

# TEST REPORT

**Intertek**

**REPORT NUMBER: 101335189COQ-001**  
ORIGINAL ISSUE DATE: September 23, 2013

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

**RENDERED TO**

**FP Innovations**  
**319 Franquet**  
**Quebec, QC G1P 4R4**

PRODUCT EVALUATED: Cross-Laminated Timber  
EVALUATION PROPERTY: Surface Burning Characteristics

**Report of testing Cross-Laminated Timber for compliance with the applicable requirements of the following criteria: CAN/ULC S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies**

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## 2 Introduction

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Intertek Testing Services NA Ltd. (Intertek) has conducted testing for FP Innovations to evaluate the surface burning characteristics of cross-laminated timber. Testing was conducted in accordance with the standard methods of CAN/ULC S102-10, *Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*.

This evaluation began September 19, 2013 and was completed the same day. Testing was witnessed by Mr. Christian Dagenais representing FP Innovations.

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client and were not independently selected for testing. The sample panels were received at the Evaluation Center on September 12, 2013.

### 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  $23 \pm 3^{\circ}\text{C}$  ( $73.4 \pm 5^{\circ}\text{F}$ ) and  $50 \pm 5\%$  relative humidity.

The sample material was prepared by the client and consisted of 3 ply SPF panels. Each sample panel measured 3.9 in. thick by 24 in. wide by 8 ft. long, and was identified by the client as 3 Ply SPF Cross-Laminated Timber (CLT).

For each trial run, three 8 ft. long by 24 in. wide sample panels were butted together end to end and placed on the upper ledge of the flame spread tunnel to form the required 24 ft. sample length. A layer of 6 mm 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 CAN/ULC S102-10.

## 4 Testing and Evaluation Methods

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### 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 Classification:

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

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### 5.1. RESULTS AND OBSERVATIONS

#### (A) Flame Spread

The resultant flame spread classifications are as follows:  
(Classification rounded to nearest 5)

| 3 Ply SPF Cross-Laminated Timber (CLT) | Flame Spread | Flame Spread Classification |
|--|--------------|-----------------------------|
| Run 1                                  | 47           | 40                          |
| Run 2                                  | 39           |                             |
| Run 3                                  | 41           |                             |

#### (B) Smoke Developed

The areas beneath the smoke developed curve and the related classifications are as follows:  
(Classification rounded to nearest 5)

| 3 Ply SPF Cross-Laminated Timber (CLT) | Smoke Developed | Smoke Developed Classification |
|--|-----------------|--------------------------------|
| Run 1                                  | 47              | 30                             |
| Run 2                                  | 21              |                                |
| Run 3                                  | 29              |                                |

#### (C) Observations

During the test runs, surface ignition occurred between 37 and 58 seconds.

## 6 Conclusion

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The 3 Ply SPF Cross-Laminated Timber (CLT), submitted by FP Innovations, exhibited the following flame spread characteristics when tested in accordance CAN/ULC S102-10, *Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*.

A series of three test runs of each material was conducted to conform to the requirements of the National Building Code of Canada.

| Sample                                 | Flame Spread Classification | Smoke Developed Classification |
|--|-----------------------------|--------------------------------|
| 3 Ply SPF Cross-Laminated Timber (CLT) | 40                          | 30                             |

The conclusions of this test report may not be used as part of the requirements 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:   
Kal Kooner, P.Eng.  
Manager – Engineering Services

# APPENDIX A

## DATA SHEETS

## CAN/ULC S102-10 DATA SHEETS Run 1

Standard: ULC S102

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Client: FP Innovations  
Date: 09 19 2013  
Project Number: 10335189  
Test Number: 1  
Operator: Greg Philp

Specimen ID: 99 mm CLT Panels SPF Deck 1 m/c 11.0 deck 2 m/c 10.8 Deck 3 m/c 11.0

### TEST RESULTS

FLAMESPREAD INDEX: 45

SMOKE DEVELOPED INDEX: 45

### SPECIMEN DATA . . .

Time to Ignition (sec): 58  
Time to Max FS (sec): 588  
Maximum FS (mm): 3345.1  
Time to 527 C (sec): Never Reached  
Time to End of Tunnel (sec): Never Reached  
Max Temperature (C): 328  
Time to Max Temperature (sec): 599  
Total Fuel Burned (cubic feet): 44.00  
  
