

Class A  
ASTM E84-05  
Fire Rating

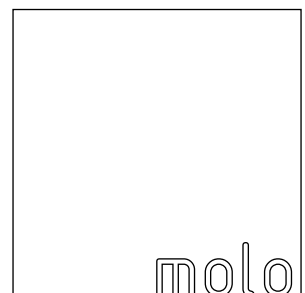
textile / tyvek® products

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## **molo textile / tyvek® products Class A ASTM E84-05 fire rating**

molo's textile softwall + softblock modular system, as well as cloud softlight, urchin softlight and textile softseating, is made from a non-woven polyethylene textile sheet material, trade named Tyvek® by DuPont. When exposed to flame, Tyvek® shrinks away rapidly. If the flame is made to follow the shrinking sheet, Tyvek® will melt at 275° F (135° C) and if its auto-ignition temperature of 750° F (400° C) is reached, it will burn but 0 smoke is developed. This product has been tested in accordance with ASTM E84-05, "Standard Test Method for Surface Burning Characteristics of Materials – 2005 Edition" and has received the top rating of "Class A" in terms of the Flame Spread and the Smoke Developed indices, as summarized below:

	flame spread	smoke developed
textile softwall	15	0
Class A	< 25	0 ~ 450

**REPORT NUMBER: 3113222COQ-001**  
ORIGINAL ISSUE DATE: February 5, 2007

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

**RENDERED TO**

**MOLO DESIGN LTD.**  
**1470 VENABLES STREET**  
**VANCOUVER, B.C. V5L 2G7**

**PRODUCT EVALUATED: Non-Woven Polyethylene Partition**  
**EVALUATION PROPERTY: Surface Burning Characteristics**

**Report of Testing Non-Woven Polyethylene Partition for compliance with the applicable requirements of the following criteria: ASTM E84-05, Standard Test Method for Surface Burning Characteristics of Materials.**

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## 2 Introduction

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Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Molo Design Ltd., to evaluate the surface burning characteristics of a non-woven polyethylene partition. Testing was conducted in accordance with the standard methods of ASTM E84-05, *Standard Test Method for Surface Burning Characteristics of Materials*. This evaluation began February 2, 2007 and was completed February 2, 2007.

Testing was witnessed by Mr. Jason Reyes, representing Molo Design Ltd.

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client and were not independently selected for testing. The sample material was received at the Evaluation Center on January 2, 2007.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The samples consisted of a series of flexible squares with the dimensions of 1-3/4 in. by 1-3/4 in. The squares are connected at the corners lengthwise and have fins along the width of the partition. The material used was polyethylene and was described by the client as "non-woven textile softwall".

Upon receipt of the samples at the Intertek Coquitlam facility they were stored in the laboratory prior to testing.

One 24 ft. partition was placed on the upper ledge of the flame spread tunnel. Fire bricks were placed on the ledge of the tunnel and a layer of 6mm reinforced cement board was placed over top of the brick so that the cement board did not crush the sample. The tunnel lid was lowered into place, and the samples were then tested in accordance with ASTM E84-05.

## 4 Testing and Evaluation Methods

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### 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. This information is plotted on a graph (flame spread curve).

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: ASTM E84-05

According to the test standard, the flame spread classification is equal to  $\frac{4900}{195 - A_t}$

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  $0.515 \times A_t$ .

#### (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:

$$\text{Unrounded Smoke Developed Index} = \frac{10,000 - \text{SmokeIntegration}}{744} \times 100$$

## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

#### (A) Flame Spread

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

Non-Woven Polyethylene Partition	Flame Spread	Flame Spread Classification
Run 1	16	15

#### (B) Smoke Developed

The areas beneath the smoke developed curve and the related classifications are as follows:  
(For smoke developed indexes 200 or more, classification is rounded to the nearest 50. For smoke developed indexes less than 200, classification is rounded to nearest 5)

Non-Woven Polyethylene Partition	Smoke Developed	Smoke Developed Classification
Run 1	0	0

#### (C) Observations

During the test the first 6 ft. of the sample burned up immediately without lighting the rest of the sample, and then the flame receded to 4.5 ft. and was stable for the remainder of the test. After opening the tunnel it was apparent that the sample had melted away from the flame as there was no char on the rest of the sample.

## 6 Conclusion

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The samples of non-woven polyethylene partition, submitted by Molo Design Ltd., exhibited the following flame spread characteristics when tested in accordance with ASTM E84-05, *Standard Test Method for Surface Burning Characteristics of Materials*.

Sample Material	Flame Spread Classification	Smoke Developed Classification
Non-Woven Polyethylene Partition	15	0

The conclusions of this test report may not 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:



Scott Leduc  
Technician – Construction Products Testing

Reviewed by:



Michael van Geyn, A.Sc.T.  
Manager – Fire Testing & Technical Programs

SL/bjm

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# APPENDIX A

## DATA SHEETS

## ASTM E84-05 DATA SHEETS

### ASTM E84

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Client: Molo Design Ltd.  
Date: Feb. 2, 2007  
Project Number: 3113222  
Test Number: 1  
Operator: Scott Leduc  
Specimen ID: Textile softwall non-woven polyethylene with a single cell structure. Each cell has dimensions of 1-3/4 in. by 1-3/4 in.

