



CHAPTER SIX

UL 723

REPORT ON FIRE RETARDANT COATING CLASSIFICATION PROGRAM

PERFORMED AT UNDERWRITERS LABORATORIES,
NORTHBROOK, ILLINOIS

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File R18958
Project 98NK37257

March 1, 1999

REPORT

on

FIRE RETARDANT COATING

Under The

CLASSIFICATION PROGRAM

No Fire Technologies Inc.
Upper Saddle River, NJ

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File R18958

Issued: 3-1-99

DESCRIPTION

PRODUCT COVERED:

The product covered by this Report is a Fire Retardant Coating identified as "A-18".

The product is Classified as to Surface Burning Characteristics only.

USE:

The product is intended for use as a building material as permitted by authorities having jurisdiction.

TEST RECORD NO. 1

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 materials is of a 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

Substrate

Douglas Fir - The test decks were 22 in. wide and 8 ft long, composed of 1 by 4 in. tongue-and-groove Douglas fir flooring fastened together on the unexposed surface with wood furring strips. Three such decks were butted together end-to-end to form the 24 ft long test surface required to fill the Steiner Tunnel furnace.

Coating

The coating material was applied to the test surface by a representative of the submitter under the observation of a staff member of Underwriters Laboratories Inc. The coating material was brush applied to the test surface in one coat. The amount of the coating applied was 165 ft²/gal per coat.

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 the Standard of Underwriters Laboratories Inc. for Test for Surface Burning Characteristics of Building Materials, UL 723.

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.

Upon exposure to the igniting flame, the samples softened, melted, and fell to the furnace floor beginning first in the area of the igniting flame. Ignition of the matter residue on the furnace floor occurred in all tests.

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 ($FSI = 4900/(195-A_T)$).

| Test No. | Test Sample | Maximum Flame Spread (ft) | Time of Maximum Flame Spread (mins) | CFS Calculated Flame Spread | FSI Flame Spread Index |
|----------|-------------------------|---------------------------|-------------------------------------|-----------------------------|------------------------|
| 1 | Blank Douglas Fir | 14.5 | 8:38 | 53.68 | 55 |
| 2 | A-18 Coated Douglas Fir | 4.5 | 9:47 | 8.37 | 10 |
| 3 | A-18 Coated Douglas Fir | 5.0 | 7:57 | 12.78 | 15 |
| 4 | A-18 Coated Douglas Fir | 5.0 | 8:59 | 10.48 | 10 |

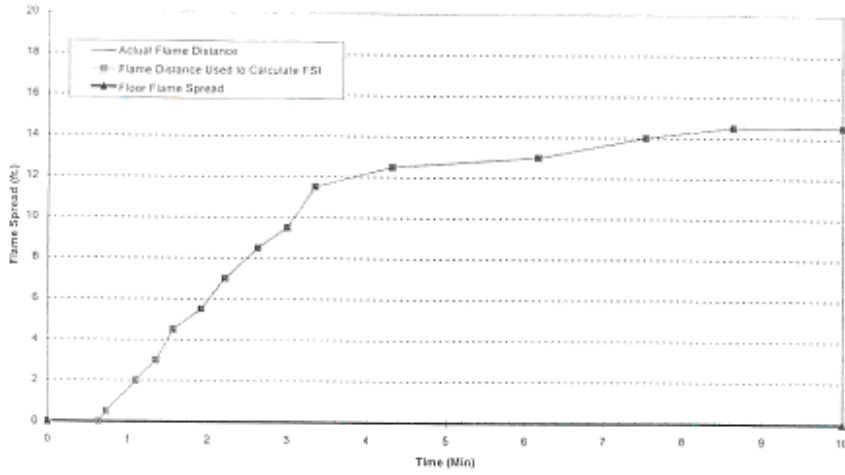
Smoke Developed Index

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.

