

# SOUTHWEST RESEARCH INSTITUTE®

6220 CULEBRA ROAD 78238-5166 • P.O. DRAWER 28510 78228-0510 • SAN ANTONIO, TEXAS, USA • (210) 684-5111 • WWW.SWRI.ORG  
CHEMISTRY AND CHEMICAL ENGINEERING DIVISION  
FIRE TECHNOLOGY DEPARTMENT  
WWW.FIRE.SWRI.ORG  
FAX (210) 522-3377



## EVALUATION OF THE SURFACE BURNING CHARACTERISTICS OF A FLEXIBLE PVC MEMBRANE IN ACCORDANCE WITH ASTM E 84 – 12, *STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS*

**MATERIAL ID:** *White Translucent Large Width*  
**TRADE NAME:** *Newmat*

**FINAL REPORT**  
Consisting of 5 Pages  
SwRI® Project No.: 01.17786.01.055c

**Test Date:** June 18, 2013  
**Report Date:** July 9, 2013


### Prepared for:

**Newmat USA Ltd.**  
81 Mahan Street  
West Babylon, NY 11704

Submitted by:

  
Joshua W. Terry  
Engineer  
Material Flammability Section

Approved by:

  
Matthew S. Blais, Ph.D.  
Director  
Fire Technology Department

This report is for the information of the client. It may be used in its entirety for the purpose of securing product acceptance from duly constituted approval authorities. This report shall not be reproduced except in full, without the written approval of SwRI. Neither this report nor the name of the Institute shall be used in publicity or advertising.



Benefiting government, industry and the public through innovative science and technology

## INTRODUCTION

This report presents the test results for a specimen submitted by Newmat USA Ltd., located in West Babylon, NY, and tested at Southwest Research Institute's (SwRI's) Fire Technology Department, located in San Antonio, Texas. The test is conducted in accordance with the procedure outlined in ASTM E 84 - 12, *Standard Test Method for Surface Burning Characteristics of Building Materials* (NFPA 255, ANSI/UL 723 and UBC 8-1).

This test method is applicable to exposed surfaces, such as ceilings or walls, provided that the material or assembly of materials, by its own structural quality or the manner in which it is tested and intended for use, is capable of supporting itself in position or being supported during the test period. The test is conducted with the material in the ceiling position.

The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame Spread and Smoke Developed index are reported. However, there is not necessarily a relationship between these two measurements.

**This standard should be used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions and should not be used to describe or appraise the fire-hazard or fire-risk of materials, products, or assemblies under actual fire conditions. However, results of the test may be used as elements of a fire-hazard assessment or a fire-risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard or fire risk of a particular end use.**

Test specimens are conditioned as appropriate in an atmosphere maintained between 68 and 78 °F and 45 to 55% relative humidity. Immediately prior to the test, the specimen is mounted in the furnace with the side to be tested facing the test flame. Cement board is placed on the unexposed side of the specimen to protect the furnace lid assembly. Sometimes, because of the nature of the material undergoing testing, additional support (e.g. wire, wire and rods, rods, and/or bars) is used to ensure that the specimen will remain in position during the test. The use of supporting materials on the underside of the test specimen may lower the Flame Spread Index from that which might be obtained if the specimen could be tested without such support, and the test results do not necessarily relate to indices obtained by testing materials without such support.

The flame front position and light obscuration are recorded throughout the 10-minute test and used to calculate the Flame Spread and Smoke Developed indices. The temperature at 23 ft is also recorded. The Flame Spread and Smoke Developed indices reported herein are relative to the results obtained for mineral fiber-reinforced cement board and select grade red oak (moisture content between 6 and 8%). The mineral fiber-reinforced cement board is the calibration material used to obtain 0 values for Flame Spread and Smoke; red oak decks are used to obtain 100 values for Flame Spread and Smoke.

The results apply specifically to the specimens tested, in the manner tested, and not to the entire production of these or similar materials, nor to the performance when used in combination with other materials.

Two model building codes (2009 International Building Code<sup>®</sup>, Chapter 8 *Interior Finishes*, Section 803 *Wall and Ceiling Finishes*; NFPA 5000, Chapter 10 *Interior Finish*, Section 10.3 *Interior Wall or Ceiling Finish Testing and Classification*) classify materials based on the Flame Spread and Smoke Developed indices. For reference purposes, the classification criteria are listed below:

| <b>Classification</b> | <b>Flame Spread Index</b> | <b>Smoke Developed Index</b> |
|-----------------------|---------------------------|------------------------------|
| <b>A</b>              | 0 – 25                    | 0 – 450                      |
| <b>B</b>              | 26 – 75                   | 0 – 450                      |
| <b>C</b>              | 76 – 200                  | 0 – 450                      |

## ASTM E 84 - 12 REPORT

CLIENT: NEWMAT USA LTD.  
SWRI PROJECT NO.: 01.17786.01.055c  
TEST DATE: JUNE 18, 2013  
DAILY TEST NO.: 3

### DESCRIPTION OF SPECIMEN

|                    |  |
|--------------------|--|
| DATE RECEIVED:     | June 6, 2013 (received ready-to-test)  |
| MATERIAL ID:*      | White Translucent Large Width  |
| TRADE NAME:*       | Newmat   |
| DESCRIPTION:*      | PVC membrane   |
| THICKNESS:*        | 5 mil (nominal) – As measured by SwRI: 0.0065 in. (nominal)                  |
| UNIT WEIGHT:       | 19.0 g/ft <sup>2</sup> (nominal)   |
| COLOR:             | White  |
| SPECIMEN SIZE:     | One section at 24.0 in. wide × 288.0 in. long                                |
| CONDITIONING TIME: | 12 days at 70 °F and 50% relative humidity                                   |
| SUPPORT USED:*     | 2.0-in. hexagonal wire mesh with 0.25-in. diameter steel rods every 24.0 in. |