#### TEST RESULTS

**FLAMESPREAD INDEX: 15**  
**SMOKE DEVELOPED INDEX: 0**

#### SPECIMEN DATA ...

Time to Ignition (sec): 2  
Time to Max FS (sec): 265  
Maximum FS (feet): 3.3  
Time to 980 F (sec): Never Reached  
Time to End of Tunnel (sec): Never Reached  
Max Temperature (F): 133  
Time to Max Temperature (sec): 597  
Total Fuel Burned (cubic feet): 36.78  
  
FS\*Time Area (ft\*min): 30.9  
Smoke Area (%A\*min): 0.0  
Unrounded FSI: 15.9

#### CALIBRATION DATA ...

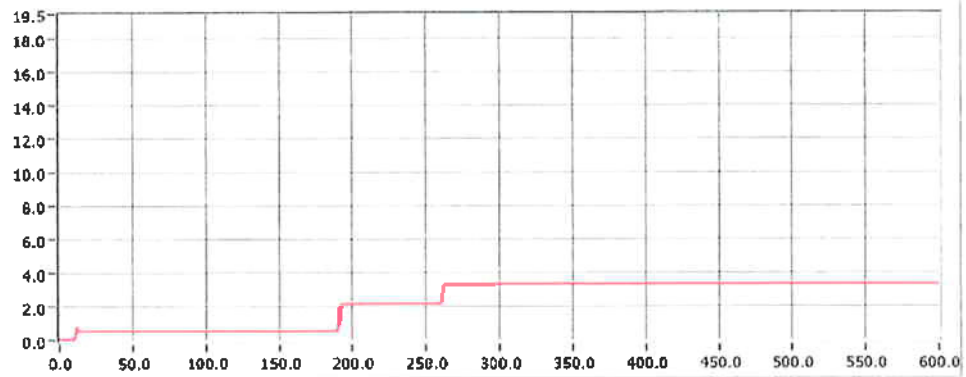
Time to Ignition of Last Red Oak (Sec): 0.0  
Red Oak Smoke Area (%A\*min): 74.4

### ASTM E84-05 DATA SHEETS

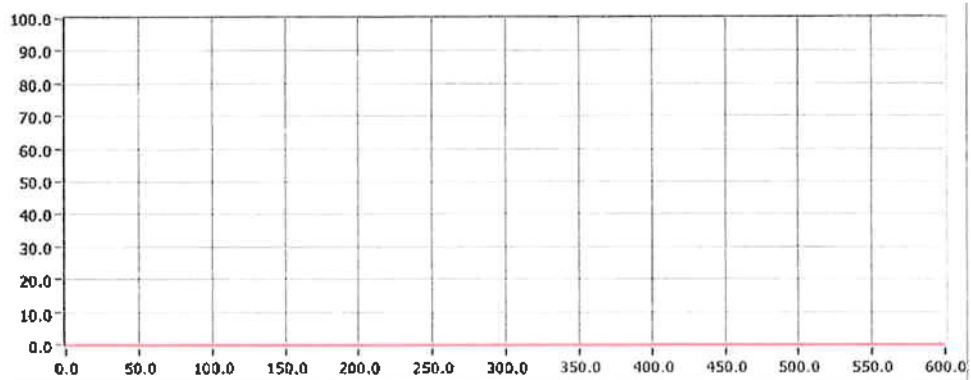
Project No: 3113222

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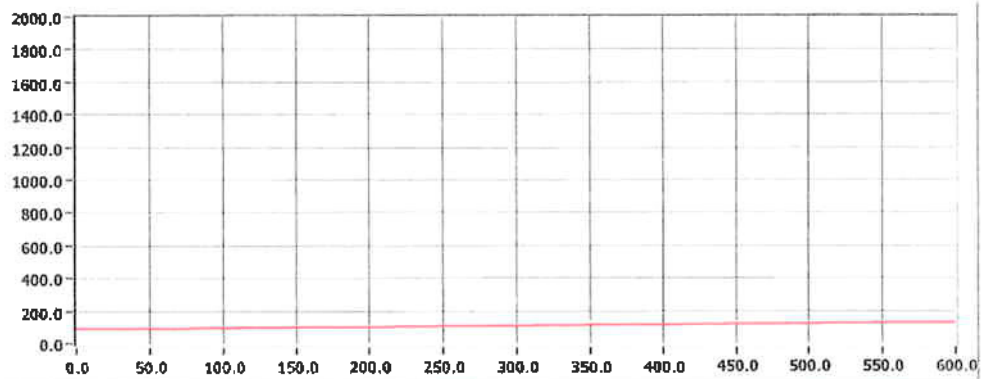
#### FLAME SPREAD (ft)



#### Smoke (%A)



#### Temperature (°F)



Time (sec)

600