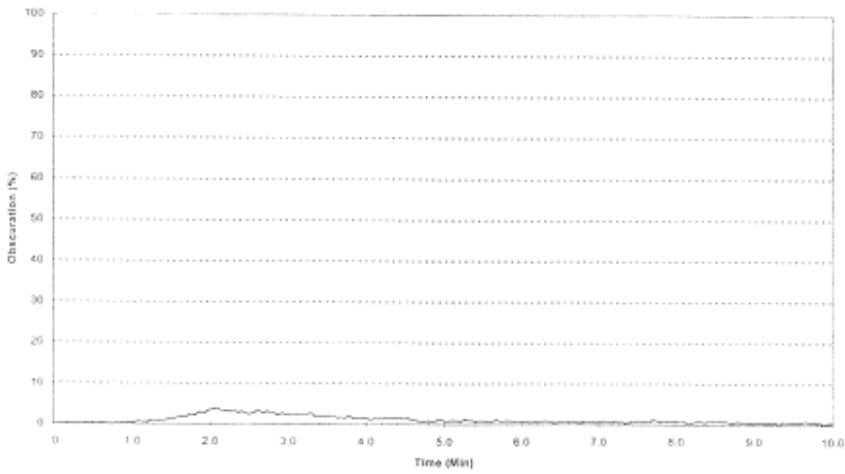
| Test No. | Test Sample | CSD Calculated Smoke Developed | SDI Smoke Developed Index |
|----------|-------------------------|--------------------------------|---------------------------|
| 1 | Blank Douglas Fir | 15.6 | 15 |
| 2 | A-18 Coated Douglas Fir | 44.3 | 45 |
| 3 | A-18 Coated Douglas Fir | 58.7 | 60 |
| 4 | A-18 Coated Douglas Fir | 60.0 | 60 |

Steiner Tunnel Results BLANK DOUGLAS FIR

Flame Spread Results



Smoke Results

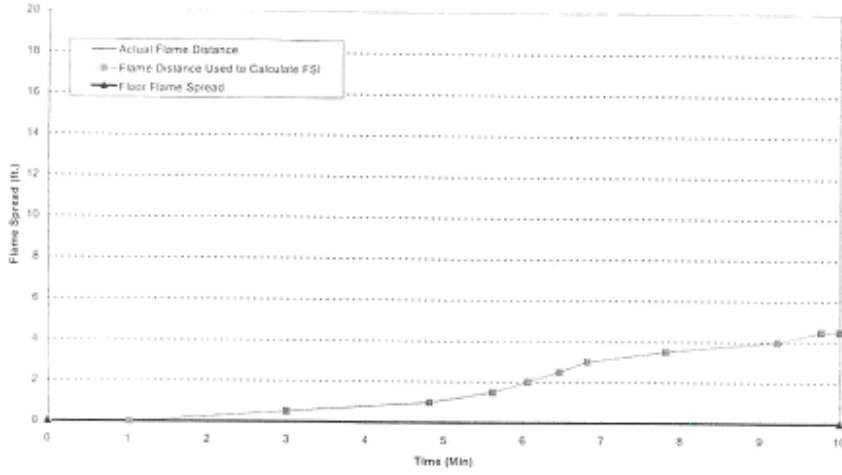


NO FIRE TECH
Test Code: 01129904.XLS
Test No. 1
Project: R18958/SBNK37257

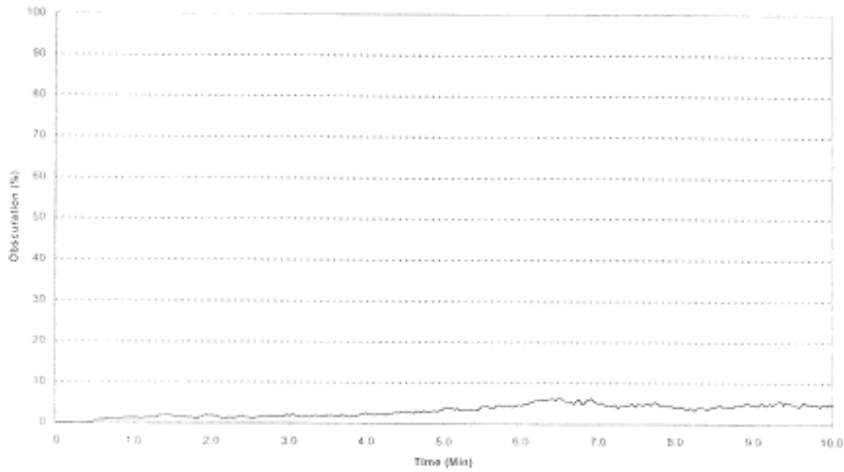
Flame Spread Index = 55
Smoke Developed Index = 15
Max Flame Spread = 14.5 ft.

