



the standard in safety

Underwriters
Laboratories

File R26170
Project 08CA60413

June 5, 2009

REPORT

on

Wall Coverings

Under the

CLASSIFICATION PROGRAM

LG Chemical, LTD
Ulsan City, Korea

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DESCRIPTION

PRODUCT COVERED:

The Product covered by this Report is a PVC Wall Covering designated BENIF.

The product is Classified as to Surface Burning Characteristics only.

USE

The product is intended for application to interior surfaces as permitted by authorities having jurisdiction.

TEST RECORD NO. 1

GENERAL:

Test results relate only to the items tested.

EXAMINATION OF MATERIALS

The materials used in this investigation were produced under the observation of a representative of Underwriters Laboratories Inc., in a ready-to-use form. The composition of the finished material is of proprietary nature. Data on the composition is on file at the Laboratories for use in the Follow-Up Service Program.

Various physical and chemical tests were conducted on the components and finished products. The results developed from these tests were employed in establishing specifications for use in the factory Follow-Up Service Program.

SURFACE BURNING CHARACTERISTICS:

SAMPLES

The product consisted of a pressure sensitive backed PVC wallcovering. For each test, the product was applied to Inorganic Reinforced Cement Board.

For each test a piece of 1 ft long by 22 in. wide by 1/16 in. thick uncoated steel plate was placed at the fire end of the tunnel furnace "upstream" from the gas burners to complete the 25 ft chamber length.

The test samples were allowed to condition at a temperature of 73 ±4°F and a relative humidity of 50±5 percent prior to testing.

METHOD

The tests were conducted in accordance with Standard ANSI/UL723, Tenth Edition, dated September 10, 2008, "Test for Surface Burning Characteristics of Building Materials", (ASTM E84-08).

RESULTS

Data on flame spread and smoke developed appears in the following tabulations. Graphs of flame spread versus time and smoke developed versus time are also provided as part of the Test Record.

Flame Spread Index

The maximum distance the flame spreads along the length of the sample from the end of the igniting flame is determined by observation.

The Flame Spread Index (FSI) of the material is determined by rounding the Calculated Flame Spread (CFS) as described in UL 723. The CFS is derived by calculating the area under the flame spread distance (ft) versus time (min) curve, ignoring any flame front recession, and using one of the calculation methods as described below.

1. If the total area (A_T) is less than or equal to 97.5 min-ft, the CFS shall be 0.515 times the total area ($FSI=0.515 A_T$).
2. If the total area (A_T) is greater than 97.5 min-ft, the CFS is to be 4900 divided by 195 minus the total area ($FSI=4900/(195-A_T)$).

Table 1: Flame Spread Summary

	Sample Description	Maximum Flame Spread (ft)	Time of Maximum Flame Spread (min:s)	Calculated Flame Spread (CFS)
1	Benif non-flame retardant adhesive - unslit Applied to Reinforced Cement Board	1.0	5:44	2.69
2	Benif non-flame retardant adhesive - unslit Applied to Reinforced Cement Board	1.5	4:21	4.74
3	Benif non-flame retardant adhesive - slit Applied to Reinforced Cement Board	2.0	4:30	5.92
4	Benif w/Flame retardant adhesive - unslit Applied to Reinforced Cement Board	0.5	5:12	1.30
5	Benif w/Flame retardant adhesive - slit Applied to Reinforced Cement Board	0.5	4:16	1.54
6	Benif w/non-flame retardant adhesive - slit Applied to Reinforced Cement Board	1.5	8:08	3.86
7	Benif w/non-flame retardant adhesive - slit Applied to Reinforced Cement Board	1.5	4:18	4.71

Flame Spread Index	5
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Smoke Developed Index

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

The CSD is expressed as:

$$\text{CSD} = (A_M / A_{r_o}) \times 100$$

Where:

