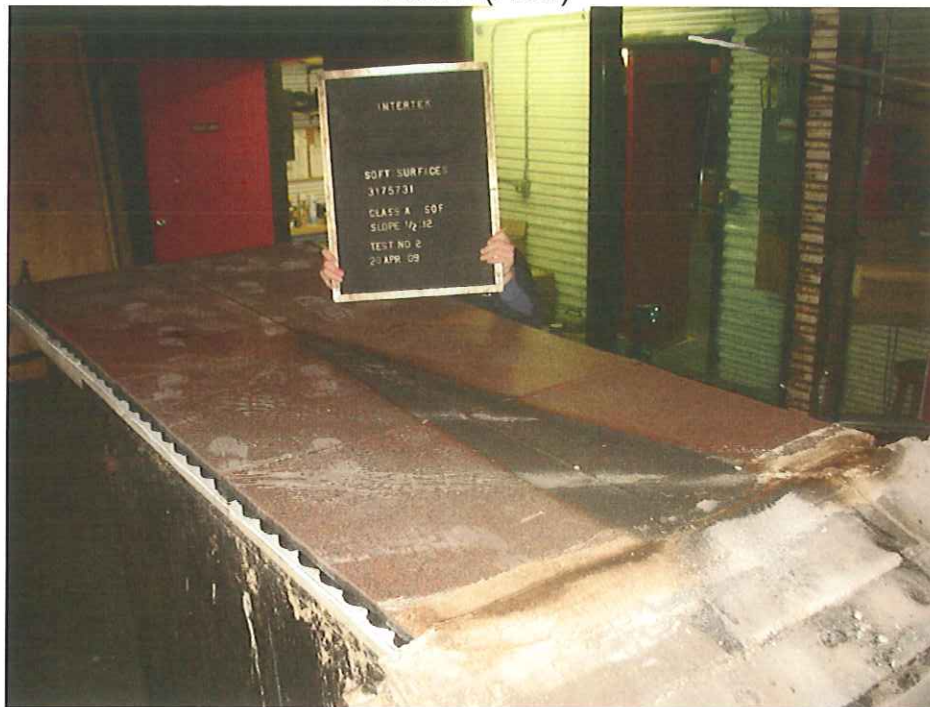
---

**APPENDIX A**  
Photos

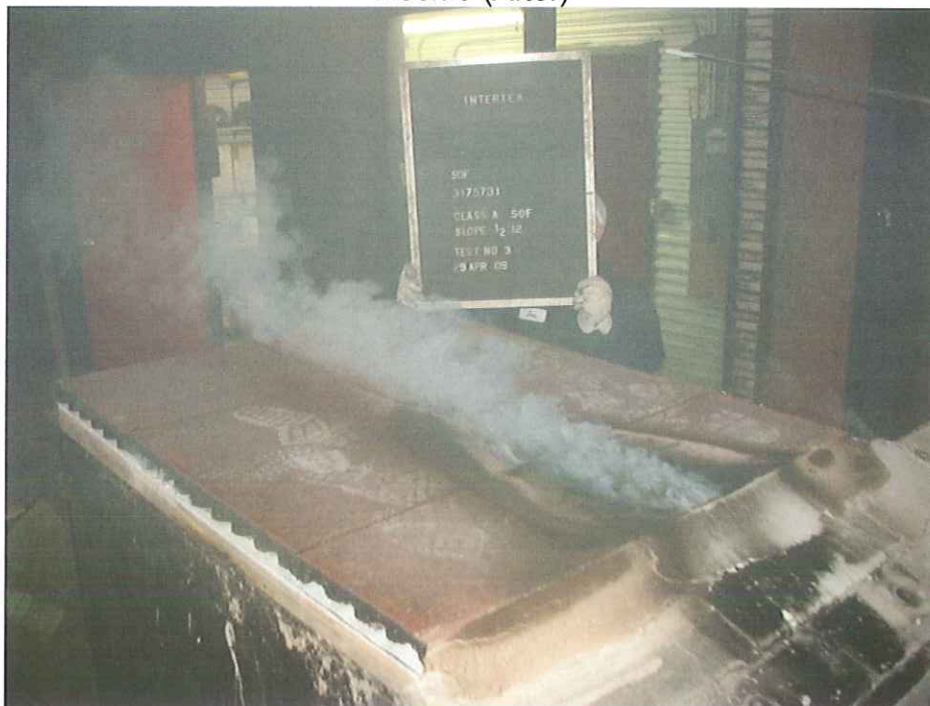
---

Photos

Deck 2 (After)



Deck 3 (After)



Deck 5 (After)



Deck 7 (After)



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
04/30/09	Initial report