

GLOBAL INNOVATIONS LLC FIRE TEST REPORT

SCOPE OF WORK

ASTM E108 TESTING ON ROOF ASSEMBLY CONTAINING GLOBAL INNOVATION'S SIMULATED THATCH

REPORT NUMBER

103503568MID-009R1

TEST DATES

06/13/18 - 02/28/19

ISSUE DATE

03/06/19

REVISED DATE

05/14/19

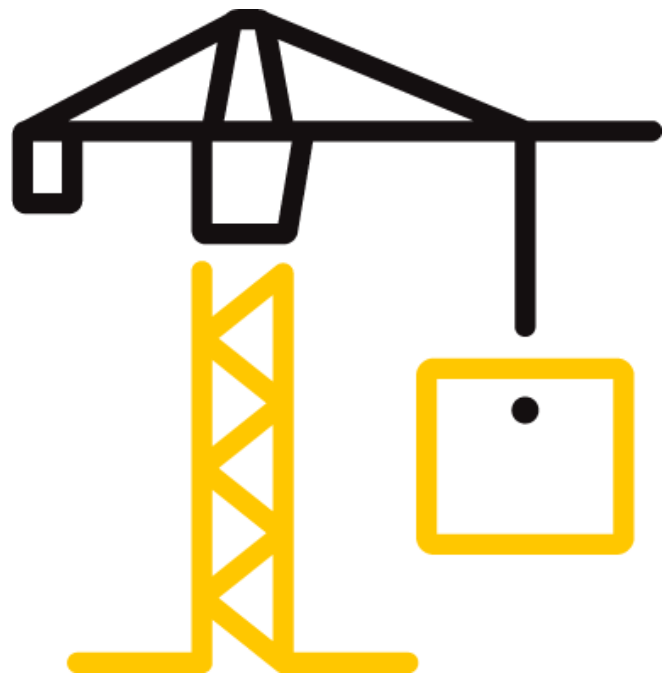
PAGES

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DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2847 (03/07/18)

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TEST REPORT FOR GLOBAL INNOVATIONS LLC

Report No.: 103503568MID-009r1

Date: 05/14/19

REPORT ISSUED TO

Global Innovations LLC

313 SW Windswept Glen

Lake City, FL 32024

Contact: Nick Rimert

E-mail: nick@endureed.com

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Global Innovations LLC 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 Middleton, WI. 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. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

SECTION 2

SUMMARY OF TEST RESULTS

For INTERTEK B&C:

COMPLETED BY:	Christopher Zimbrich
TITLE:	Technician I –
DEPARTMENT:	Fire Resistance
SIGNATURE:	
DATE:	05/14/19

CJZ

REVIEWED BY:	Chad Naggs
TITLE:	Technical Team Lead –
DEPARTMENT:	Fire Resistance
SIGNATURE:	
DATE:	05/14/19

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SECTION 2 (CONTINUED)

SUMMARY OF TEST RESULTS

DECK #	TYPE OF TEST	SLOPE	CLASSIFICATION	RESULTS
8	Spread of Flame	5:12	Class A	Pass
9	Spread of Flame	5:12	Class A	Pass
14	Burning Brand	5:12	Class A	Pass
15	Burning Brand	5:12	Class A	Pass
16	Burning Brand	5:12	Class A	Pass
17	Burning Brand	5:12	Class A	Pass
18	Intermittent Flame	5:12	Class A	Pass
19	Intermittent Flame	5:12	Class A	Pass

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	MEASUREMENT UNCERTAINTY	CALIBRATION DUE DATE
Roofing Test Apparatus	204	N/A	Date of Test
Anemometer	221	±2% of max reading	07/24/2019
K-Meter	1354	±1°F	07/16/2019
Thermocouple Probe	1317	±3.96°F	10/09/2019
Stopwatch	1397	±0.001% (over 3hr period)	04/04/2019
Moisture Meter	1110	N/A	Date of Test
Moisture Meter Calibration Block	1380	±0.134%	04/12/2019
Moisture Meter Pins	144CC	N/A	N/A
Scale	008	±50% of minimum valid division.	04/10/2019
Class 'A' Burning Brands	59CC	N/A	N/A

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SECTION 4

MATERIAL SOURCE/INSTALLATION

The samples were randomly selected on 05/17/18 by Intertek representative Derek Anderson, at the Global Innovations LLC manufacturing facility, located at 313 SW Windswept Glen, Lake City, FL 32024. The specimens, identified as Endureed Dominica and Endureed Bali and assigned Sample Tracker ID number MID1805231308-001, were received in good order at the Evaluation Center on 05/23/18.