---

\* From Client's material description and/or instructions

## ASTM E 84 - 12 REPORT

CLIENT: NEWMAT USA LTD.  
SWRI PROJECT NO.: 01.17786.01.055c  
TEST DATE: JUNE 18, 2013  
DAILY TEST NO.: 3

### TEST RESULTS

|                              |     |
|------------------------------|-----|
| FLAME SPREAD INDEX (FSI):    | 20  |
| SMOKE DEVELOPED INDEX (SDI): | 115 |

### TEST DATA

|                        |        |
|------------------------|--------|
| UNROUNDED FSI:         | 20     |
| UNROUNDED SDI:         | 114.3  |
| FS*TIME AREA (Ft*Min): | 38.8   |
| SMOKE AREA (%*Min):    | 106.0  |
| FUEL AREA (°F*Min):    | 3789.3 |

### OBSERVATIONS DURING TEST

|                                    |       |
|------------------------------------|-------|
| IGNITION TIME (Min:Sec):           | 00:05 |
| MAXIMUM FLAME FRONT ADVANCE (Ft.): | 3.9   |
| TIME TO MAXIMUM ADVANCE (Min:Sec): | 0:21  |
| MAXIMUM TEMP. AT EXPOSED TC (°F):  | 437   |
| TIME TO MAXIMUM TEMP. (Min:Sec):   | 6:03  |
| TOTAL FUEL BURNED (Cu. Ft.):       | 52.0  |
| DRIPPING (Min:Sec):                | None  |
| FLAMING ON FLOOR (Min:Sec):        | None  |
| AFTERFLAME TOP (Min:Sec):          | None  |
| AFTERFLAME FLOOR (Min:Sec):        | None  |
| SAGGING (Min:Sec):                 | None  |
| DELAMINATION (Min:Sec):            | None  |
| SHRINKAGE (Min:Sec):               | None  |
| FALLOUT (Min:Sec):                 | 00:09 |

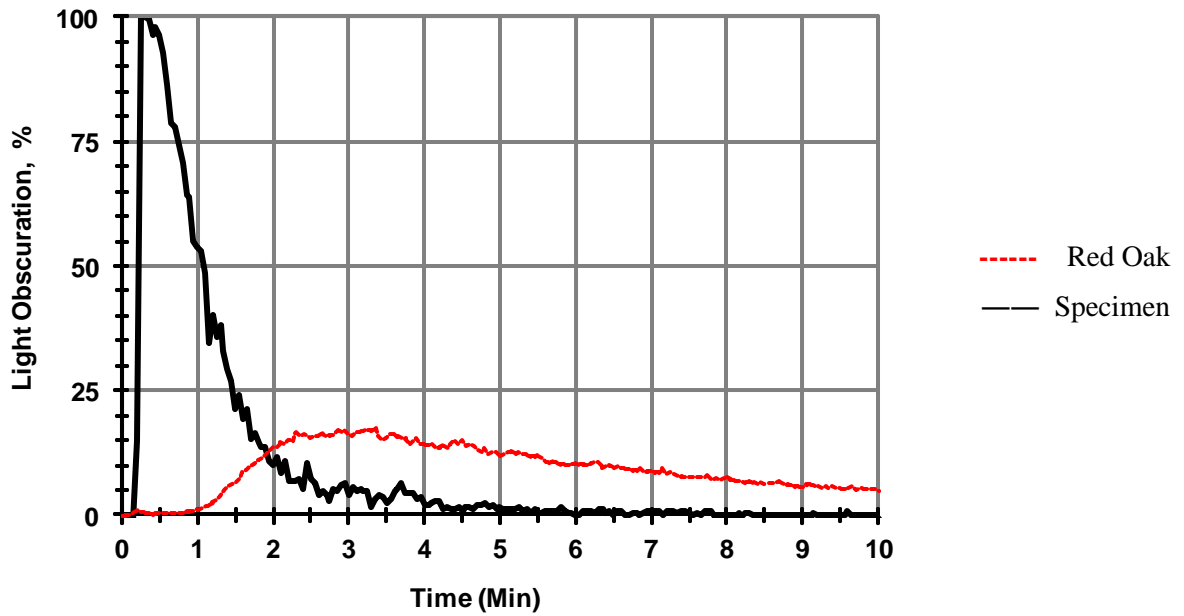
### CALIBRATION DATA

|                               |      |
|-------------------------------|------|
| RED OAK SMOKE AREA (%*Min):   | 89.1 |
| RED OAK FUEL AREA (°F*Min):   | 8670 |
| GRC BOARD FUEL AREA (°F*Min): | 5011 |

# ASTM E 84 - 12 REPORT

CLIENT: NEWMAT USA LTD.  
SWRI PROJECT NO.: 01.17786.01.055c  
TEST DATE: JUNE 18, 2013  
DAILY TEST NO.: 3

## LIGHT OBSCURATION



## FLAMESPREAD