FS\*Time Area (M\*min): 25.3  
Smoke Area (%A\*min): 79.8  
Unrounded FSI: 46.8  
Unrounded SDI: 47.4

### CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 44.0  
Red Oak Smoke Area (%A\*min): 168.3

Tested By:  \_\_\_\_\_

Reviewed By:  \_\_\_\_\_









## CAN/ULC S102-10 DATA SHEETS Run 3

Standard: ULC S102

Page 1 of 2

Client: FP Innovations  
Date: 09 19 2013  
Project Number: 101335189  
Test Number: 3  
Operator: Greg Philp

Specimen ID: 99 mm thick CLT Panels SPF Deck 1 m/c 11.6 deck 2 m/c 10.9 Deck 3 m/c  
11.3

### TEST RESULTS

**FLAMESPREAD INDEX: 40**

**SMOKE DEVELOPED INDEX: 30**

### SPECIMEN DATA . . .

Time to Ignition (sec): 47  
Time to Max FS (sec): 376  
Maximum FS (mm): 2724.9  
Time to 527 C (sec): Never Reached  
Time to End of Tunnel (sec): Never Reached  
Max Temperature (C): 312  
Time to Max Temperature (sec): 580  
Total Fuel Burned (cubic feet): 44.00  
  
FS\*Time Area (M\*min): 22.2  
Smoke Area (%A\*min): 49.4  
Unrounded FSI: 41.0  
Unrounded SDI: 29.3

### CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 44.0  
Red Oak Smoke Area (%A\*min): 168.3

Tested By:  \_\_\_\_\_

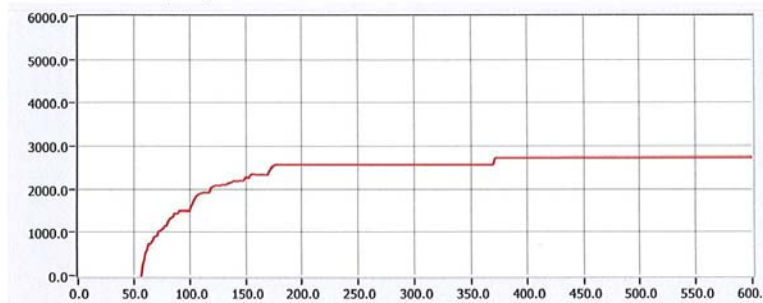
Reviewed By:  \_\_\_\_\_

### CAN/ULC S102-10 DATA SHEETS Run 3

Page 2 of 2

Client: FP Innovations      Specimen ID: 99 mm thick CLT Panels SPF Deck 1 m/c  
Test No.: 3      Standard: ULC S102

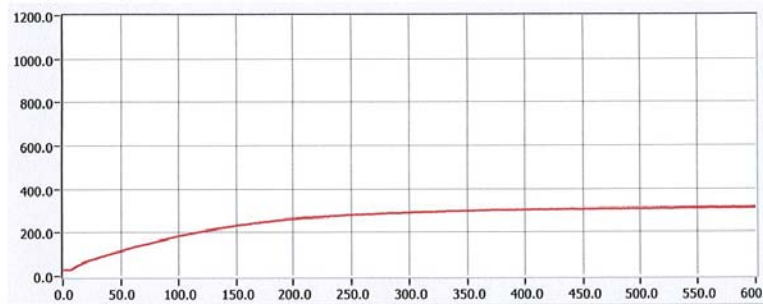
#### FLAME SPREAD (MM)



#### Smoke (%A)



#### Temperature (°C)



Time (sec)

600

Tested By: SS

Reviewed By: JK

## REVISION SUMMARY

| <b>DATE</b>        | <b>PAGE(S)</b> | <b>SUMMARY</b>      |
|--------------------|----------------|---------------------|
| September 23, 2013 | All            | Original Issue Date |
|                    |                |                     |
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