



REPORT NUMBER: 3188456COQ-003
ORIGINAL ISSUE DATE: September 29, 2009

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

RENDERED TO

International Carbide Technology
No. 1-17, Toa-Chan, 12 Ling
Kem-Ko Village, Lu-Chu Hsiang
Taoyuan, 338, Taiwan

PRODUCT EVALUATED: Intumescent Coating "DC 315"
EVALUATION PROPERTY: Surface Burning Characteristics

Report of testing intumescent coating "DC 315" for compliance with the applicable requirements of the following criteria: CAN/ULC S102-07; Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT

1 Table of Contents

	PAGE
1 Table of Contents	2
2 Introduction	3
3 Test Samples	3
3.1 SAMPLE SELECTION.....	3
3.2 SAMPLE AND ASSEMBLY DESCRIPTION	3
4 Testing and Evaluation Methods.....	4
4.1 TEST STANDARD.....	4
5 Testing and Evaluation Results	5
5.1 RESULTS AND OBSERVATIONS.....	5
6 Conclusion	6
APPENDIX A – Data Sheets	6 Pages
REVISION SUMMARY	

2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for International Carbide Technology, to evaluate the surface burning characteristics of Intumescent Coating "DC 315". Testing was conducted in accordance with the standard methods of CAN/ULC S102-07; *Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*.

This evaluation began September 29, 2009 and was completed September 29, 2009.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client and were not independently selected for testing. The sample materials were received at the Evaluation Center on September 9, 2009.

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 identified by the client as intumescent coating "DC 315". This product was applied by the client to three Orientated Strand Boards (OSB), on one side only, to a nominal thickness of 12 mils wet. Each board measured 24 inches wide by 8 feet long by 3/8 inch thick.

For each trial run, three 8 ft. lengths of panel were placed on the upper ledges of the flame spread tunnel, with the coated face oriented toward the flame, and butted together to form the required 24 ft. sample length. A layer of 6mm reinforced cement board was placed on top of the sample, the tunnel lid was lowered into place, and the samples were then tested in accordance with CAN/ULC S102-07.

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 asbestos-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).

Calculations: (CAN/ULC S102-07)

According to the test standard, the flame spread classification is equal to $\frac{5363}{195 - A_t}$

when A_t is the total area beneath the flame spread curve, if this area exceeds 97.5 minute feet. If the area beneath the curve is less than or equal to 97.5 minute feet the classification becomes $0.564 \times A_t$.

(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.

Calculations:

Unrounded Smoke Developed Index = $\frac{10,000 - \text{SmokeIntegration}}{1076} \times 100$

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

(A) Flame Spread

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

Intumescent Coating "DC 315" Applied to OSB	Flame Spread	Flame Spread Classification
Run 1	0	0
Run 2	0	
Run 3	0	

(B) Smoke Developed

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

Intumescent Coating "DC 315" Applied to OSB	Smoke Developed	Smoke Developed Classification
Run 1	22	25
Run 2	23	
Run 3	27	

(C) Observations

After ignition the sample began to slowly darken to the point where the intumescent properties were taking effect and not allowing for fire to commence. At the average time of 424 seconds is when the product did catch fire, minimally. This had no or little effect on the smoke developed.

6 Conclusion

The samples of Intumescent Coating "DC 315" applied to 3/8 in. thick OSB, submitted by International Carbide Technology, exhibited the following flame spread characteristics when tested in accordance with CAN/ULC S102-07; *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 Material	Flame Spread Classification	Smoke Developed Classification
Intumescent Coating "DC 315" Applied to OSB	0	25

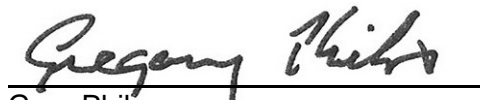
The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK TESTING SERVICES NA LTD.