Steiner Tunnel Results
A-18 COATING APPLIED AT 6 MILS

Flame Spread Results



Smoke Results

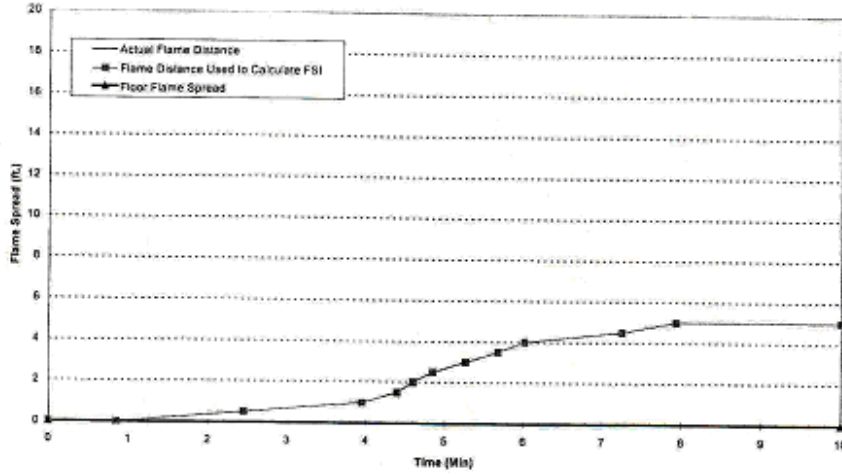


NO FIRE: 11:01 BIC
Test Code: 02049911.XLS
Test No: 1
Project: R10358/SHMK3/257

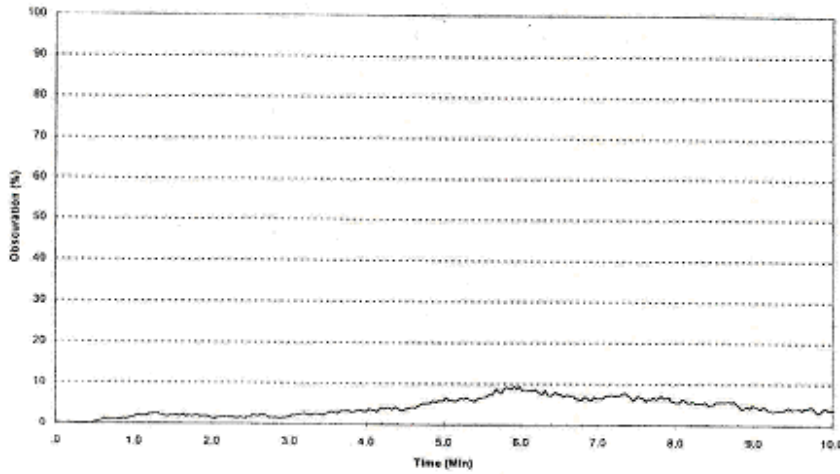
Flame Spread Index = 10
Smoke Developed Index = 45
Max Flame Spread = 4.5 ft

