

# DAL-TILE CORPORATION FIRE TEST REPORT

**SCOPE OF WORK**

ASTM E108 TESTING ON ROOF ASSEMBLY CONTAINING DAL TILE PERENNIAL ROOF TILE

**REPORT NUMBER**

103469556SAT-001A

**TEST DATE(S)**

05/01/18 - 05/02/18

**ISSUE DATE**      **[REVISED DATE]**

05/08/18      ORIGINAL

**RECORD RETENTION END DATE**

05/08/28

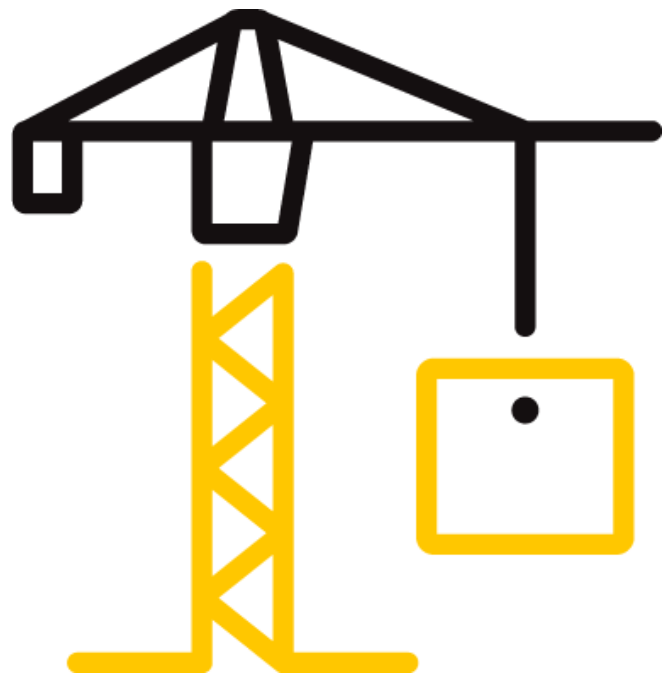
**PAGES**

19

**DOCUMENT CONTROL NUMBER**

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## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### REPORT ISSUED TO

#### Dal-tile Corporation

7834 C. F. Hawn Freeway

Dallas, TX 75217

Contact: Doug Pedersen

E-mail: doug.pedersen@daltile.com

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Dal-tile Corporation to evaluate the fire performance of the assembly described in Section 5 of this report. Testing was conducted at the Intertek B&C test facility in Elmendorf, Texas. Results obtained are tested values and were secured by using the designated test method. A summary of test results is reported herein and the complete assembly construction details are included in this report. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

### SECTION 2

#### SUMMARY OF TEST RESULTS

DECK #	TYPE OF TEST	SLOPE	CLASSIFICATION	RESULTS
1	Burning Brand	5:12	Class A	Pass
2	Burning Brand	5:12	Class A	Pass
3	Burning Brand	5:12	Class A	Pass
4	Burning Brand	5:12	Class A	Pass
5	Spread of Flame	5:12	Class A	Pass
6	Spread of Flame	5:12	Class A	Pass
7	Intermittent Flame	5:12	Class A	Pass
8	Intermittent Flame	5:12	Class A	Pass

For INTERTEK B&C:

<b>COMPLETED BY:</b>	Theodore Salazar	<b>REVIEWED BY:</b>	Juan Manuel Flores, P.E.
<b>TITLE:</b>	Technician I	<b>TITLE:</b>	Senior Staff Engineer
<b>DEPARTMENT:</b>	Fire Resistance	<b>DEPARTMENT:</b>	Building & Construction
<b>SIGNATURE:</b>		<b>SIGNATURE:</b>	
<b>DATE:</b>	05/08/18	<b>DATE:</b>	05/08/18

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## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 3

#### TESTING AND EVALUATION METHODS

The samples were evaluated in accordance with the following:

**ASTM E108-17**, *Standard Test Methods for Fire Tests of Roof Coverings*

The following test equipment was used to conduct the test.