CSD=Calculated Smoke Developed

A_M = The area under the curve for the test material

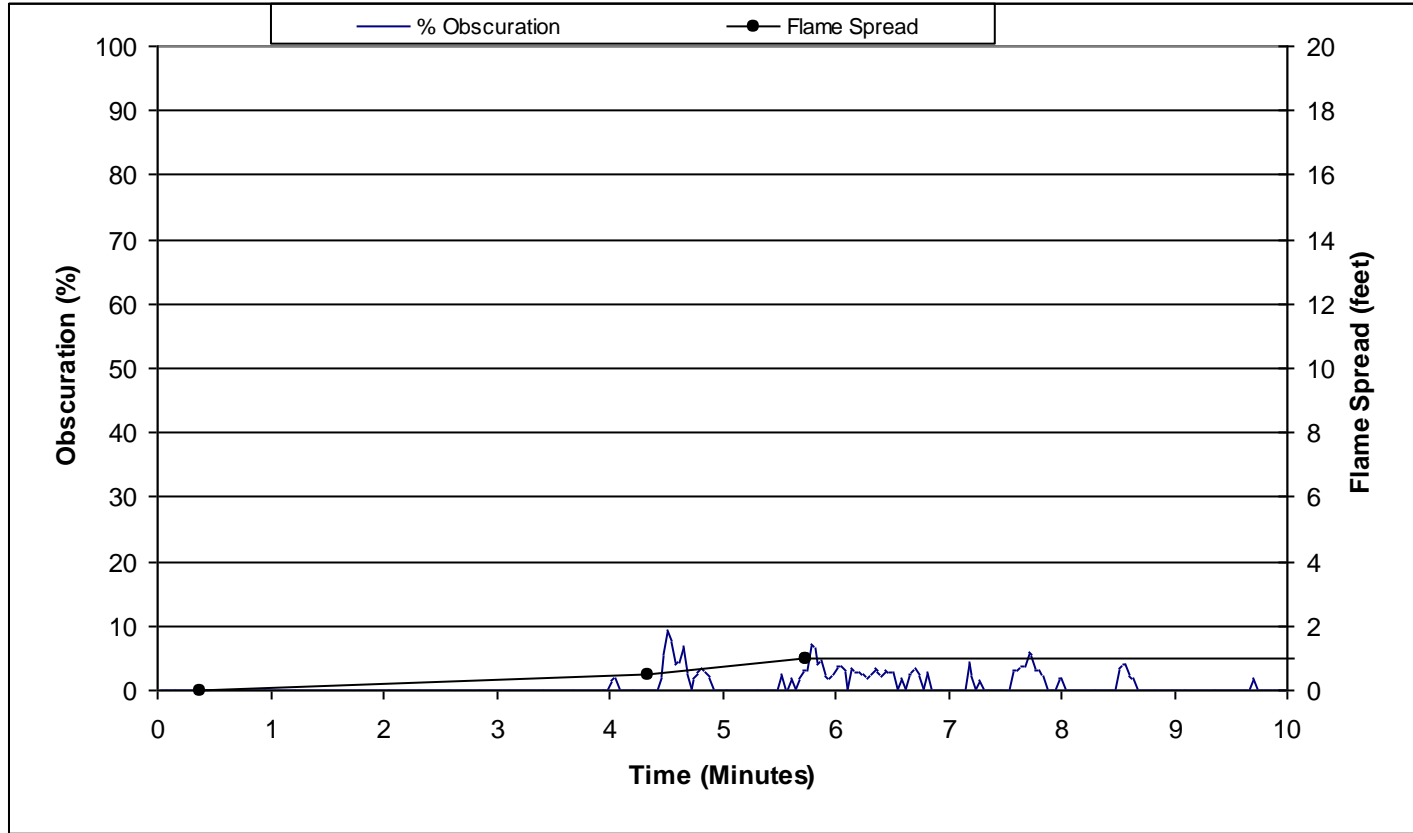
A_{r_o} = The area under the curve for untreated red oak

Table 2: Smoke Developed Summary

	Sample Description	CSD Calculated Smoke Developed
1	Benif non-flame retardant adhesive - unslit Applied to Reinforced Cement Board	8.7
2	Benif non-flame retardant adhesive - unslit Applied to Reinforced Cement Board	15.4
3	Benif non-flame retardant adhesive - slit Applied to Reinforced Cement Board	36.8
4	Benif w/Flame retardant adhesive - unslit Applied to Reinforced Cement Board	4.6
5	Benif w/Flame retardant adhesive - slit Applied to Reinforced Cement Board	2.3
6	Benif w/non-flame retardant adhesive - slit Applied to Reinforced Cement Board	5.8
7	Benif w/non-flame retardant adhesive - slit Applied to Reinforced Cement Board	8.0