Steiner Tunnel Results A-18 COATING APPLIED AT 6 MILS

Flame Spread Results



Smoke Results

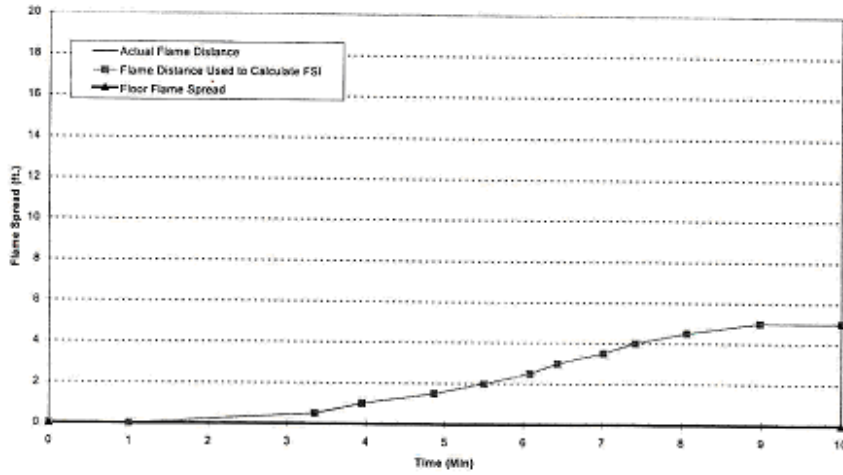


NO FIRE TECH INC.
Test Code: 92249912.XLS
Test No. 2
Project: R18958/98N37257

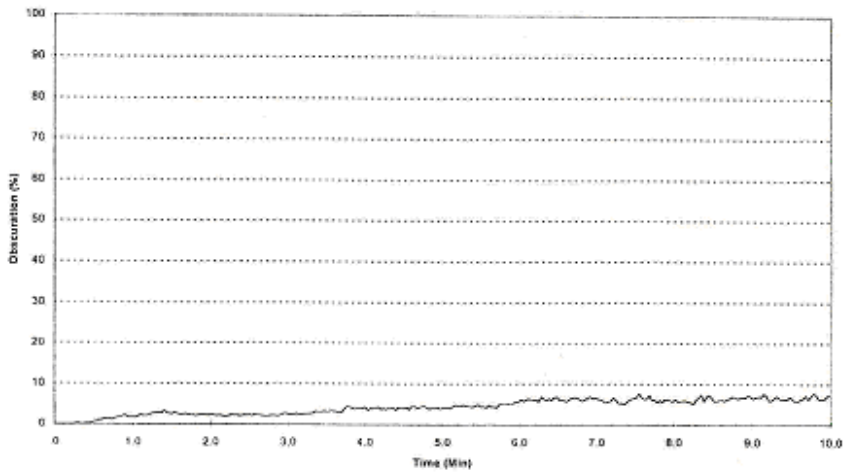
Flame Spread Index = 15
Smoke Developed Index = 60
Max Flame Spread = 5 ft.

Steiner Tunnel Results A-18 COATING APPLIED AT 6 MILS

Flame Spread Results



Smoke Results



NO FIRE TECH INC.
Test Code: 02249913.XLS
Test No. 3
Project: R18958/8NK37257

Flame Spread Index = 10
Smoke Developed Index = 60
Max Flame Spread = 5 ft.

CONCLUSION

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.

The product covered by this Report is judged to be eligible for Classification and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Classification Marking as shown below on such products which comply with the Follow-Up Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the Laboratories' Classification Marking are considered as Classified by Underwriters Laboratories Inc.

CLASSIFICATION MARKING:

UNDERWRITERS LABORATORIES INC. ®
CLASSIFIED
COATING FIRE RETARDANT
SURFACE BURNING CHARACTERISTICS

| | A-18 Coating |
|--------------------------------------|--------------|
| Fire Retardant Coating Surface | Douglas Fir |
| Flame Spread | 10 |
| Smoke Developed | 55 |
| Number of Preliminary Coats | None |
| Rate Per Coat (ft ² /gal) | - |
| Number of Fire-Retardant Coats | 1 |
| Rate Per Coat (ft ² /gal) | 165 |
| Number of Overcoats | None |
| Rate Per Coat (ft ² /gal) | - |

Report by:

Reviewed by:

ROBERT S. KIEFER
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UPPER SADDLE RIVER NJ 07458

RE: Project Number(s) - 98NK37257

Your most recent listing is shown below. Please review this information and report any inaccuracies to the UL Engineering staff member who handled your project.
For information on placing an order for UL Listing Cards in a 3 x 5 inch format, please refer to the enclosed ordering information.

BMQX
Coatings, Fire Retardant

September 24, 1999

NO FIRE TECHNOLOGIES INC
21 INDUSTRIAL AVE, UPPER SADDLE RIVER NJ 07458

R18958

| | |
|--------------------------------|-------------|
| Fire Retardant Coating | A-18 |
| Surface | Douglas Fir |
| Flame Spread | 10 |
| Smoke Developed | 55 |
| Number of Preliminary Coats | None |
| Rate Per Coat (Sq ft per gal) | — |
| Number of Fire-Retardant Coats | 1 |
| Rate Per Coat (Sq ft per gal) | 165 |
| Number of overcoats | None |
| Rate Per Coat (Sq ft per gal) | — |

LOOK FOR CLASSIFICATION MARKING ON PRODUCT