The subject test specimen is a traceable sample selected from the manufacturer's facility. Intertek selected the specimen and has verified the composition, manufacturing techniques and quality assurance procedures (Reference Intertek Test Specimen Selection Report No. 103503568MID-002, dated 05/17/18).

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 Intertek technicians.

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

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.
8	Class 'A' SOF	$\frac{15}{32}$ " AC plywood	(1) layer $\frac{1}{2}$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Dominica thatch mechanically fastened with a 6 $\frac{1}{2}$ " reveal.
9	Class 'A' SOF	$\frac{15}{32}$ " AC plywood	(1) ply Soprema FR Plus self-adhered, Endureed Dominica thatch mechanically fastened with a 6 $\frac{1}{2}$ " reveal.
14	Class 'A' BB	$\frac{15}{32}$ " AC plywood	(1) layer $\frac{1}{4}$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Dominica thatch mechanically fastened with a 6 $\frac{1}{2}$ " reveal.

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SECTION 5 (CONTINUED)

SPECIMEN DESCRIPTION

15	Class 'A' BB	$15/32$ " AC plywood	(1) layer $1/4$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Dominica thatch mechanically fastened with a $6\ 1/2$ " reveal.
16	Class 'A' BB	$15/32$ " AC plywood	(1) layer $1/4$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Bali thatch mechanically fastened with a $6\ 1/2$ " reveal.
17	Class 'A' BB	$15/32$ " AC plywood	(1) layer $1/4$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Bali thatch mechanically fastened with a $6\ 1/2$ " reveal.
18	Class 'A' IF	$15/32$ " AC plywood	(1) layer $1/4$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Bali thatch mechanically fastened with a $6\ 1/2$ " reveal.
19	Class 'A' IF	$15/32$ " AC plywood	(1) layer $1/4$ " DensDeck mechanically fastened, (1) ply Soprema FR Plus self-adhered, Endureed Bali thatch mechanically fastened with a $6\ 1/2$ " reveal.

Storage Information: Decks were stored in the fire laboratory prior to testing. Typical laboratory conditions are 60-80°F and 50-65% relative humidity

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Garrett Voss	Intertek B&C
Evan Sorge	Intertek B&C
Chris Zimbrich	Intertek B&C

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SECTION 7**TEST RESULTS****Calibration Information**

TEST CONDITIONS (CLASS A)	
Test Date	10/03/2018
Air Velocity	1047.6 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	1400°F
Ambient Air Temperature	79°F

TEST CONDITIONS (CLASS A)	
Test Date	10/18/2018
Air Velocity	1068.7 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	1400°F
Ambient Air Temperature	63°F

TEST CONDITIONS (CLASS A)	
Test Date	02/27/2019
Air Velocity	1058.6 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	N/A
Ambient Air Temperature	78°F

TEST CONDITIONS (CLASS A)	
Test Date	02/28/2019
Air Velocity	1063.3 average fpm
Slope of Cal. Deck	5:12
Average Flame Temperature	1396°F
Ambient Air Temperature	87°F

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SECTION 7(CONTINUED)

TEST RESULTS

SPREAD OF FLAME TESTS

Test Observations Deck: 8

Test Date	10/03/2018
Ambient Air Temperature	83°F
Slope of Test Deck	5:12

TIME (min:sec)	DISTANCE (feet-inches)	OBSERVATIONS/COMMENTS
00:00		Burner ignited.
00:35		Surface ignition.
01:34	1'	
02:45	2'	
03:06	3'	
05:38	4'	
10:00		Test stop.

Acceptance Level: Class "A", maximum spread of flames is 4'11".

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SECTION 7 (CONTINUED)

TEST RESULTS

Test Observations Deck: 9

Test Date	10/18/2018
Ambient Air Temperature	58°F
Slope of Test Deck	5:12

TIME (min:sec)	DISTANCE (feet-inches)	OBSERVATIONS/COMMENTS
00:00		Burner ignited.
00:37		Surface ignition.
00:39	1'	
00:53	2'	
01:26	3'	
02:54	4'	
03:52	5'	
10:00		Test stop.

Acceptance Level: Class "A", maximum spread of flames is 5'2".

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SECTION 7(CONTINUED)

TEST RESULTS

BURNING BRAND TESTS

Test Observations Deck: 14

Test Date	02/27/2019
Ambient Air Temperature	72°F
Brand Type	Class A, 4.31 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	00:00	Brand placed on deck.
	00:51	Surface ignition.
	06:42	Brand ¼ consumed.
	07:58	Smoke/steam from horizontal joint, underside.
	08:19	Brand ½ consumed.
	10:47	Brand ¾ consumed.
	16:23	Discoloring at horizontal joint, underside.
	24:17	Flame out, topside.
	39:12	Glow out topside, brand fully consumed.
	90:00	Test stopped.