Tested and
Reported by:


Gerry Loverro
Technician – Construction Products Testing

Reviewed by:


Greg Philp
Reviewer, Fire Testing

GL

APPENDIX A

DATA SHEETS

CAN/ULC S102-07 DATA SHEETS
Run 1

ULCS 102.1

Page 8 of 9

Client: International Carbide
Date: 09/29/09
Project Number: 3188456
Test Number: 1
Operator: Gerry Loverro
Specimen ID: intumescent coating, DC 363.

TEST RESULTS

FLAMESPREAD INDEX: 0
SMOKE DEVELOPED INDEX: 20

SPECIMEN DATA . . .

Time to Ignition (sec): 439
Time to Max FS (sec): 0
Maximum FS (mm): 0.0
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (C): 160
Time to Max Temperature (sec): 599
Total Fuel Burned (cubic metres): 47.70

FS*Time Area (M*min): 0.0
Smoke Area (%A*min): 23.1
Unrounded FSI: 0.0

CALIBRATION DATA . . .

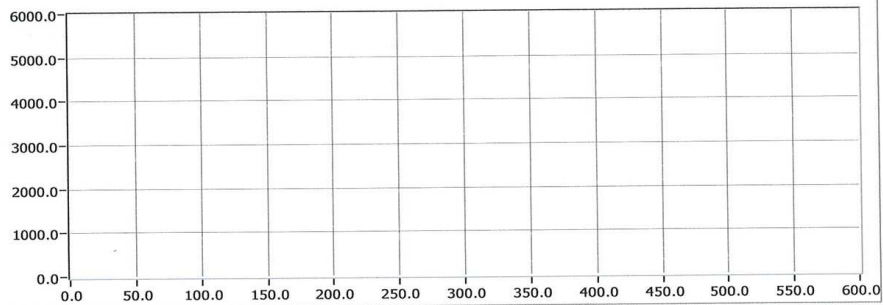
Time to Ignition of Last Red Oak (Sec): 40.0
Red Oak Smoke Area (%A*min): 107.6

CAN/ULC S102-07 DATA SHEETS Run 1

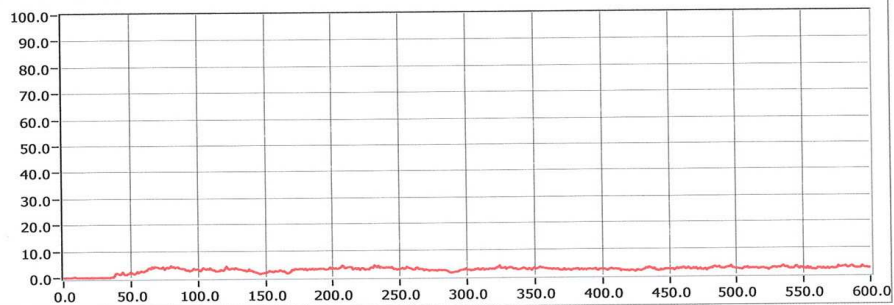
Project No: 3188456

Page 9 of 9

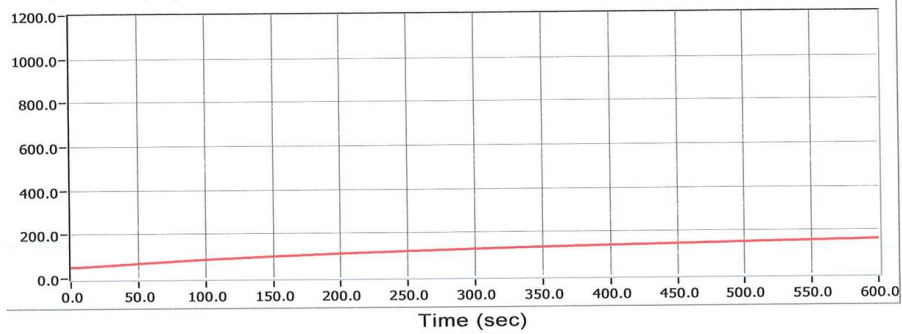
FLAME SPREAD (MM)



Smoke (%A)



Temperature (°C)



Time (sec)
600

CAN/ULC S102-07 DATA SHEETS
Run 2

ULCS 102.1

Page 8 of 9

Client: International Carbide
Date: 09/29/09
Project Number: 3188456
Test Number: 2
Operator: Gerry Loverro
Specimen ID: Intumescent coating, DC 363.

