

January 03, 2007

Mr. Danny French
Contego International
334 Greyhound Pass West
Carmel, IN 46032

Our Reference: R25382 / 06CA51291

Subject: Report Of Surface Burning Characteristics Tests On Fire Retardant
Coating As Submitted By Contego International

Dear Mr. French

This is an interim Report summarizing the results of tests conducted under an investigation identified as Assignment No. 06CA51291.

METHOD:

Each test was conducted in accordance with Standard ANSI/UL723, ninth edition; dated August 29, 2003, "Test for Surface Burning Characteristics of Building Materials" (ASTM E84).

The test determines the Surface Burning Characteristics of the material, specifically the flame spread and smoke developed indices when exposed to fire.

The maximum distance the flame travels along the length of the sample from the end of the igniting flame is determined by observation. The Flame Spread Index of the material is derived by plotting the progression of the flame front on a time-distance basis, ignoring any flame front recession, and using the equations described below:

- A. $CFS = 0.515 A_T$ when A_T is less than or equal to 97.5 minute-foot.
- B. $CFS = 4900/(195-A_T)$ when A_T is greater than 97.5 minute-foot.

Where A_T = total area under the time distance curve expressed in minute-foot.

The Smoke Developed Index (SDI) is determined by rounding the Calculated Smoke Developed (CSD) as described in UL 723. The CSD is determined by the output of photoelectric equipment operating across the furnace flue pipe. A curve is developed by plotting the values of light absorption (decrease in cell output) against time. The CSD is derived by expressing the net area under the curve for the material tested as a percentage of the area under the curve for untreated red oak.

The CSD is expressed as:

$$\text{CSD} = (A_m/A_{ro}) \times 100$$

Where:

CSD = Calculated Smoke Developed

A_m = The area under the curve for the test material.

A_{ro} = The area under the curve for untreated red oak.

SAMPLES:

Sample Description

Test No.	System
1	blank doug fir.
2	Fire Barrier coated doug fir.
3	Fire Barrier coated doug fir.
4	Fire Barrier coated doug fir.

Each test sample consisted of three 8 by 2 ft wide coated douglas fir decks butted end-to-end to form the required 24 ft. long surface.

RESULTS:

The results are tabulated below are considered applicable only to the specific samples tested.

Data sheets and graphical plots of flame travel versus time and smoke developed versus time are also enclosed.

Table 1: Test Summary

Test No.	Test Code	Sample Description	CFS Calculated Flame Spread	FSI Flame Spread Index	CSD Calculated Smoke Developed	SDI Smoke Developed Index
1	12190606	blank doug fir.	62.74	65	68.9	70
2	12190607	Fire Barrier coated doug fir.	0.00	0	1.4	0
3	12190609	Fire Barrier coated doug fir.	1.77	0	28.2	30
4	12190610	Fire Barrier coated doug fir.	0.09	0	12.1	10

The Classification Marking of Underwriters Laboratories Inc. on the product is the only method provided by Underwriters Laboratories Inc. to identify products, which have been produced under its Classification and Follow-Up Service.

SURFACE BURNING CHARACTERISTICS CLASSIFICATION:

Based on the above test results, the following Classification is being established for the product submitted.

SURFACE BURNING CHARACTERISTICS

<u>Surface</u>	<u>Douglas Fir</u>
Flame Spread	0
Smoke Developed	0-30
Number of Preliminary Coats	None
Rate Per Coat (ft ² /gal)	-
Number of Fire Retardant Coats	2
Rate Per Coat (ft ² /gal)	145
Number of Overcoats	None
Rate Per Coat (ft ² /gal)	-

We are currently in the process of conducting various supplemental tests to establish specifications in the Follow-Up Service Procedure for periodic follow-up tests at our Northbrook facility. Upon completion of this work we will close the project.

Should you have any questions on the above, please contact the undersigned.

Very truly yours,



Robert S Kiefer (ext. 42014)
Senior Engineering Associate
Fire Protection Division

Reviewed by:



James F. Smith (ext. 42666)
Staff Engineering Associate
Fire Protection Division

Underwriters Laboratories Inc.