Smoke Developed Index	35
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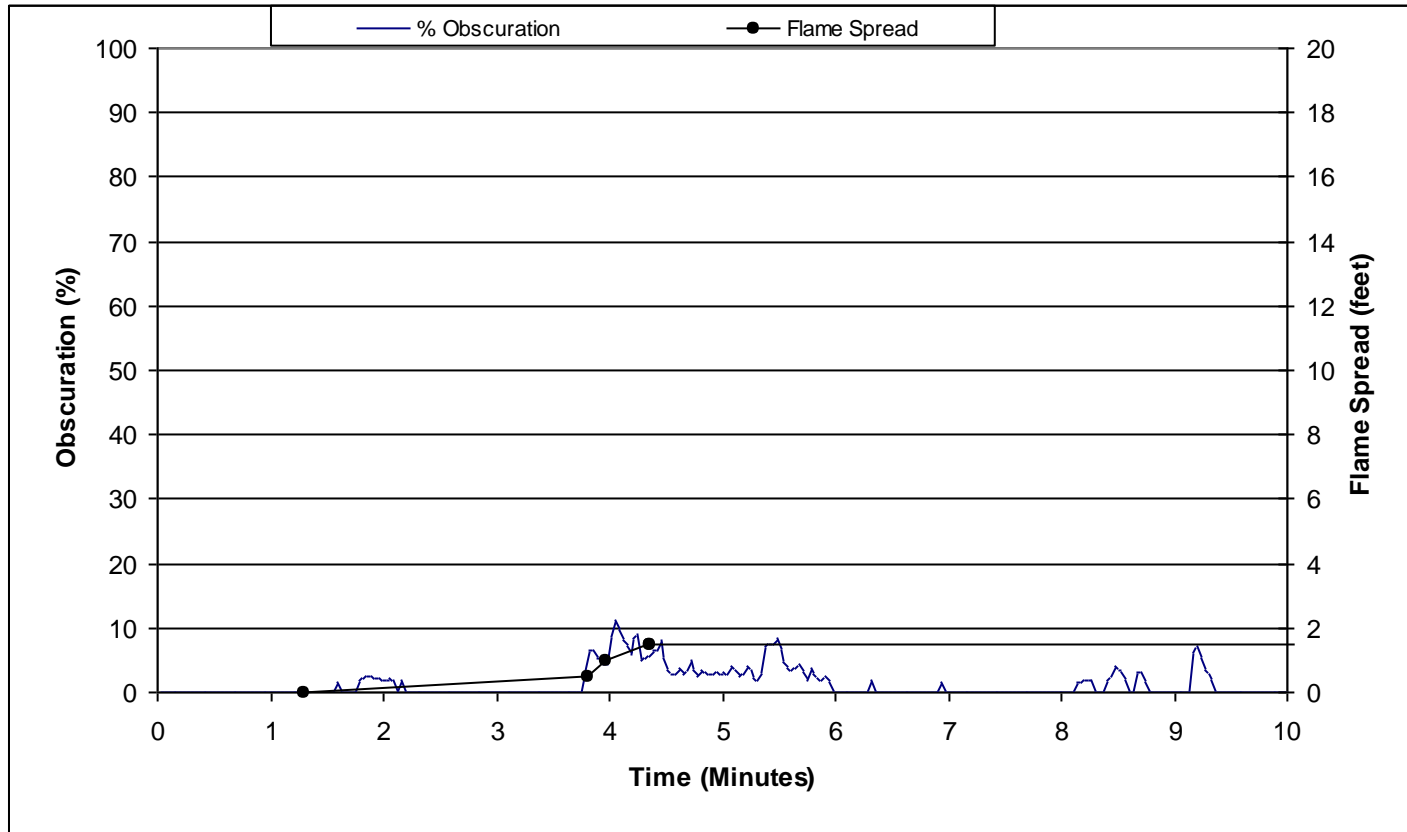
Flame Spread / Smoke Results
Lg Chemical
Non-flame retardant Acrylic Adhesive - unslit



