

ITS Intertek Testing Services
ETL SEMKO

REPORT OF A

STANDARD FLAME SPREAD TEST PROGRAM

CONDUCTED ON

CEDAR TONE COMPOSITE DECK BOARD

CLIENT:

BRITE MILLWORK INC.
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Warnock Hersey



TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
MATERIAL SPECIFICATIONS	2
SAMPLE MOUNTING	2
TEST PROCEDURE	3
FLAME SPREAD CURVES	5
SMOKE DEVELOPED CURVES	7
TEST RESULTS	9
CONCLUSION	10

INTRODUCTION

On December 19, 2001, the Fire Laboratories Division of Intertek Testing Services NA Ltd./Warnock Hersey conducted a flame spread test program to determine the surface burning characteristics of cedar tone composite boards. The material tested was documented and selected by a representative of ITS/Warnock Hersey.

Testing was conducted in accordance with ASTM E84-00, *Standard Test Method for Surface Burning Characteristics of Materials*.

Upon receipt of the samples at the ITS/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.

Two trial runs were conducted on the sample material.

MATERIAL SPECIFICATIONS

The material tested was selected by a representative of ITS/Warnock Hersey. It consisted of individual decking measuring 5-1/2 in. by 96 in. by 1-1/4 in. thick, with a wood grain pattern on both sides and hollow cores. The material was identified by the client as "Cedar Tone Composite Deck Boards".

SAMPLE MOUNTING

The samples were fastened together to create a width of 20-1/2 in. and a length of 24 ft. They were placed on the upper ledge of the flame spread tunnel and covered with a layer of reinforced cement board. The specimens were oriented in the tunnel such that the textured side faced down toward the heat source, and then tested accordance with ASTM E84-00.

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 E84-00

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:

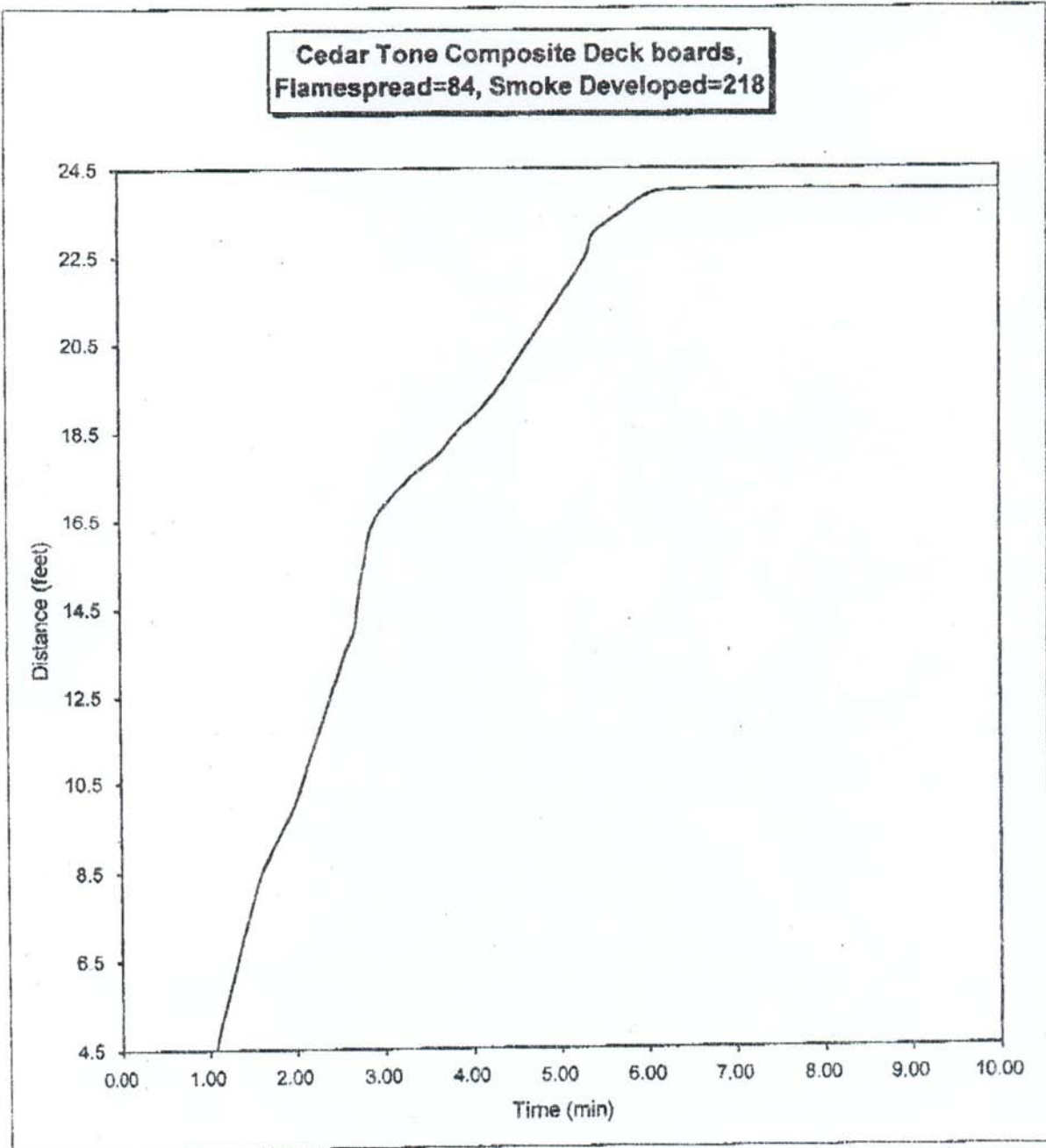
A photocell is used to measure the amount of light, which is obscured by the smoke passing down the tunnel duct.

