

**REPORT OF A**

**STANDARD FLAME SPREAD TEST PROGRAM**

**CONDUCTED ON**

**POLYPROPYLENE SIDING**

**CLIENT:**

**NOVIK INC.  
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## PREFACE

This report describes the tests, standards, and details for the samples of polypropylene siding, submitted by Novik Inc.

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## INTRODUCTION

On March 7, 2005, Intertek Testing Services NA Ltd./Warnock Hersey conducted a flame spread test program to determine the surface burning characteristics of polypropylene siding. The material tested was selected, prepared, and submitted by the client.

Testing was conducted in accordance with ASTM E84-03a, *Standard Test Method for Surface Burning Characteristics of Materials*.

Upon receipt of the samples at the Intertek/Warnock Hersey laboratory they were placed in a conditioning room where they remained in an atmosphere of  $23 \pm 3^{\circ}\text{C}$  ( $73.4 \pm 5^{\circ}\text{F}$ ) and  $50 \pm 5\%$  relative humidity.

One trial run was conducted on the sample material.

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## MATERIAL SPECIFICATIONS

The material tested measured 14 in. wide by 47 in. long, with a nominal thickness of 1/8in. The material consisted of polypropylene moulded into a finished shingle product and was grey in colour.

## SAMPLE MOUNTING

Eight sample pieces were cut into 7in. wide sections so when interlocked with a complete sample piece it made up the required 21 in. sample width. Eight sections were laid on poultry wire that was supported by 3/8in. steel rods placed every 24in on centres. The sample material was placed faced down with the polypropylene shingles exposed to the flame. A layer of 6 mm reinforced cement board was placed over top of the samples, the lid was lowered into place, and then tested in accordance with ASTM E84-03a.

## TEST PROCEDURE

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 spread classification for red oak flooring is 100, and 0 for asbestos-cement board.

### CALCULATIONS: ASTM E84-03a

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  $0.515 \times A_t$ .

**TEST PROCEDURE (*Continued*)**

**(B) SMOKE DEVELOPED:**

A photocell is used to measure the amount of light, which is obscured by the smoke passing down the tunnel duct.

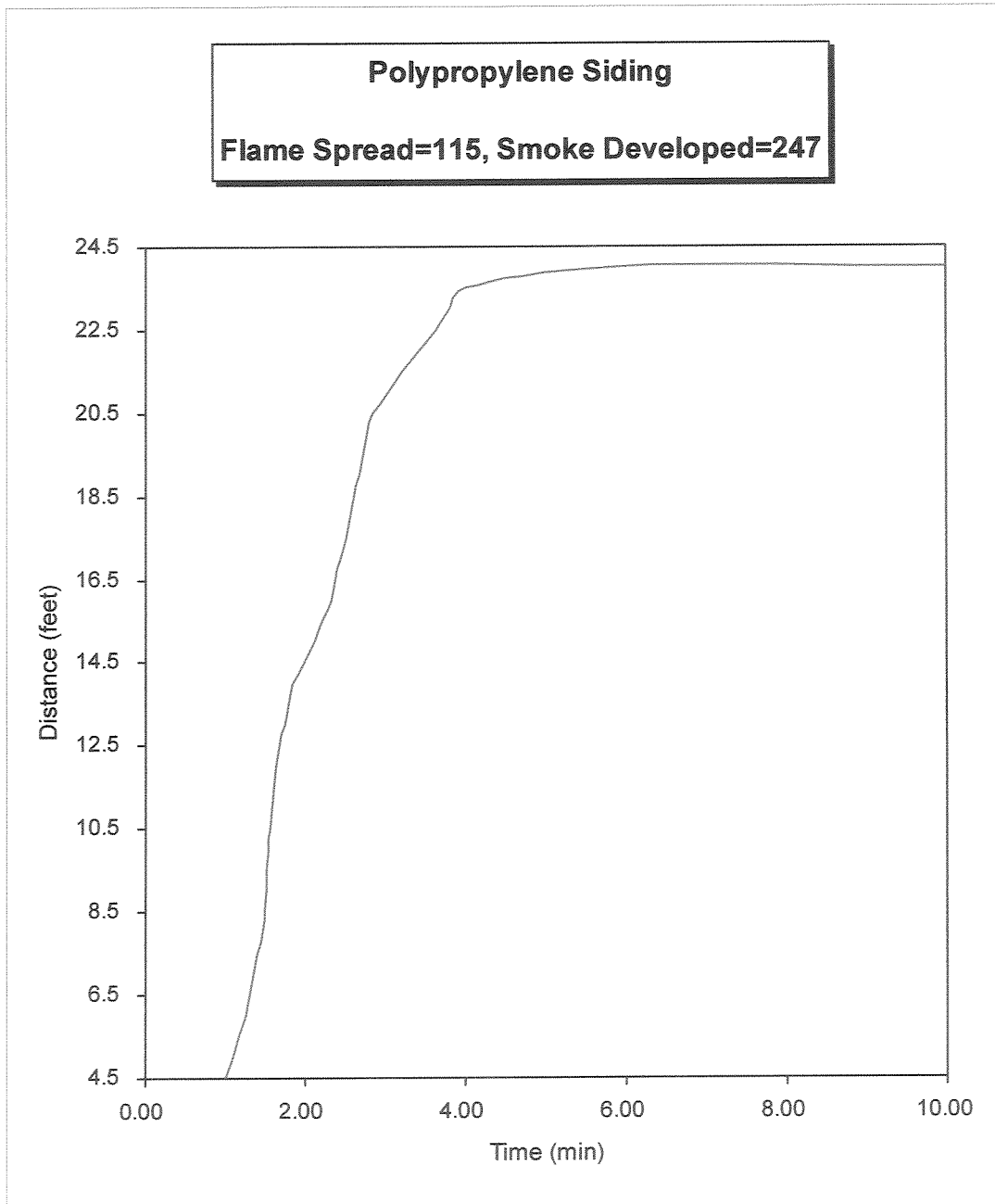
When the smoke from a burning sample obscures the light beam, the output from the photocell decreases. This decrease with time is recorded and compared to the results obtained for red oak, which is 100.