Test No. 1
08CA60413 / R26170
04130908

Flame Spread Index: 5
Smoke Developed Index: 10
Max. Flame Spread: 1.0

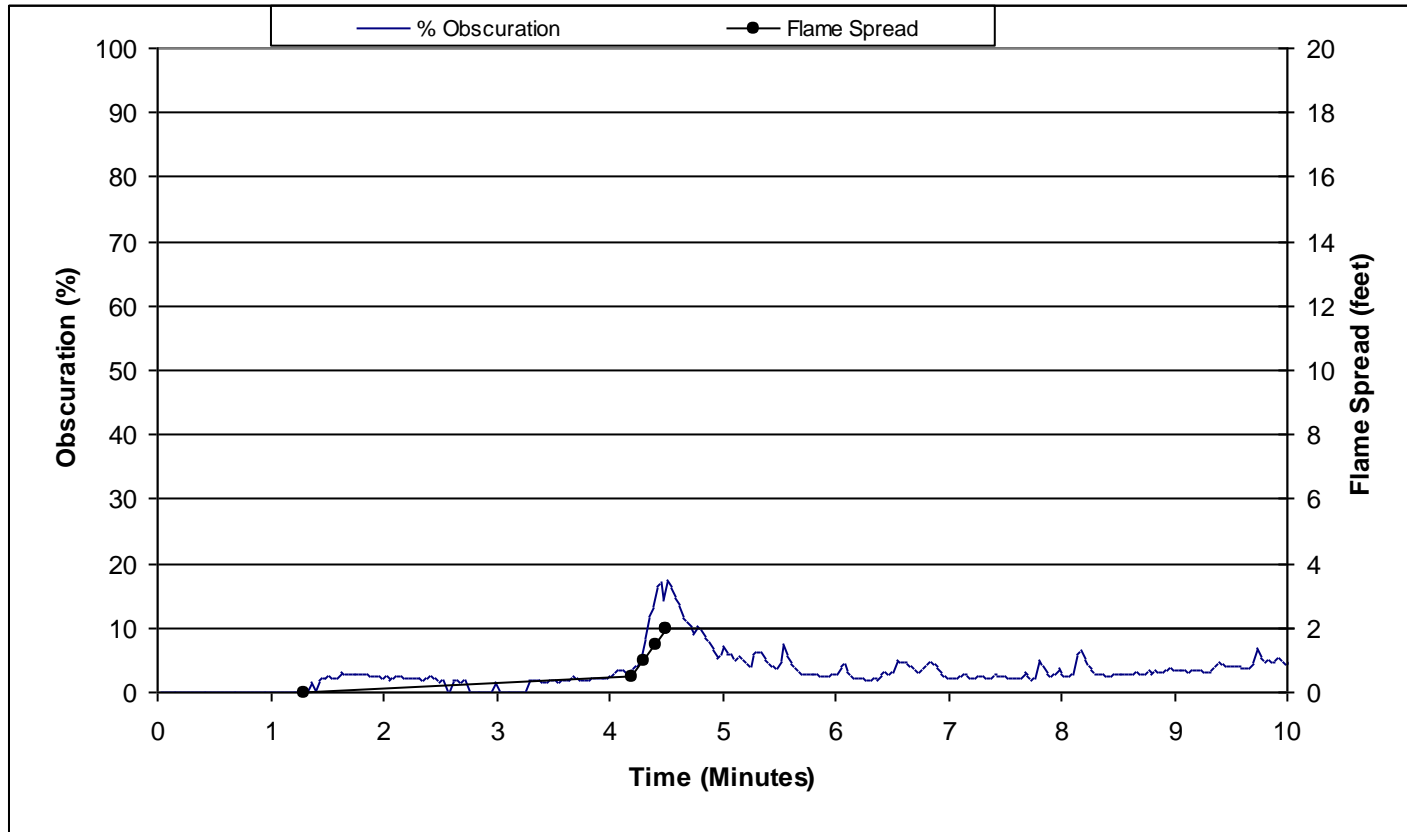
Flame Spread / Smoke Results
Lg Chemical
Non-flame retardant Acrylic Adhesive - unslit