Project: 06CA51291
Tested by: HISLOP
Employee #: 7036

File: R25382
Engineer: KIEFER
Emp. #: 98874

Test Code: 12190606
Date: 12/19/06

TEST METHOD: The test was conducted in accordance with UL 723, 9th Edition

Client Name: Contego International					
Test Duration	10 Minutes	Test No.:	1	Hot Test:	No
Mounting:	Self	Test Type:	Classification	Burn-Out Required:	No

Test Sample: blank doug fir.

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)		Time (Sec)		Distance (Feet)		Time (Sec)
Ignition		40		9		150
0.5		52		10		178
1		60		11		202
2		68		12		232
3		82		13		242
4		88		14		272
5		100		15		316
6		104		16		440
7		132		16.5		500
8		142		17		576

Calculated Flame Spread (CFS): 62.74
Flame Spread Index (FSI): 65

Time to Ignition (sec): 40
Maximum Flame Spread (ft): 17.0
Area Under the Flame Spread Curve (ft.-min): 116.9

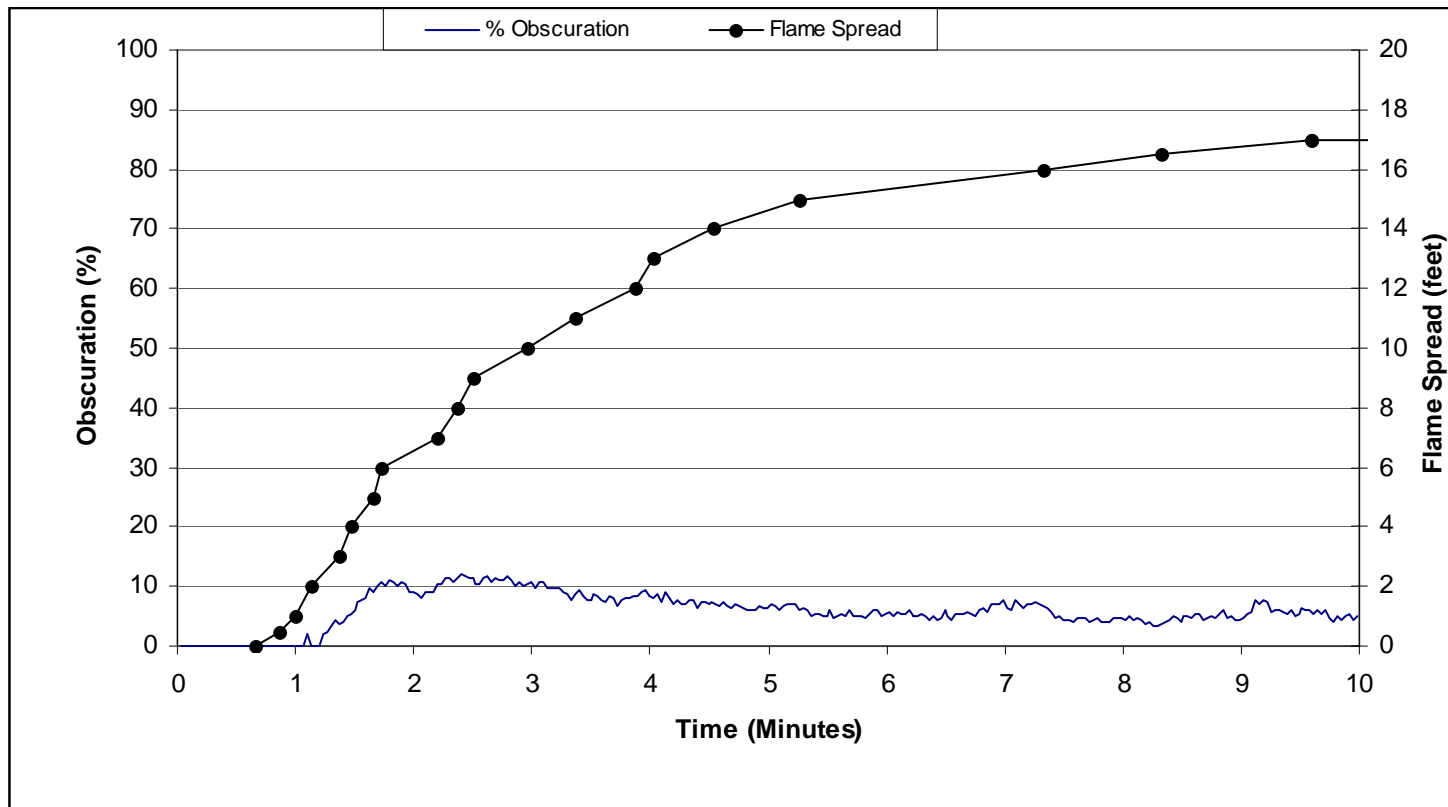
SMOKE RESULTS

Calculated Smoke Developed (CSD): 68.9
Smoke Developed Index (SDI): 70

Area Under the Smoke Curve (sq. in.): 2.98
Area Under Red Oak Curve (sq. in.): 4.32

Flame Spread / Smoke Results

Contego International
blank doug fir.



Test No. 1
06CA51291 / R25382
12190606

Flame Spread Index: 65
Smoke Developed Index: 70
Max. Flame Spread: 17.0

Underwriters Laboratories Inc.

Project: 06CA51291
Tested by: HISLOP
Employee #: 7036

File: R25382
Engineer: KIEFER
Emp. #: 98874

Test Code: 12190607
Date: 12/19/06

TEST METHOD: The test was conducted in accordance with UL 723, 9th Edition

Client Name: Contego International		
Test Duration: 10 Minutes	Test No.: 2	Hot Test: No
Mounting: Self	Test Type: Classification	Burn-Out Required: No

Test Sample: Fire Barrier coated doug fir.

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)	Time (Sec)
Ignition	346

Calculated Flame Spread (CFS): 0.00
Flame Spread Index (FSI): 0

Time to Ignition (sec): 346
Maximum Flame Spread (ft): 0.0
Area Under the Flame Spread Curve (ft.-min): 0.0

