TEST REPORT

REPORT NUMBER: 102841566COQ-003b
ORIGINAL ISSUE DATE: March 14, 2017

EVALUATION CENTER
Intertek Testing Services NA Ltd.
1500 Brigantine Drive
Coquitlam, B.C. V3K 7C1

RENDERED TO

Structurlam Products Ltd.
2176 Government Street
Penticton, BC V2A 8B5
CAN

PRODUCT EVALUATED: 4 in. thick Douglas Fir Crosslam CLT Panels
EVALUATION PROPERTY: Surface Burning Characteristics

Report of testing 4 in. thick Douglas Fir Crosslam CLT Panels for compliance with the applicable requirements of the following criteria: ASTM E84-16a, *Standard Test Method for Surface Burning Characteristics of Materials.*

1 Table of Contents

2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Structurlam Products Ltd., to evaluate the surface burning characteristics of 4 in. thick Douglas Fir Crosslam CLT Panels. Testing was conducted in accordance with the standard methods of ASTM E84-16a, *Standard Test Method for Surface Burning Characteristics of Materials*.

This evaluation began March 10, 2017 and was completed March 10, 2017.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were randomly selected on January 25, 2017 by Intertek representative Dan Lungu. The sampling was conducted at Structurlam Products Ltd located at 2176 Government Street Penticton, BC The sample panels were received at the Evaluation Center on February 3, 2017.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

Upon receipt of the samples at the Intertek Coquitlam laboratory they were placed in a conditioning room where they remained in an atmosphere of 23 ± 3°C (73.4 ± 5°F) and 50 ± 5% relative humidity.

The sample panels consisted of 4 in. thick Douglas Fir Crosslam CLT Panels. Each panel measured 24 in. wide by 6 ft. long by nominal 4in. thick. The moisture content ranged from 12.2% to 12.8%.

For each trial run, four 6 ft. long by 24 in. wide sample panels were butted together and placed on the upper ledge of the flame spread tunnel to form the required 24 ft. sample length. A layer of 6mm reinforced cement board was placed over top of the samples, the tunnel lid was lowered into place, and the samples were then tested in accordance with ASTM E84-16a.

4 Testing and Evaluation Methods

4.1. TEST STANDARD

The results of the tests are expressed by indexes, which compare the characteristics of the sample under tests relative to that of select grade red oak flooring and inorganic-cement board.

(A) Flame Spread Index:

This index relates to the rate of progression of a flame along a sample in the 25 foot tunnel. A natural gas flame is applied to the front of the sample at the start of the test and drawn along the sample by a draft kept constant for the duration of the test. An observer notes the progression of the flame front relative to time.

The test apparatus is calibrated such that the flame front for red oak flooring passes out the end of the tunnel in five minutes, thirty seconds (plus or minus 15 seconds).

(B) Smoke Developed:

A photocell is used to measure the amount of light, which is obscured by the smoke passing down the tunnel duct. When the smoke from a burning sample obscures the light beam, the output from the photocell decreases. This decrease with time is recorded and compared to the results obtained for red oak, which is defined to be 100.

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

(A) Flame Spread

The resultant flame spread Indexes are as follows:
(Index rounded to nearest 5)

4 in. thick Douglas Fir Crosslam CLT Panels	Flame Spread	Flame Spread Index
Run 1	32	30
Run 2	31	30

(B) Smoke Developed

The areas beneath the smoke developed curve and the related Indexes are as follows:
(For smoke developed indexes 200 or more, index is rounded to the nearest 50. For smoke developed indexes less than 200, index is rounded to nearest 5)

4 in. thick Douglas Fir Crosslam CLT Panels	Smoke Developed	Smoked Developed Index
Run 1	34	35
Run 2	39	40

(C) Observations

During the test runs, surface ignition occurred between 30 and 37 seconds; the flame began to progress along the sample until it reached the maximum flame spread.

6 Conclusion

The 4 in. thick Douglas Fir Crosslam CLT Panels, submitted by Structurlam Products Ltd, exhibited the following flame spread characteristics when tested in accordance ASTM E84-16a, *Standard Test Method for Surface Burning Characteristics of Materials*.

4 in. thick Douglas Fir Crosslam CLT Panels	Flame Spread Index	Smoke Developed Index
Run 1	30	35
Run 2	30	40

The conclusions of this test report may be used as part of the requirements for Intertek product certification. A series of two test runs are required for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK TESTING SERVICES NA LTD.

Tested and
Reported by: _____
Greg Philp
Technician – Building Products

Reviewed by: _____
Riccardo DeSantis
Manager – Building Products

APPENDIX A

DATA SHEETS

ASTM E84-16a DATA SHEETS
Run 1

ASTM E84

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Client: Structurlsm Products
Date: 03 10 2017
Project Number: 102841566
Test Number: 1
Operator: Greg Philp

Specimen ID: 4 in. thick D Fir Crosslam CLT Panels Avg m/c 12.8%

TEST RESULTS

FLAMESPREAD INDEX: 30

SMOKE DEVELOPED INDEX: 35

SPECIMEN DATA . . .