ROOFING LAB EQUIPMENT	INVENTORY NUMBER	CALIBRATION DUE DATE
Thermo-Hygrometer	170747561	10/16/19
Flowmeter (0-8 SCFM)	63721010006	02/08/19
Anemometer 4 inch.	RVA500543001	05/17/18
Stopwatch	160778730	09/21/18
Digital Thermometer	1A03544	10/06/18
Scale	3021091-7HK	09/01/18

### SECTION 4

#### MATERIAL SOURCE/INSTALLATION

The test specimen was submitted to Intertek directly from the client. Samples were not independently selected for testing. Intertek has not verified the composition, manufacturing techniques or quality assurance procedures. The specimens, identified as DAL TILE PERENNIAL ROOF TILE, and logged in under Intertek Sample tracking system as SAT1803221509-001 were received in good order at the Evaluation Center on 03/22/18. The test material was applied to the plywood decks by the client.

### SECTION 5

#### SPECIMEN DESCRIPTION

The plywood decks were constructed by Intertek technicians according to the specifications of test standard ASTM E108, 2017 Edition, "*Standard Test Methods for Fire Tests of Roof Coverings.*"

The test material was applied by the client to the test decks.

**Moisture Content:** Moisture content of the lumber was verified prior to testing to be within the limits of the standard.

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SPECIMEN DESCRIPTION**

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

DECK #	DECK TYPE	DECK SURFACE	SYSTEM Systems are described in assembly from wood deck to top surface.
1	Class A / Burning Brand	15/32 in. thick, Type A-C Douglas Fir Plywood	Samples did not have an underlayment fastened to the deck surface. Samples did have a GSE HD smooth high density polyethylene (HDPE) geomembrane. This was cut to the width of the deck and 18 in. long and fastened under each course of tile, with both the membrane and tile overlapping the previously fastened tile by 2-3/4 in. Each tile piece measured 23-3/4 in. long x 12 in. wide. The first tile was set flush with one edge of the deck and the adjacent tile was set and then the overhanging piece was cut to be flush with the other side of the deck (leaving approximately a 16-1/4 in. piece of tile). Each next course of tile was staggered by setting the full length tile on the opposite edge of the deck from the previous course. The tiles had four (4) pre-drilled holes approximately 2 in. below the top edge of the tile for fastening to the deck. The membrane and tiles were fastened to the deck using 11 ga. x 2 in. long electrogalvanized roofing nails.
2	Class A / Burning Brand		
3	Class A / Burning Brand		
4	Class A / Burning Brand		
5	Class A / Spread of Flame		
6	Class A / Spread of Flame		
7	Class A / Intermittent Flame		
8	Class A / Intermittent Flame		

**Storage Information:** Decks were stored in the conditioning room prior to testing. Typical conditioning room conditions are 73°F and 50% relative humidity.

## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 6

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Doug Pedersen	Dal-tile Corporation
Theodore Salazar	Intertek B&C
Jason De La Cruz	Intertek B&C
Servando Romo	Intertek B&C

### SECTION 7

#### TEST RESULTS

##### Calibration Information

TEST CONDITIONS (CLASS A)	
Test Date	05/01/2018
Air Velocity	1080 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	1407°F
Ambient Air Temperature	72°F

TEST CONDITIONS (CLASS A)	
Test Date	05/02/2018
Air Velocity	1069 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	1414°F
Ambient Air Temperature	73°F