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

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SECTION 7 (CONTINUED)

TEST RESULTS

Test Observations Deck: 15

Test Date	02/27/2019
Ambient Air Temperature	78°F
Brand Type	Class A, 4.31 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	00:00	Brand placed on deck.
	00:48	Surface ignition.
	06:21	Brand ¼ consumed.
	07:32	Smoke/steam from horizontal joint, underside.
	08:44	Brand ½ consumed.
	11:17	Brand ¾ consumed.
	18:39	Discoloring at horizontal joint, underside.
	34:19	Flame out topside.
	40:07	Glow out topside, brand fully consumed.
	90:00	Test stopped.

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

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SECTION 7 (CONTINUED)

TEST RESULTS

Test Observations Deck: 16

Test Date	02/27/2019
Ambient Air Temperature	73°F
Brand Type	Class A, 4.31 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	00:00	Brand placed on deck.
	00:51	Surface ignition.
	06:17	Brand ¼ consumed.
	08:29	Smoke/steam from horizontal joint, underside.
	09:45	Brand ½ consumed.
	16:20	Brand ¾ consumed.
	18:36	Discoloring at horizontal joint, underside.
	31:16	Flame out topside.
	39:41	Glow out topside, brand fully consumed.
	90:00	Test stopped.

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

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SECTION 7 (CONTINUED)

TEST RESULTS

Test Observations Deck: 17

Test Date	02/28/2019
Ambient Air Temperature	76°F
Brand Type	Class A, 4.30 lbs.
Slope of Test Deck	5:12

BRAND #	TIME (min:sec)	OBSERVATIONS
1	00:00	Brand placed on deck.
	00:15	Surface ignition.
	05:50	Brand ¼ consumed.
	08:12	Smoke/steam at horizontal joint, underside.
	09:50	Brand ½ consumed.
	16:00	Brand ¾ consumed.
	19:04	Discoloring at horizontal joint, underside.
	26:15	Flame out topside.
	53:35	Glow out topside, brand fully consumed.
	90:00	Test stopped.

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

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SECTION 7 (CONTINUED)

TEST RESULTS

INTERMITTENT FLAME TESTS

Test Observations Deck: 18

Test Date	02/28/2019
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	00:54	02:01	
2	04:00	05:24	06:02	
3	08:00	09:18	12:29	
4	12:00	13:16	15:58	
5	16:00	16:58	N/A	
6	20:00	Flame continues	N/A	23:47 Smoke at horizontal joint, underside.
7	24:00	Flame continues	N/A	
8	28:00	Flame continues	N/A	
9	32:00	Flame continues	N/A	
10	36:00	Flame continues	N/A	38:03 Discoloring at horizontal joint, underside.
11	40:00	Flame continues	N/A	
12	44:00	Flame continues	46:03	
13	48:00	No ignition	N/A	
14	52:00	No ignition	N/A	
15	56:00	No ignition	N/A	120:00 Test stop.

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

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SECTION 7 (CONTINUED)

TEST RESULTS

Test Observations Deck: 19

Test Date	02/28/2019
Ambient Air Temperature	73°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	01:50	02:00	
2	04:00	No ignition	N/A	
3	08:00	09:31	N/A	
4	12:00	Flame continues	N/A	
5	16:00	Flame continues	N/A	
6	20:00	Flame continues	N/A	28:13 Smoke at horizontal joint, underside.
7	24:00	Flame continues	N/A	
8	28:00	Flame continues	N/A	
9	32:00	Flame continues	N/A	
10	36:00	Flame continues	N/A	36:11 Discoloring at horizontal joint, underside.
11	40:00	Flame continues	N/A	
12	44:00	Flame continues	N/A	
13	48:00	Flame continues	N/A	
14	52:00	Flame continues	N/A	
15	56:00	Flame continues	67:19	120:00 Test stop.

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

SECTION 8

CONCLUSION

The Global Innovations' Endureed in the system described in this test report **met** the criteria of ASTM E108 (2017) for a Class "A" rating at a 5:12 slope.

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SECTION 9

PHOTOGRAPHS

TEST #8 BEFORE



TEST #8 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #9 BEFORE



TEST #9 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #14 BEFORE



TEST #14 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #15 BEFORE



TEST #15 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #16 BEFORE



TEST #16 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #17 BEFORE



TEST #17 AFTER



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SECTION 9 (CONTINUED)

PHOTOGRAPHS

TEST #18 BEFORE



TEST #18 AFTER



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SECTION 9 (CONTINUED) PHOTOGRAPHS

TEST #19 BEFORE



TEST #19 AFTER





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SECTION 10

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/06/19	23	Original Report Issue
1	05/14/19	23	Corrected client address on Page 2 and Section 4 on Page 4.