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.

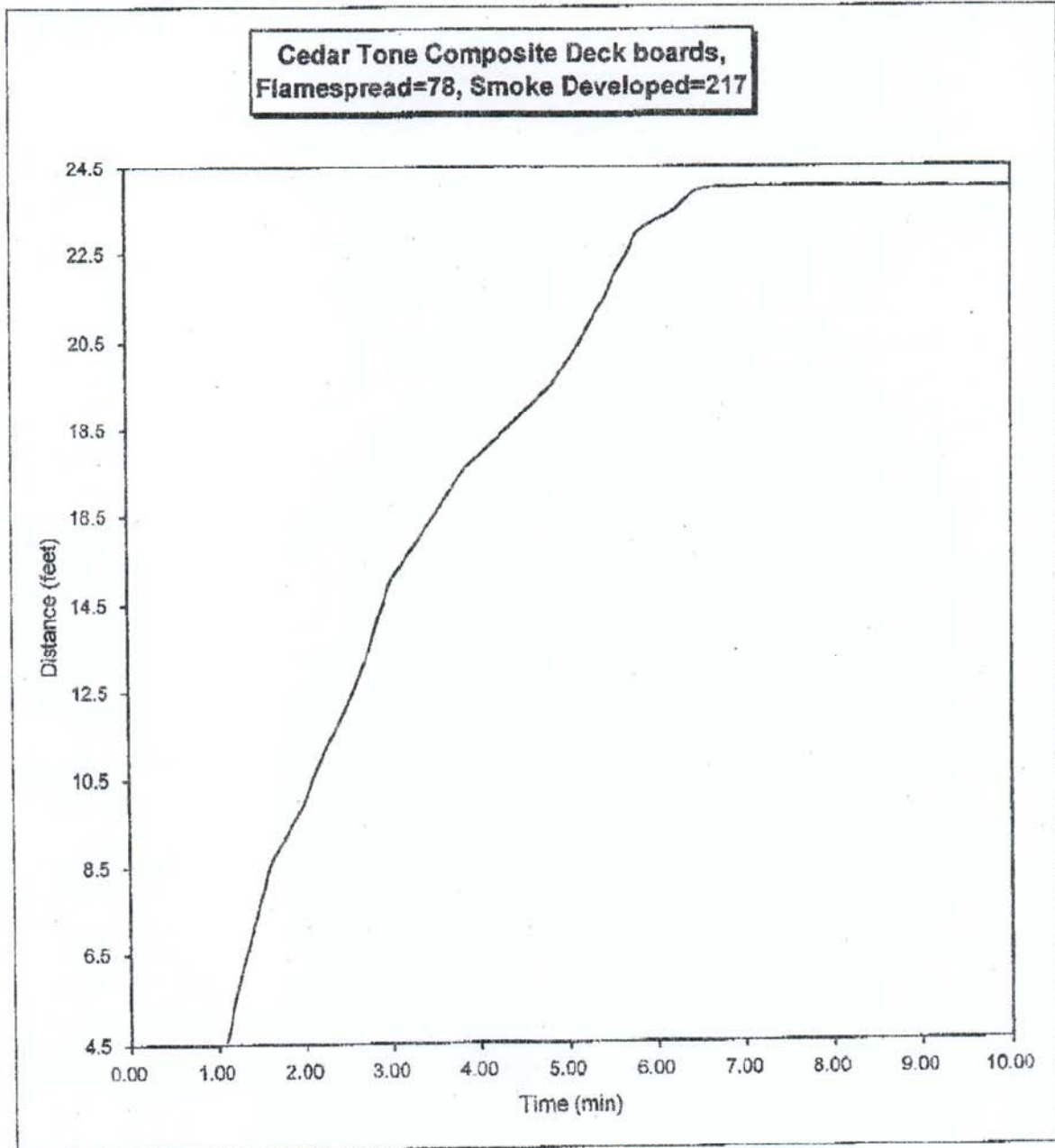
CALCULATIONS:

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

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

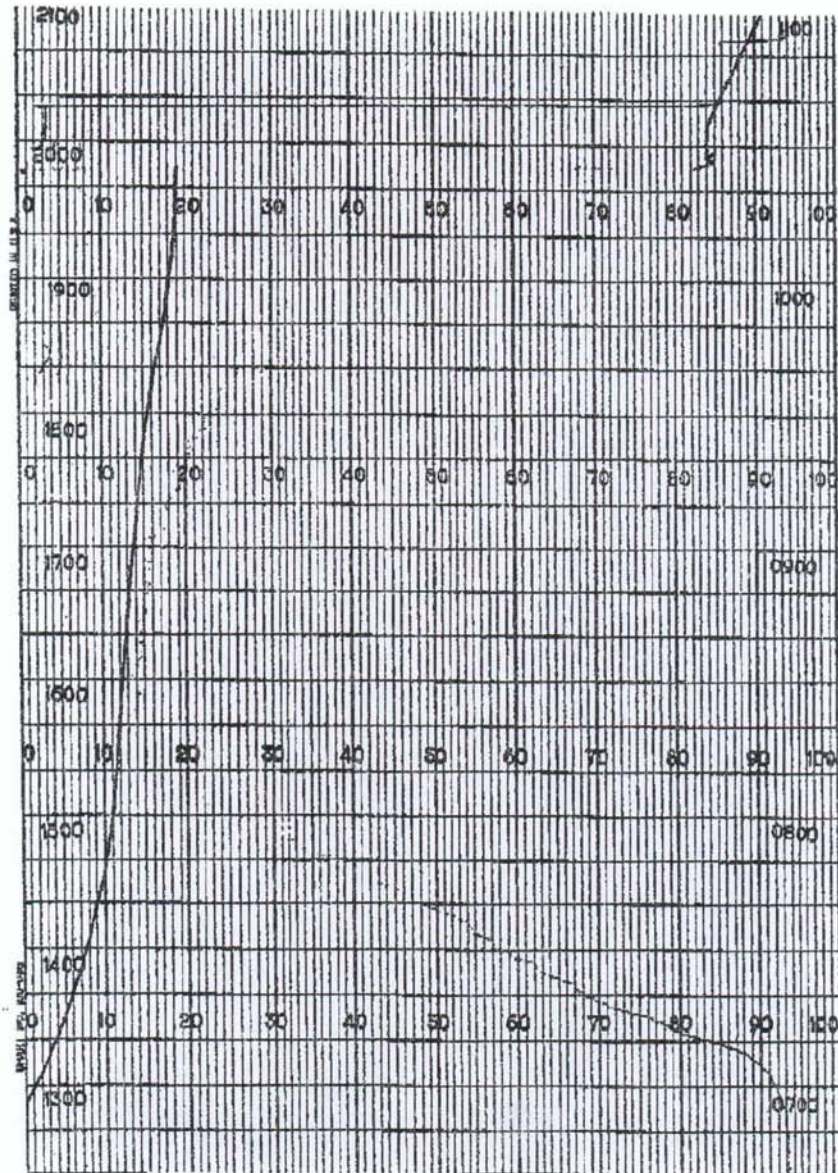


**FLAME SPREAD
DISTANCE IN FEET VS. TIME IN MINUTES
RUN 2**



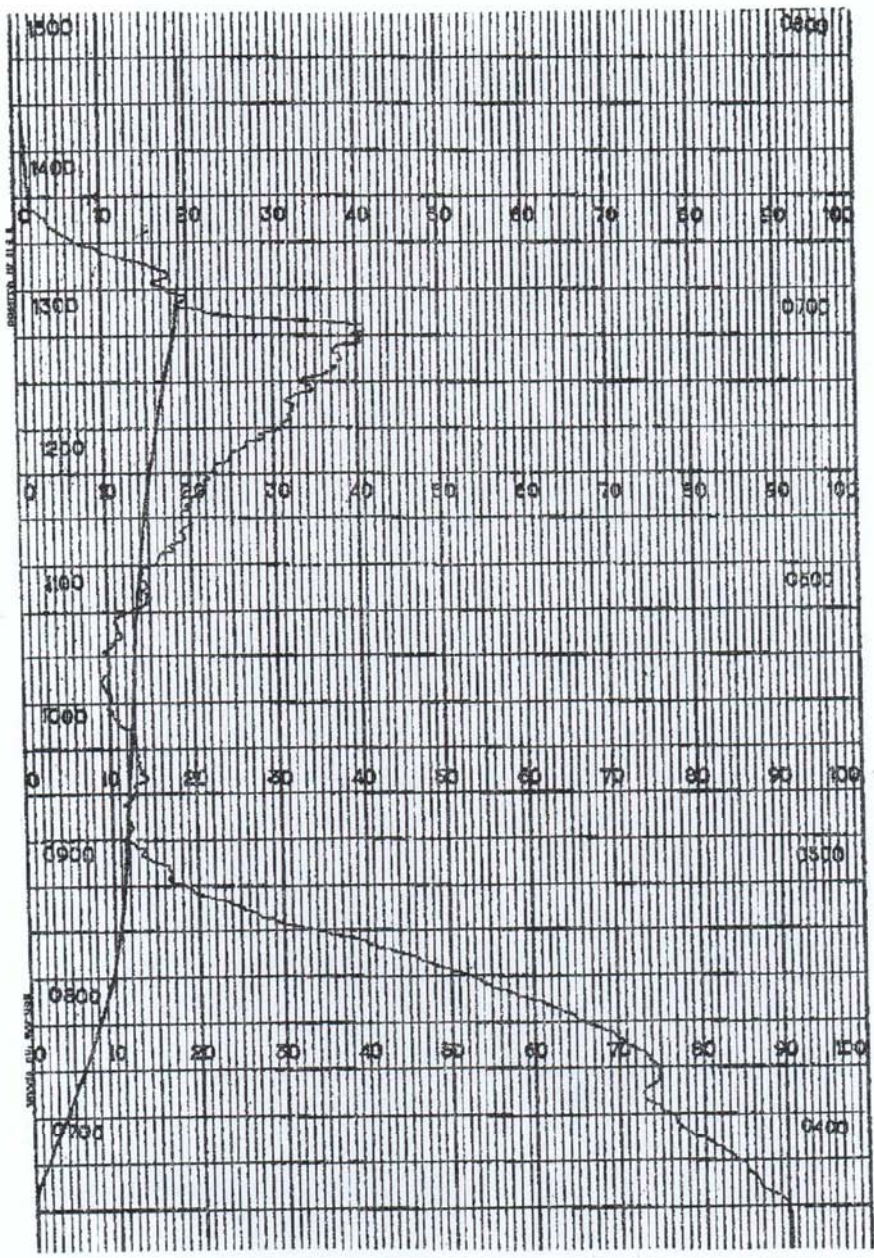
SMOKE DEVELOPED CURVE

RUN 1



SMOKE DEVELOPED CURVE

RUN 2



TEST RESULTS

FLAME SPREAD

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

Cedar Tone Composite Deck Board	Flame Spread	Flame Spread Classification
Run 1	84	85
Run 2	78	80

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)

Cedar Tone Composite Deck Board	Smoke Developed	Smoke Developed Classification
Run 1	218	200
Run 2	217	200

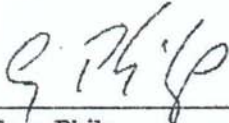
CONCLUSION

The samples of cedar tone composite deck board, submitted by Brite Millwork Inc., exhibited the following flame spread characteristics when tested in accordance with ASTM E84-00, *Standard Test Method for Surface Burning Characteristics of Materials*.

Sample	Flame Spread Classification	Smoke Developed Classification
Cedar Tone Composite Deck Board - Run 1	85	200
Cedar Tone Composite Deck Board - Run 2	80	200

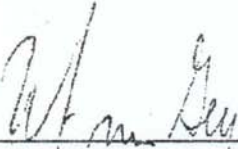
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