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TEST REPORT

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

RENDERED TO

PALMEX INTERNATIONAL
2518 CHEMIN DES ENTREPRISES
SAINT SAUVEUR DES MONTS QC
CANADA, J0R1R7

CONTACT:
Mrs. Corinne Schevin
corinne@palmex-international.com

PRODUCT EVALUATED:
Domingo/Rio Composite Palm Leaves

EVALUATION PROPERTY:
ASTM E108, "Standard Methods for Fire Tests of Roof Coverings"

Report of Testing Palmex International's Domingo/Rio composite palm leaves for compliance with the applicable requirements of ASTM E108 (2010) "Standard Test Methods for Fire Tests of Roof Coverings" and UL 790 (2004).

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2 Introduction

Intertek Testing Services NA (Intertek) Fire Testing Laboratory in Middleton, Wisconsin conducted an investigation of the external fire resistance characteristics of Palmex International's Domingo/Rio composite palm leaves, for class "A" application. The samples were received at the laboratory November 15, 2013 in good condition.

The tests were conducted in accordance with ASTM E108 (2010) "*Standard Test Methods for Fire Tests of Roof Coverings*" and UL 790 (2004).

3 Test Samples

The plywood decks were constructed by Intertek technicians according to the specifications of test standard ASTM E108 (2010) "*Standard Test Methods for Fire Tests of Roof Coverings*".

1. The test material was submitted by the client.

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

Deck#	Deck Type	Deck Material	System
1	Spread of Flames	15/32" AC Plywood	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
2	Spread of Flames	15/32" AC Plywood	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
3	Intermittent Flames	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
4	Intermittent Flames	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
5	Burning Brand	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
6	Burning Brand	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
7	Burning Brand	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.
8	Burning Brand	15/32" AC Plywood, 1/2" Dens Deck	(1) Layer of Soprema Lastobond w/granules. Palmex International HDPE composite palm leaves Rows overlap by 5cm, 20cm reveal, mechanically fastened with coil roofing nails at marked locations.

4 Testing and Evaluation Methods

The tests were conducted in accordance with ASTM E108 (2010) “*Standard Test Methods for Fire Tests of Roof Coverings*” and UL 790 (2004).

5 Test Results

5.1. Calibration

Test Conditions (Class A)

Test Date	11/18/2013
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	1404°F
Ambient air temp.	65°F

Test Conditions (Class A)

Test Date	11/19/2013
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	1387°F
Ambient air temp.	69°F

Test Conditions (Class A)

Test Date	11/20/2013
Air Velocity	1056 +/-44 fpm
Slope of Cal. Deck	5:12
Average flame temp	NA
Ambient air temp.	66°F

5.2. Results and Observations

Spread of Flames Tests

Test Observations Deck: 1

Test Date	11/18/2013
Slope of Test Deck	5:12
Ambient Temperature	71°F

Time (min:sec)	Distance (feet-inches)	Observations/Comments
00:00		Burner ignited.
00:13		Surface ignition.
00:46	1'	
01:07		Surface ignition out.
10:00		Test stop.

Acceptance Level: Class 'A', maximum spread of flames is 1'5".

Test Observations Deck: 2

Test Date	11/18/2013
Slope of Test Deck	5:12
Ambient Temperature	72°F

Time (min:sec)	Distance (feet-inches)	Observations/Comments
00:00		Burner ignited.
00:09		Surface ignition.
00:52	1'	
01:03		Surface ignition out.
10:00		Test stop.

Acceptance Level: Class 'A', maximum spread of flames is 1'7".

Intermittent Flames Tests

Test Observations Deck: 3

Test Date	11/18/13
Ambient Air Temperature	72°F
Slope of Test Deck	5:12

Cycle		Time To:		Observations/Comments (Include Off Cycles)
No.	Min.	Ignition (min : sec)	Flame Out (min : sec)	
1	Start	NI	NI	
2	4	NI	NI	
3	8	NI	NI	
4	12	NI	NI	
5	16	NI	NI	
6	20	NI	NI	
7	24	NI	NI	
8	28	NI	NI	
9	32	NI	NI	
10	36	NI	NI	
11	40	NI	NI	
12	44	NI	NI	
13	48	NI	NI	
14	52	NI	NI	
15	56	NI	NI	75:00 – Test stop. No smoke, glow or flame.