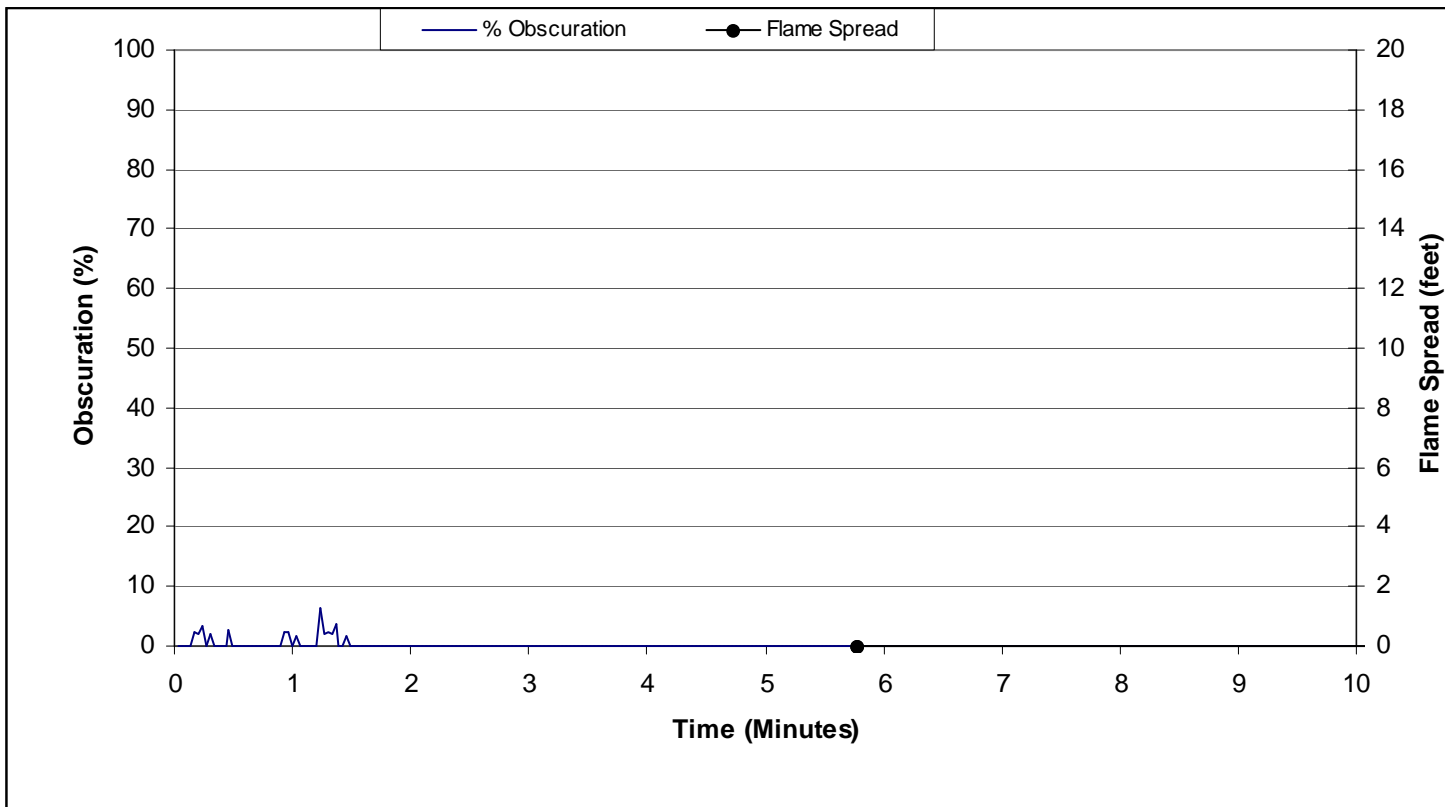
SMOKE RESULTS

Calculated Smoke Developed (CSD): 1.4
Smoke Developed Index (SDI): 0

Area Under the Smoke Curve (sq. in.): 0.06
Area Under Red Oak Curve (sq. in.): 4.32

Flame Spread / Smoke Results

Contego International
Fire Barrier coated doug fir.



Test No. 2
06CA51291 / R25382
12190607

Flame Spread Index: 0
Smoke Developed Index: 0
Max. Flame Spread: 0.0

Underwriters Laboratories Inc.

Project: 06CA51291
Tested by: HISLOP
Employee #: 7036

File: R25382
Engineer: KIEFER
Emp. #: 98874

Test Code: 12190609
Date: 12/19/06

TEST METHOD: The test was conducted in accordance with UL 723, 9th Edition

Client Name: Contego International					
Test Duration	10 Minutes	Test No.:	3	Hot Test:	No
Mounting:	Self	Test Type:	Classification	Burn-Out Required:	No

Test Sample: Fire Barrier coated doug fir.

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)	Time (Sec)	Distance (Feet)	Time (Sec)
Ignition	366	3.5	570
0.5	542	4	574
1	550	4.5	580
1.5	554	5	592
2	556	5.5	598
3	558	6	600

Calculated Flame Spread (CFS): 1.77
Flame Spread Index (FSI): 0
Time to Ignition (sec): 366
Maximum Flame Spread (ft): 6.0
Area Under the Flame Spread Curve (ft.-min): 3.4