Time to Ignition (sec):	37
Time to Max FS (sec):	549
Maximum FS (feet):	8.2
Time to 980 F (sec):	Never Reached
Time to End of Tunnel (sec):	Never Reached
Max Temperature (F):	620
Time to Max Temperature (sec):	589
Total Fuel Burned (cubic feet):	45.87
FS*Time Area (ft*min):	62.3
Smoke Area (%A*min):	23.9
Unrounded FSI:	32.1
Unrounded SDI:	33.8

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec):	38.0
Red Oak Smoke Area (%A*min):	70.8

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ASTM E84-16a DATA SHEETS
Run 1

Project No: 102841566

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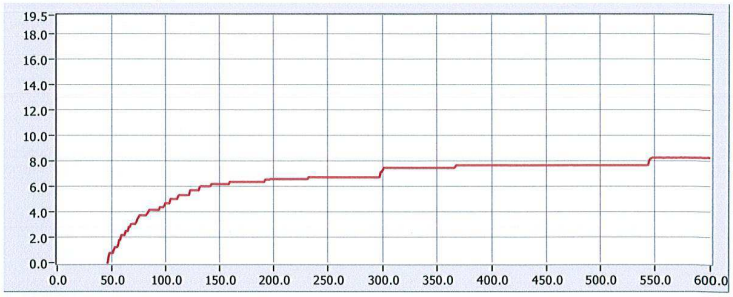
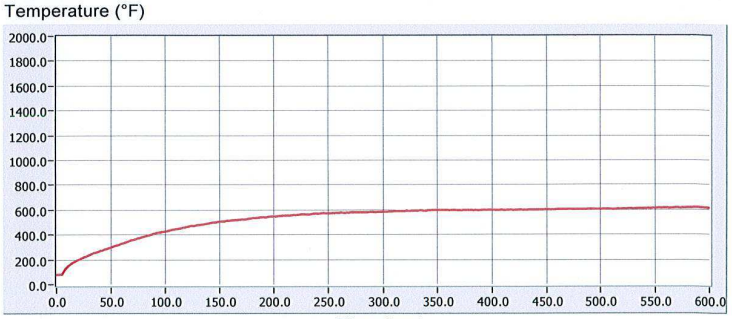
FLAME SPREAD (ft)



Smoke (%A)

Temperature (°F)



Time (sec)

600

ASTM E84-16a DATA SHEETS
Run 2

ASTM E84

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Client: Structurlam Products Ltd
Date: 03 10 2017
Project Number: 102841566
Test Number: 2
Operator: Greg Philp

Specimen ID: 4 in. thick D Fir Crosslam CLT Panels Avg m/c 12.2%

TEST RESULTS

FLAMESPREAD INDEX: 30

SMOKE DEVELOPED INDEX: 40

SPECIMEN DATA . . .

Time to Ignition (sec):	30
Time to Max FS (sec):	334
Maximum FS (feet):	7.1
Time to 980 F (sec):	Never Reached
Time to End of Tunnel (sec):	Never Reached
Max Temperature (F):	616
Time to Max Temperature (sec):	600
Total Fuel Burned (cubic feet):	45.87
FS*Time Area (ft*min):	60.1
Smoke Area (%A*min):	27.5
Unrounded FSI:	31.0
Unrounded SDI:	38.8

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec):	38.0
Red Oak Smoke Area (%A*min):	70.8

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ASTM E84-16a DATA SHEETS
Run 2

Project No: 102841566

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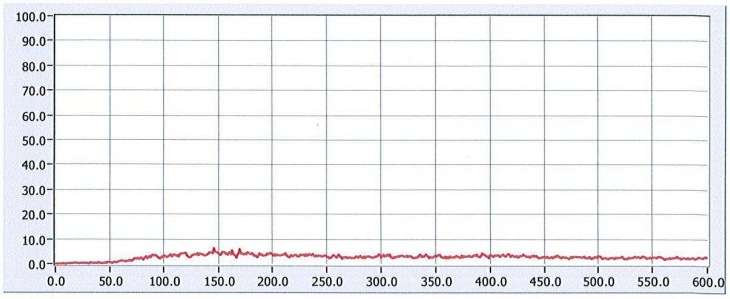
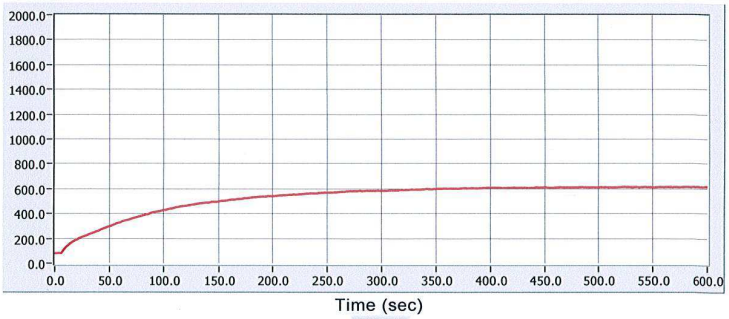
FLAME SPREAD (ft)

Smoke (%A)



Temperature (°F)



Time (sec)

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REVISION SUMMARY

DATE	PAGE(S)	SUMMARY
March 14, 2017	All	Original Issue Date