Test No. 2
08CA60413 / R26170
04130910

Flame Spread Index: 5
Smoke Developed Index: 15
Max. Flame Spread: 1.5

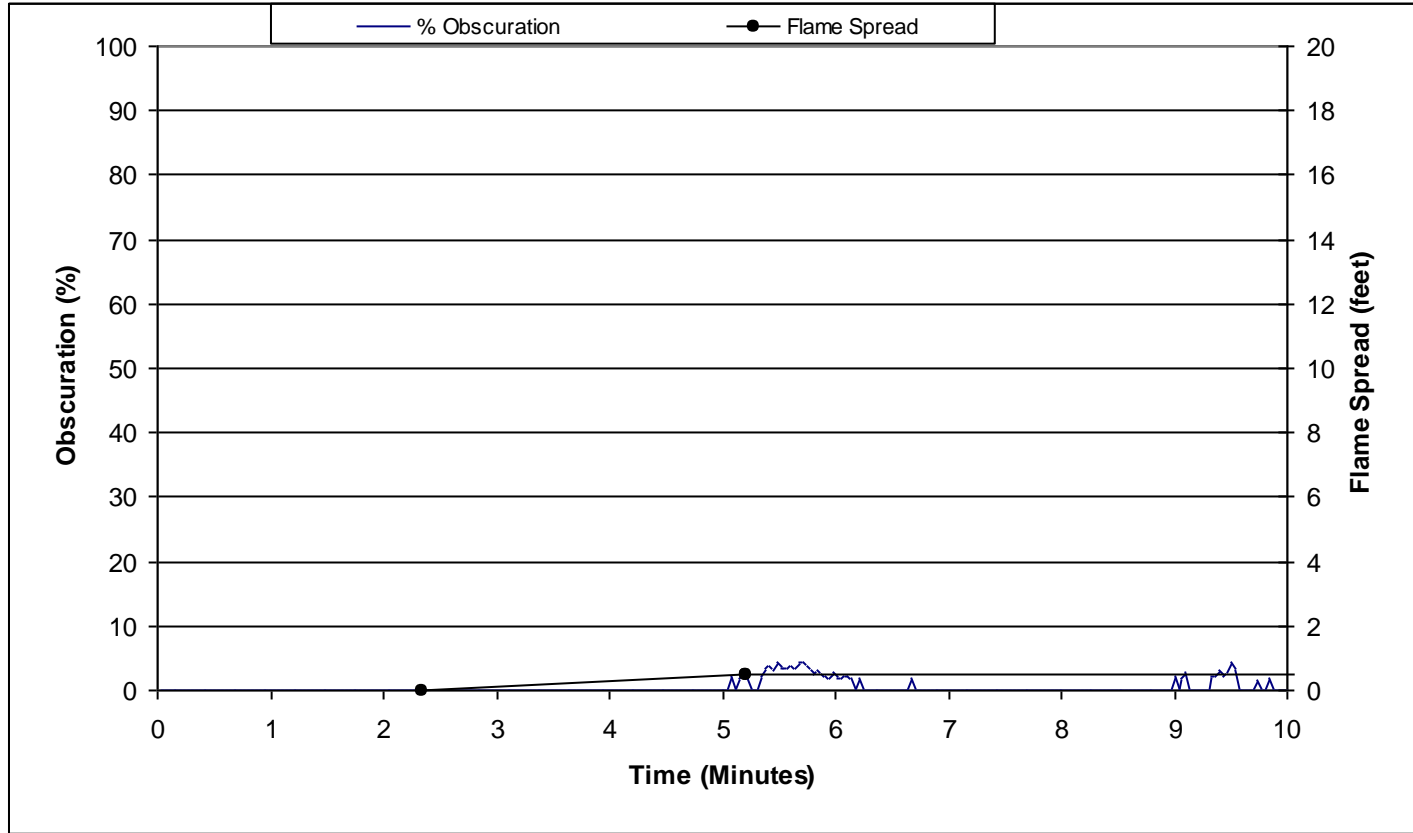
Flame Spread / Smoke Results
Lg Chemical
non-flame retardant adhesive - slit