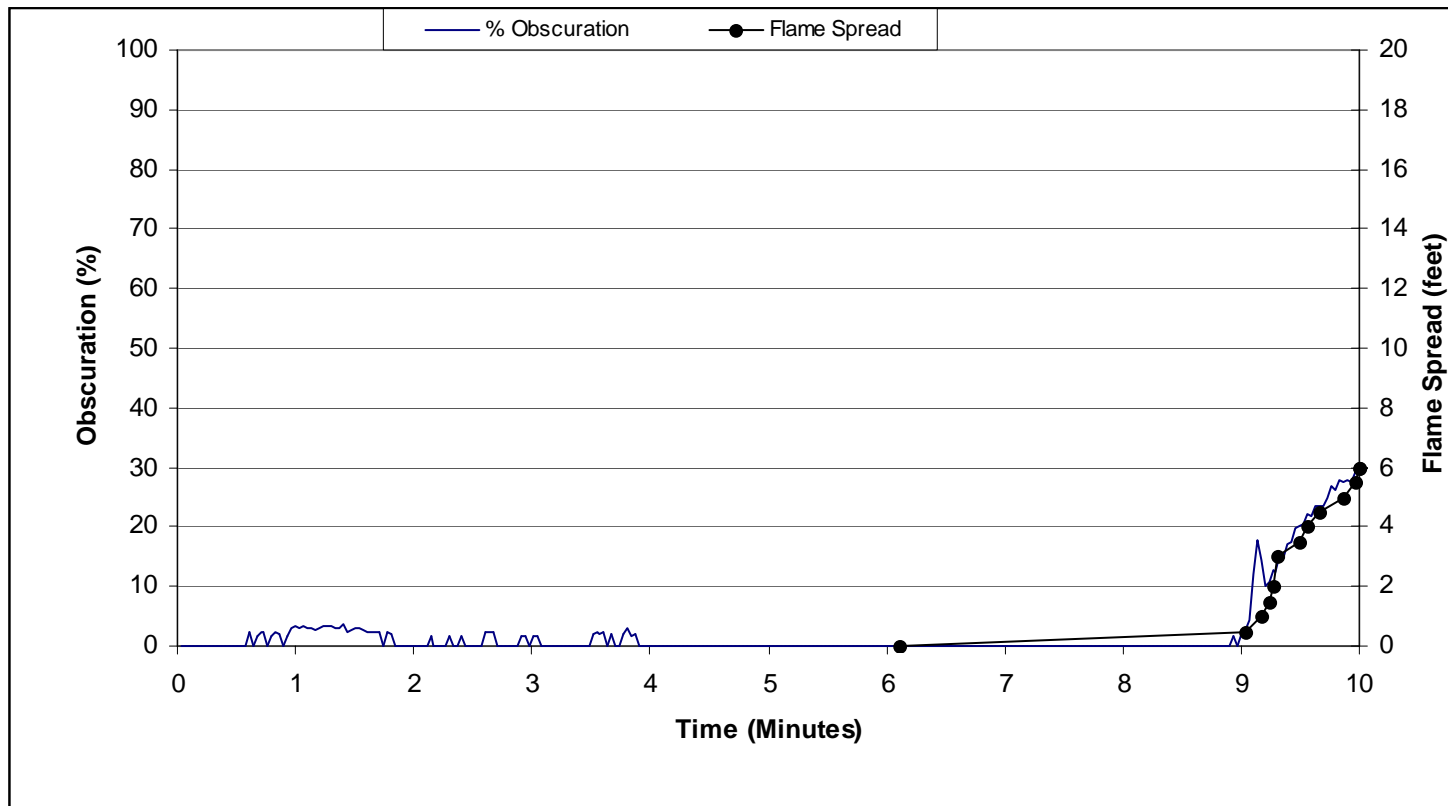
SMOKE RESULTS

Calculated Smoke Developed (CSD): 28.2
Smoke Developed Index (SDI): 30
Area Under the Smoke Curve (sq. in.): 1.22
Area Under Red Oak Curve (sq. in.): 4.32

Notes: After fire barrier coat charred up it fell (late in the test) resulting in the flame spread. In the first test the charred coat did not fall.

Flame Spread / Smoke Results

Contego International
Fire Barrier coated doug fir.



Test No. 3
06CA51291 / R25382
12190609

Flame Spread Index: 0
Smoke Developed Index: 30
Max. Flame Spread: 6.0

Underwriters Laboratories Inc.

Project: 06CA51291
Tested by: HISLOP
Employee #: 7036

File: R25382
Engineer: KIEFER
Emp. #: 98874

Test Code: 12190610
Date: 12/19/06

TEST METHOD: The test was conducted in accordance with UL 723, 9th Edition

Client Name: Contego International		
Test Duration: 10 Minutes	Test No.: 4	Hot Test: No
Mounting: Self	Test Type: Classification	Burn-Out Required: No

Test Sample: Fire Barrier coated doug fir.