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**TEST RESULTS**

**BURNING BRAND TESTS**

**Test Observations Deck: 1**

Test Date	05/01/2018
Ambient Air Temperature	84°F
Brand Type	Class A, 4.2 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	0:00	Ignited brand placed on deck.
	1:22	Cracking visible on tile.
	2:01	Cracking sound was heard.
	2:12	Cracking sound was heard.
	2:43	Cracking sound was heard.
	4:26	Smoke was visible through underside of joint.
	5:39	Cracking sound was heard.
	7:58	Cracking sound was heard..
	9:50	Smoke increasing.
	10:10	Discoloring at the underside of joint.
	13:17	Flame visible between tile and deck (course 3).
	19:13	Cracking sound was heard.
	20:00	Charring area increasing and glowing, visible at joint.
	24:10	Small blue flame at course 3 from plastic on top of deck.
	27:00	No sign of flame.
	37:00	No sign of smoke.
	43:00	No signs of flame or smoke underdeck. All glowing pieces for brand have self-extinguished. Test is terminated.

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

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**Test Observations Deck: 2**

Test Date	05/01/2018
Ambient Air Temperature	73°F
Brand Type	Class A, 4.2 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	0:00	Ignited brand placed on deck.
	0:48	Cracking sound was heard.
	1:21	Cracking sound was heard.
	1:27	Cracking sound was heard.
	1:48	Cracking sound was heard.
	2:42	Cracking sound was heard.
	4:58	Cracking sound was heard.
	5:51	Smoke was visible through underside of joint.
	8:41	Cracking sound was heard.
	9:30	Smoke increasing.
	10:14	Discoloring at the underside of joint.
	30:00	Flame and glowing from brand have self-extinguished.
	33:00	Light smoke still visible.
	40:00	No signs of flame or smoke underdeck. All glowing pieces for brand have self-extinguished. Test is terminated.

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

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**Test Observations Deck: 3**

Test Date	05/01/2018
Ambient Air Temperature	75°F
Brand Type	Class A, 4.2 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	0:00	Ignited brand placed on deck.
	1:03	Cracking sound was heard.
	1:37	Cracking sound was heard.
	2:23	Cracking sound was heard.
	2:31	Cracking sound was heard.
	2:58	Cracking sound was heard.
	3:46	Smoke was visible between the tile and deck, topside.
	5:23	Smoke was visible through underside of joint.
	5:58	Cracking sound was heard.
	7:35	Cracking sound was heard.
	10:03	Smoke increasing at joint.
	11:48	Discoloring at the underside of joint.
	18:36	Light smoke still visible.
	23:51	Flame and glowing from brand have self-extinguished.
	40:44	No signs of flame or smoke underdeck. All glowing pieces for brand have self-extinguished. Test is terminated.

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



**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**Test Observations Deck: 4**

Test Date	05/01/2018
Ambient Air Temperature	81°F
Brand Type	Class A, 4.2 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	0:00	Ignited brand placed on deck.
	0:25	Cracking sound was heard.
	0:50	Cracking sound was heard.
	1:38	Cracking sound was heard.
	1:46	Smoke was visible between the tile and deck, topside.
	3:02	Cracking sound was heard.
	4:39	Cracking sound was heard.
	4:53	Smoke was visible through underside of joint.
	6:12	Cracking sound was heard.
	10:19	Discoloring at the underside of joint.
	10:25	Cracking sound was heard.
	21:57	Smoke decreasing at joint.
	23:03	Flame and glowing from brand have self-extinguished.
	25:34	Smoke and glowing was visible though underside of joint.
	36:22	No signs of flame or smoke underdeck. All glowing pieces for brand have self-extinguished. Test is terminated.

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

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**SPREAD OF FLAME TESTS**

**Test Observations Deck: 5**

Test Date	05/01/2018
Ambient Air Temperature	84°F
Slope of Test Deck	5:12

TIME (min:sec)	DISTANCE (feet-inches)	OBSERVATIONS/COMMENTS
0:00		Burner ignited.
4:14		Cracking sound was heard.
10:00		Gas burner is turned off. No flame spread observed. Test is terminated.

Acceptance Level: Class "A", maximum spread of flames is 0'0".