**CALCULATIONS:**

$$\frac{10,000 - (\text{smoke integrator reading}) \times 100}{3356} = \text{smoke developed}$$

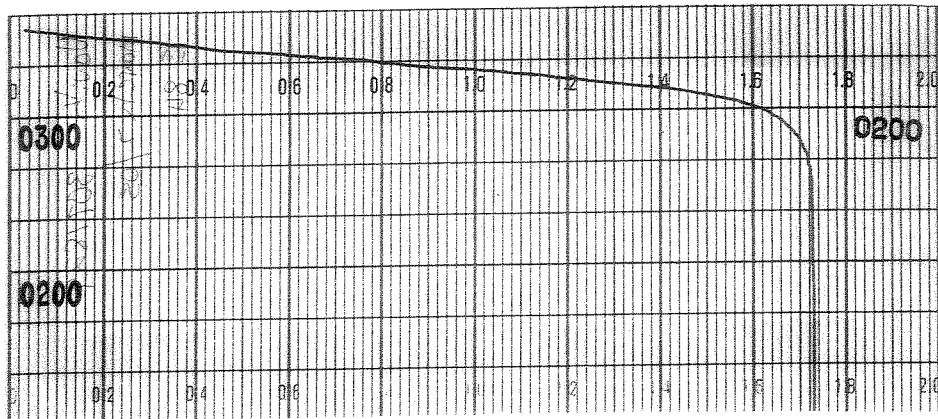
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**FLAME SPREAD  
DISTANCE IN FEET VS. TIME IN MINUTES  
RUN 1**



**SMOKE DEVELOPED CURVE**

**RUN 1**



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## TEST RESULTS

### FLAME SPREAD

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

Sample Material	Flame Spread	Flame Spread Classification
Polypropylene Siding	115	115

### 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)

Sample Material	Smoke Developed	Smoked Developed Classification
Polypropylene Siding	247	250

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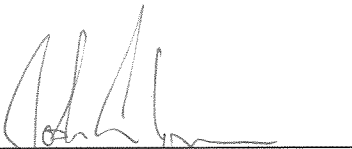
### CONCLUSIONS

The samples of polypropylene siding, submitted by Novik Inc., exhibited the following flame spread characteristics when tested in accordance with ASTM E84-03a, *Standard Test Method for Surface Burning Characteristics of Materials*.

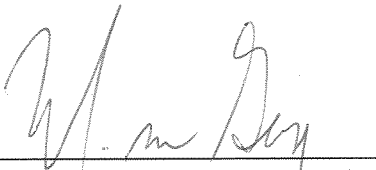
Sample Material	Flame Spread Classification	Smoke Developed Classification
Polypropylene Siding	115	250

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