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)		Time (Sec)
Ignition		339
0.5		595

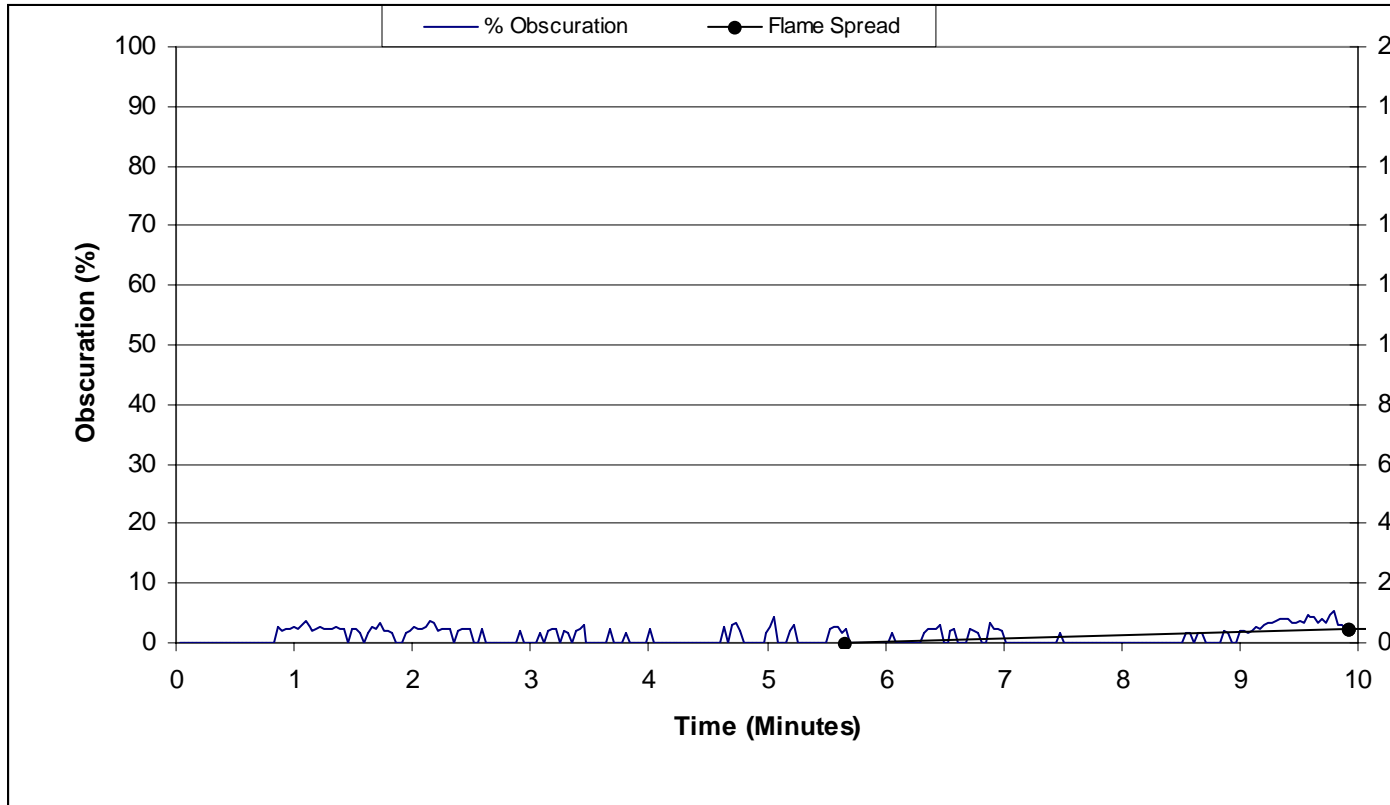
Calculated Flame Spread (CFS): 0.09
Flame Spread Index (FSI): 0
Time to Ignition (sec): 339
Maximum Flame Spread (ft): 0.5
Area Under the Flame Spread Curve (ft.-min): 0.2

SMOKE RESULTS

Calculated Smoke Developed (CSD): 12.1
Smoke Developed Index (SDI): 10
Area Under the Smoke Curve (sq. in.): 0.52
Area Under Red Oak Curve (sq. in.): 4.32

Flame Spread / Smoke Results

Contego International Fire Barrier coated doug fir.



Test No. 4
06CA51291 / R25382
12190610

Flame Spread Index: 0
Smoke Developed Index: 10
Max. Flame Spread: 0.5