**Test Observations Deck: 6**

Test Date	05/01/2018
Ambient Air Temperature	88°F
Slope of Test Deck	5:12

TIME (min:sec)	DISTANCE (feet-inches)	OBSERVATIONS/COMMENTS
0:00		Burner ignited.
6:41		Cracking sound was heard.
10:00		Gas burner is turned off. No flame spread observed. Test is terminated.

Acceptance Level: Class "A", maximum spread of flames is 0'0".

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**INTERMITTENT FLAME TESTS**

**Test Observations Deck: 7**

Test Date	05/02/2018
Ambient Air Temperature	81°F
Slope of Test Deck	5:12

CYCLE		TIME TO:		OBSERVATIONS/COMMENTS
NO.	MIN.	IGNITION (min : sec)	FLAME OUT (min : sec)	(Include Off Cycles)
1	Start	None	None	
2	4:00	None	None	
3	8:00	None	None	
4	12:00	None	None	
5	16:00	None	None	
6	20:00	None	None	
7	24:00:00	None	None	
8	28:00:00	None	None	
9	32:00:00	None	None	
10	36:00:00	None	None	
11	40:00:00	None	None	
12	44:00:00	None	None	
13	48:00:00	None	None	
14	52:00:00	None	None	
15	56:00:00	None	None	58:00 Burner off. 60:00 test is terminated.

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

**TEST REPORT FOR DAL-TILE CORPORATION**

Report No.: 103469556SAT-001A

Date: 05/08/18

**SECTION 7 (Continued)**

**TEST RESULTS**

**Test Observations Deck: 8**

Test Date	05/02/2018
Ambient Air Temperature	72°F
Slope of Test Deck	5:12

CYCLE		TIME TO:		OBSERVATIONS/COMMENTS
NO.	MIN.	IGNITION (min : sec)	FLAME OUT (min : sec)	(Include Off Cycles)
1	Start	None	None	
2	4:00	None	None	
3	8:00	None	None	
4	12:00	None	None	
5	16:00	None	None	
6	20:00	None	None	
7	24:00:00	None	None	
8	28:00:00	None	None	
9	32:00:00	None	None	
10	36:00:00	None	None	
11	40:00:00	None	None	
12	44:00:00	None	None	
13	48:00:00	None	None	
14	52:00:00	None	None	
15	56:00:00	None	None	58:00 Burner off. 60:00 test is terminated.

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

**SECTION 8**

**CONCLUSION**

The Dal-tile Corporation, DAL TILE PERENNIAL ROOF TILE, system as described in this test report **MET** the criteria of ASTM E108 (2017) for a Class "A" rating at a 5:12 slope.

## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 PHOTOGRAPHS



**Photo No. 1  
TEST #1 BEFORE**



**Photo No. 2  
TEST #1 AFTER**

## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 (Continued)

#### PHOTOGRAPHS



**Photo No. 3**  
**TEST #2 BEFORE**



**Photo No. 4**  
**TEST #2 AFTER**



## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 (Continued)

#### PHOTOGRAPHS



**Photo No. 5**  
**TEST #3 DURING**



**Photo No. 6**  
**TEST #3 AFTER**

## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 (Continued)

#### PHOTOGRAPHS



**Photo No. 7**  
**TEST #4 BEFORE**



**Photo No. 8**  
**TEST #4 DURING**



## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 (Continued)

#### PHOTOGRAPHS



**Photo No. 9**  
**TEST #5 BEFORE (representative of Test 6)**



**Photo No. 10**  
**TEST #5 DURING (representative of Test 6)**

## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 8 (Continued) PHOTOGRAPHS



**Photo No. 11  
TEST #7 AFTER**



**Photo No. 12  
TEST #8 AFTER**



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## TEST REPORT FOR DAL-TILE CORPORATION

Report No.: 103469556SAT-001A

Date: 05/08/18

### SECTION 9

#### REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	05/08/18	19	Original Report Issue