TEST RESULTS

FLAMESPREAD INDEX: 0
SMOKE DEVELOPED INDEX: 25

SPECIMEN DATA . . .

Time to Ignition (sec): 411
Time to Max FS (sec): 0
Maximum FS (mm): 0.0
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (C): 170
Time to Max Temperature (sec): 600
Total Fuel Burned (cubic metres): 47.60
FS*Time Area (M*min): 0.0
Smoke Area (%A*min): 24.5
Unrounded FSI: 0.0

CALIBRATION DATA . . .

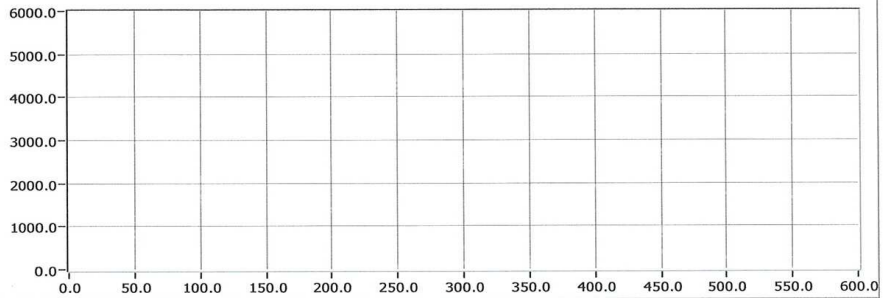
Time to Ignition of Last Red Oak (Sec): 40.0
Red Oak Smoke Area (%A*min): 107.6

CAN/ULC S102-07 DATA SHEETS Run 2

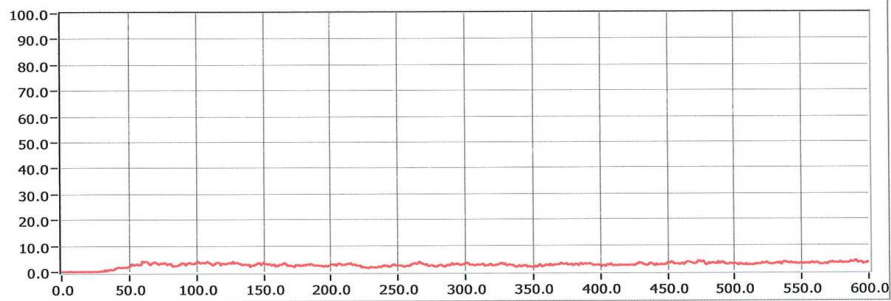
Project No: 3188456

Page 9 of 9

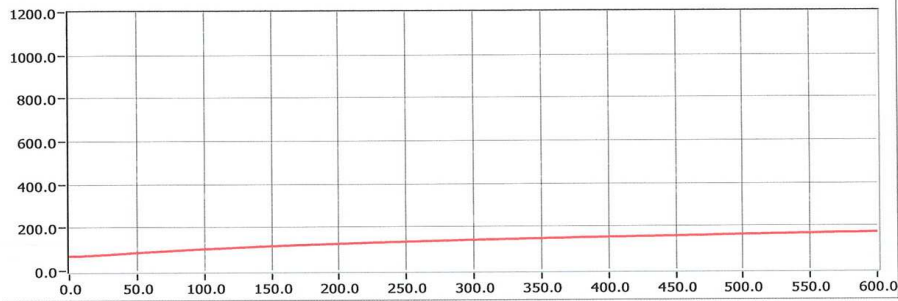
FLAME SPREAD (MM)



Smoke (%A)



Temperature (°C)



Time (sec)
600

CAN/ULC S102-07 DATA SHEETS
Run 3

ULCS 102.1

Page 8 of 9

Client: International Carbide
Date: 09/29/09
Project Number: 3188456
Test Number: 3
Operator: Gerry Loverro
Specimen ID: Intumescent coating, DC 363

TEST RESULTS

FLAMESPREAD INDEX: 0
SMOKE DEVELOPED INDEX: 25

SPECIMEN DATA . . .