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

Test Observations Deck: 4

Test Date	11/18/13
Ambient Air Temperature	71°F
Slope of Test Deck	5:12

Cycle		Time To:		Observations/Comments (Include Off Cycles)
No.	Min.	Ignition (min : sec)	Flame Out (min : sec)	
1	Start	00:13	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	
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	
11	40	40:00	42:01	
12	44	NI	NI	
13	48	NI	NI	
14	52	NI	NI	
15	56	NI	NI	90:00 – Test stop. No smoke, glow or flame.

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

Burning Brand Tests

Test Observations Deck: 5

Test Date	11/19/13
Ambient Air Temperature	70°F
Brand Type	Class A, 4.63 lbs
Slope of Test Deck	5:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	00:12	Surface ignition.
	06:26	Brand ¼ consumed.
	09:36	Brand ½ consumed.
	13:51	Brand ¾ consumed.
	32:18	Flame out, top side.
	33:23	Glow out, top side. Brand fully consumed.
	60:00	Test stop. No smoke, glow or flame. Deck cool to touch.

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

Test Observations Deck: 6

Test Date	11/19/13
Ambient Air Temperature	66°F
Brand Type	Class A, 4.66 lbs
Slope of Test Deck	5:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	00:10	Surface ignition.
	06:59	Brand ¼ consumed.
	10:56	Brand ½ consumed.
	15:43	Brand ¾ consumed.
	28:07	Flame/Glow out, top side. Brand fully consumed.
	70:00	Test stop. No smoke, glow or flame. Deck cool to touch.

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

Test Observations Deck: 7

Test Date	11/20/13
Ambient Air Temperature	61°F
Brand Type	Class A, 4.63 lbs
Slope of Test Deck	5:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	00:14	Surface ignition.
	08:21	Brand ¼ consumed.
	14:06	Brand ½ consumed.
	17:58	Brand ¾ consumed.
	34:21	Flame/Glow out, top side. Brand fully consumed.
	90:00	Test stop. No smoke, glow or flame. Deck cool to touch.

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

Test Observations Deck: 8

Test Date	11/20/13
Ambient Air Temperature	65°F
Brand Type	Class A, 4.55 lbs
Slope of Test Deck	5:12

Brand#	Time (min:sec) Brand placed on deck	Observations
1	00:00	Brand placed on deck.
	00:15	Surface ignition.
	07:23	Brand ¼ consumed.
	12:14	Brand ½ consumed.
	12:34	Discoloration of horizontal joint, underside.
	16:26	Brand ¾ consumed.
	36:19	Flame out, glow out, top side. Brand fully consumed.
	80:00	Test stop.

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

6 Conclusion

The tests were conducted in accordance with ASTM E108 (2010) "*Standard Test Methods for Fire Tests of Roof Coverings*" and UL 790 (2004). Below is a summary of the test results.

Sample #	Test	Slope	Rating
1	Spread of Flames	5:12	Class 'A'
2	Spread of Flames	5:12	Class 'A'
3	Intermittent Flames	5:12	Class 'A'
4	Intermittent Flames	5:12	Class 'A'
5	Burning Brand	5:12	Class 'A'
6	Burning Brand	5:12	Class 'A'
7	Burning Brand	5:12	Class 'A'
8	Burning Brand	5:12	Class 'A'

The Palmex International Domingo/Rio composite palm leaves, applied as stated in the this report, met the requirements of ASTM E108 (2010) "*Standard Test Methods for Fire Tests of Roof Coverings*" and UL 790 (2004) for a Class 'A' application at 5:12.

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: _____

Gregory Allen
Project Engineer, Fire
Intertek Building Products



Reviewed by: _____

Kent Kelsey
Lead Engineer, Fire
Intertek Building Products



Palmex International
Project No. 101398495MID-001

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APPENDIX A

Photographs

Photographs,
After

Test 1



Test 2



Test 3



Test 4



Test 5



Test 6



Test 7



Test 8





REVISION SUMMARY

DATE	SUMMARY
11/22/2013	Initial report