Test No. 3
08CA60413 / R26170
04150905

Flame Spread Index: 5
Smoke Developed Index: 35
Max. Flame Spread: 2.0

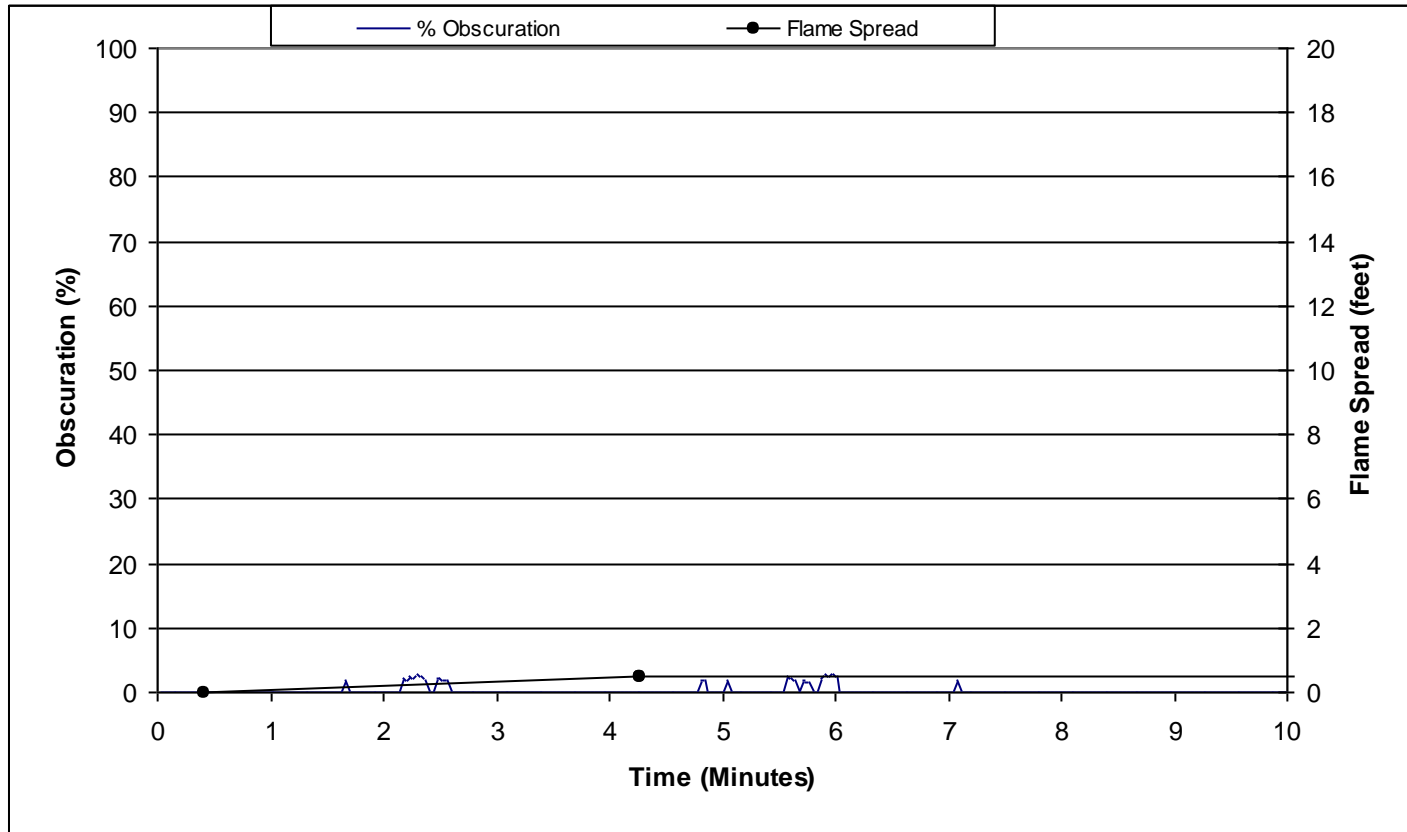
Flame Spread / Smoke Results
Lg Chemical
Benif w/Flame retardant adhesive - unslit