Time to Ignition (sec): 423
Time to Max FS (sec): 0
Maximum FS (mm): 0.0
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (C): 175
Time to Max Temperature (sec): 599
Total Fuel Burned (cubic metres): 47.70
FS*Time Area (M*min): 0.0
Smoke Area (%A*min): 29.0
Unrounded FSI: 0.0

CALIBRATION DATA . . .

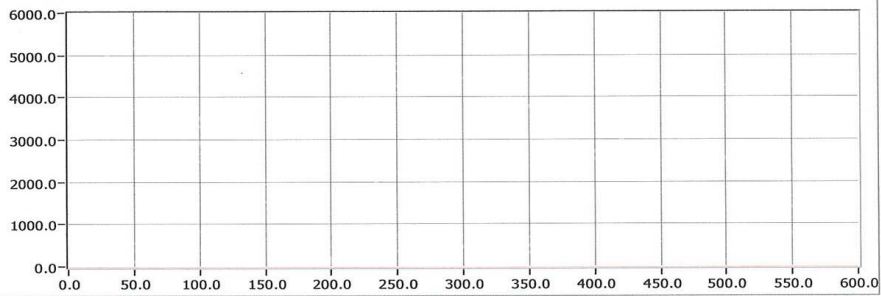
Time to Ignition of Last Red Oak (Sec): 40.0
Red Oak Smoke Area (%A*min): 107.6

CAN/ULC S102-07 DATA SHEETS Run 3

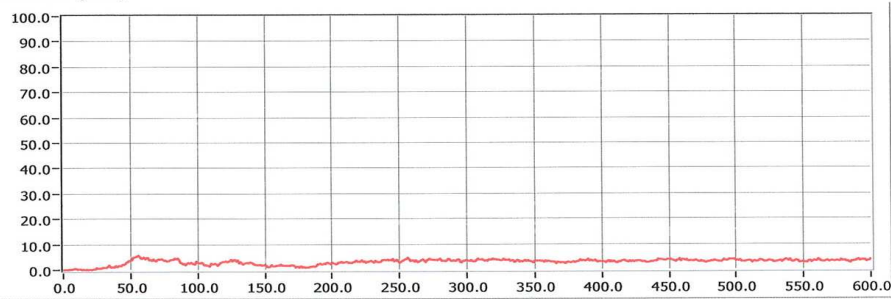
Project No: 3188456

Page 9 of 9

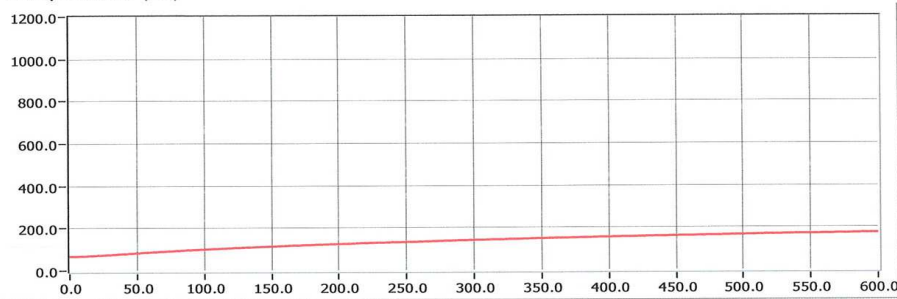
FLAME SPREAD (MM)



Smoke (%A)



Temperature (°C)



Time (sec)

600

REVISION SUMMARY

DATE	PAGE(S)	SUMMARY
September 29, 2009	All	Original Issue Date