Test No. 4
08CA60413 / R26170
04150906

Flame Spread Index: 0
Smoke Developed Index: 5
Max. Flame Spread: 0.5

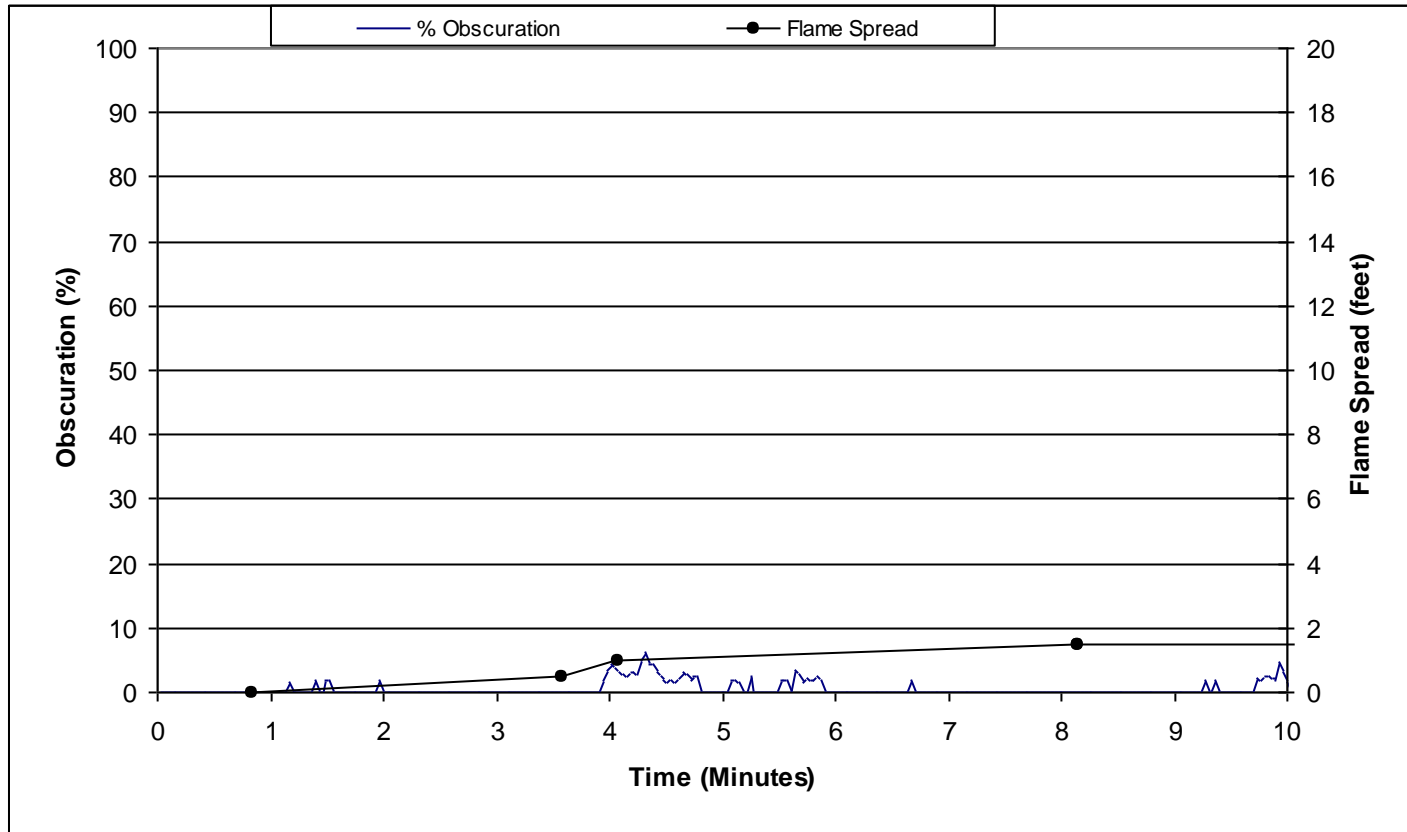
Flame Spread / Smoke Results
Lg Chemical
Benif w/Flame retardant adhesive - slit



Test No. 5
08CA60413 / R26170
04150907

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

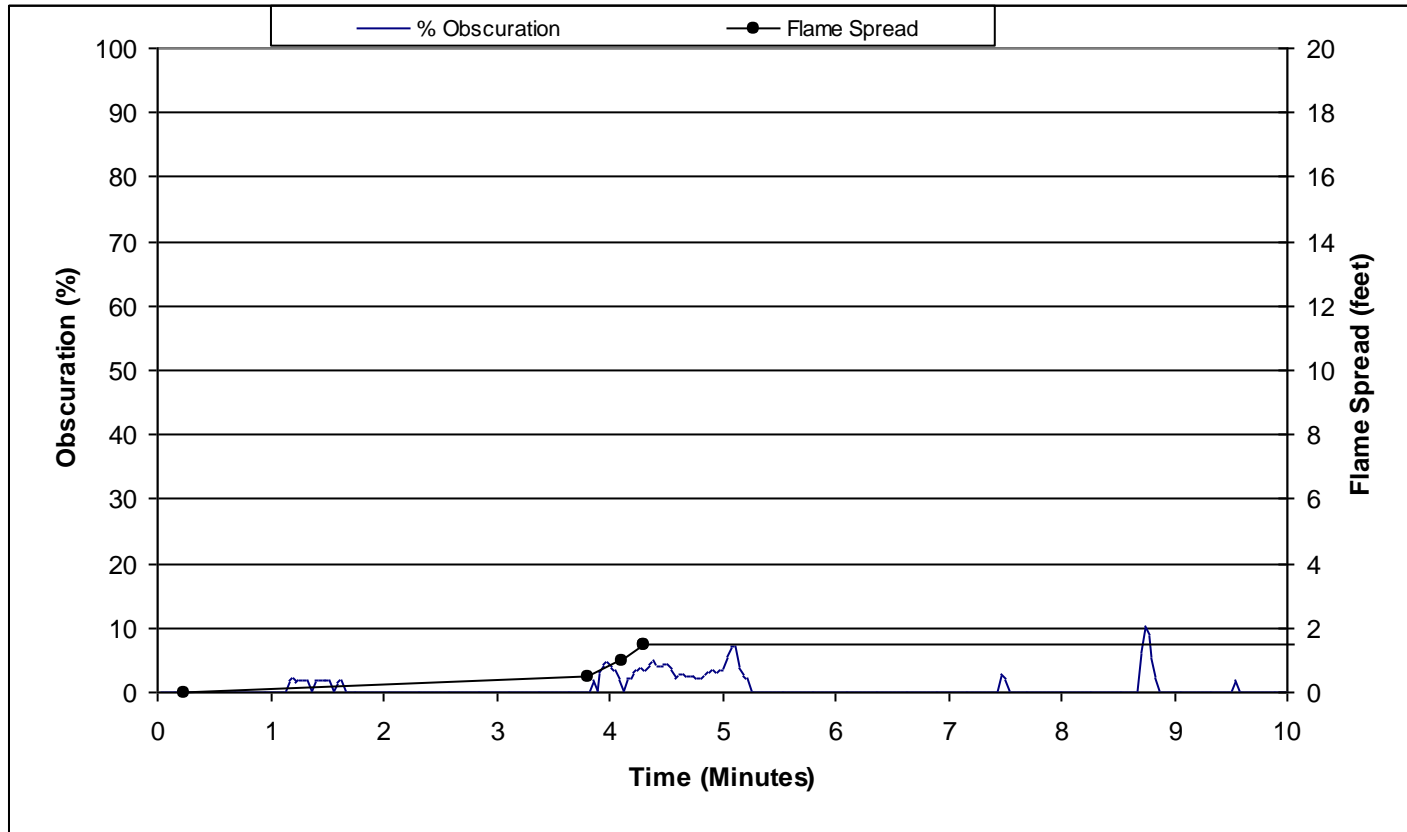
Flame Spread / Smoke Results
Lg Chemical
Benif w/non-flame retardant adhesive - slit



Test No. 6
08CA60413 / R26170
04150909

Flame Spread Index: 5
Smoke Developed Index: 5
Max. Flame Spread: 1.5

Flame Spread / Smoke Results
Lg Chemical
Benif w/non-flame retardant adhesive - slit



Test No. 7
08CA60413 / R26170
04150910

Flame Spread Index: 5
Smoke Developed Index: 10
Max. Flame Spread: 1.5

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the Standard for Surface Burning Characteristics for Building Materials, UL723, Tenth Edition (dated September 10, 2008) and, therefore, such products are judged eligible to bear UL's Mark as described below and on the Conclusion Page of this Report.

Classification Marking:

The surface Burning Characteristics as shown below in the Classification Marking represent the judgment of Underwriters laboratories Inc. based upon the results of the examination and tests presented in this Report.



Wall Coverings
Issue No.
SURFACE BURNING CHARACTERISTICS

Flame Spread 5
Smoke Developed 35

Test Record by:

A handwritten signature in black ink that reads 'Tom Sias'.

Thomas Sias (ext. 42686)
Engineering Associate
Fire Protection Division

Reviewed by:

A handwritten signature in black ink that reads 'James Smith'.

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

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

GENERAL:

At the request of the submitter, the product designation from "BENIF" to "LG Hausys interior film" was submitted for inclusion in Volume 1, Section 1. It was determined that the product designation change would not affect the fire test result of the final product.

Therefore, it was judged that the product designation change was acceptable for inclusion in the procedure.

Test Record No. 2 Summary

The results of this investigation covered by Test Record No. 2, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the Standard for Surface Burning Characteristics for Building Materials, UL 723, Tenth Edition (dated September 10, 2008) and, therefore, such products are judged eligible to bear UL's mark as described on the Conclusion Page of this Report.

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Record No. 2 By:



JAMILA SHAWON
Project Engineer
Conformity Assessment Services

Reviewed By:



JAMES F. SMITH
Staff Engineering Associate
Conformity Assessment Services

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the category and the products are judged to be eligible for Classification and Follow-Up Service. The manufacturer is authorized to use the UL Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the UL Mark are considered as Classified by Underwriters Laboratories Inc.

Report by:



Thomas Sias (ext. 42686)
Engineering Associate
Fire Protection Division

Reviewed by:



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