Intertek ETL SEMKO

CERTIFICATION REPORT OF A

FLAME SPREAD TEST PROGRAM

CONDUCTED ON

SPRAY-IN-PLACE OPEN-CELL POLYURETHANE FOAM (OPF)

CLIENT:

HESTERMAN TECHNICAL SERVICE INC.
190 HODSMANN ROAD
REGINA, SK
S4N 5X4

REPORT PREPARED BY:

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PREFACE

This report describes the tests, standards, and details for the samples of spray-in-place open-cell polyurethane foam (OPF), submitted by Hesterman Technical Service Inc.

This report does not automatically imply product certification. Products must bear labels in order to demonstrate Intertek/Warnock Hersey certification.

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INTRODUCTION

On June 1, 2004, Intertek Testing Services NA Ltd./Warnock Hersey conducted a flame spread test program to determine the surface burning characteristics of a spray-in-place open-cell polyurethane foam. The material tested was selected by a representative of Intertek/Warnock Hersey and submitted by the client.

Testing was conducted in accordance with CAN/ULC S102-M88; *Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*.

Upon receipt of the samples at the Intertek/Warnock Hersey laboratory they were placed in the conditioning room where they remained in an atmosphere of 23 ± 3°C (73.4 ± 5°F) and 50 ± 5% relative humidity until they reached a constant weight.

Three trial runs were conducted on the sample material.

PRE-TEST INSPECTION

A pre-test inspection was conducted on April 19, 2004 at Hesterman Technical Services Inc., Regina, SK, by Mr. Kalvir Kooner representing Intertek/Warnock Hersey. The details of the inspection are on file (CP Project No. 3057347) at Intertek/Warnock Hersey and will form the basis for follow-up services.

MATERIAL SPECIFICATIONS

The material tested consisted of six sections, each measuring 20-1/2 in. wide by 48 in. long by approximately 5 in. thick. The spray-in-place open-cell polyurethane foam (OPF) was mounted to cut sections of 5/16 in. thick Hardi Panel and allowed to cure.

SAMPLE MOUNTING

For each trial run, six 4 ft. lengths of panel were placed on the upper ledge of the flame spread tunnel and butted together to form the required 24 ft. sample length. A layer of 6mm reinforced cement board was placed over top of the sample, the lid was lowered into place, and then tested in accordance with CAN/ULC S102-M88.

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.

The test apparatus is calibrated such that the flame spread classification for red oak flooring is 100, and 0 for asbestos-cement board.

CALCULATIONS: (CAN/ULC S102-M88)

According to the test standard, the flame spread classification is equal to $\frac{5363}{(195 - A_t)}$ 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 $0.564 \times A_t$.

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:

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

TEST RESULTS

FLAME SPREAD

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

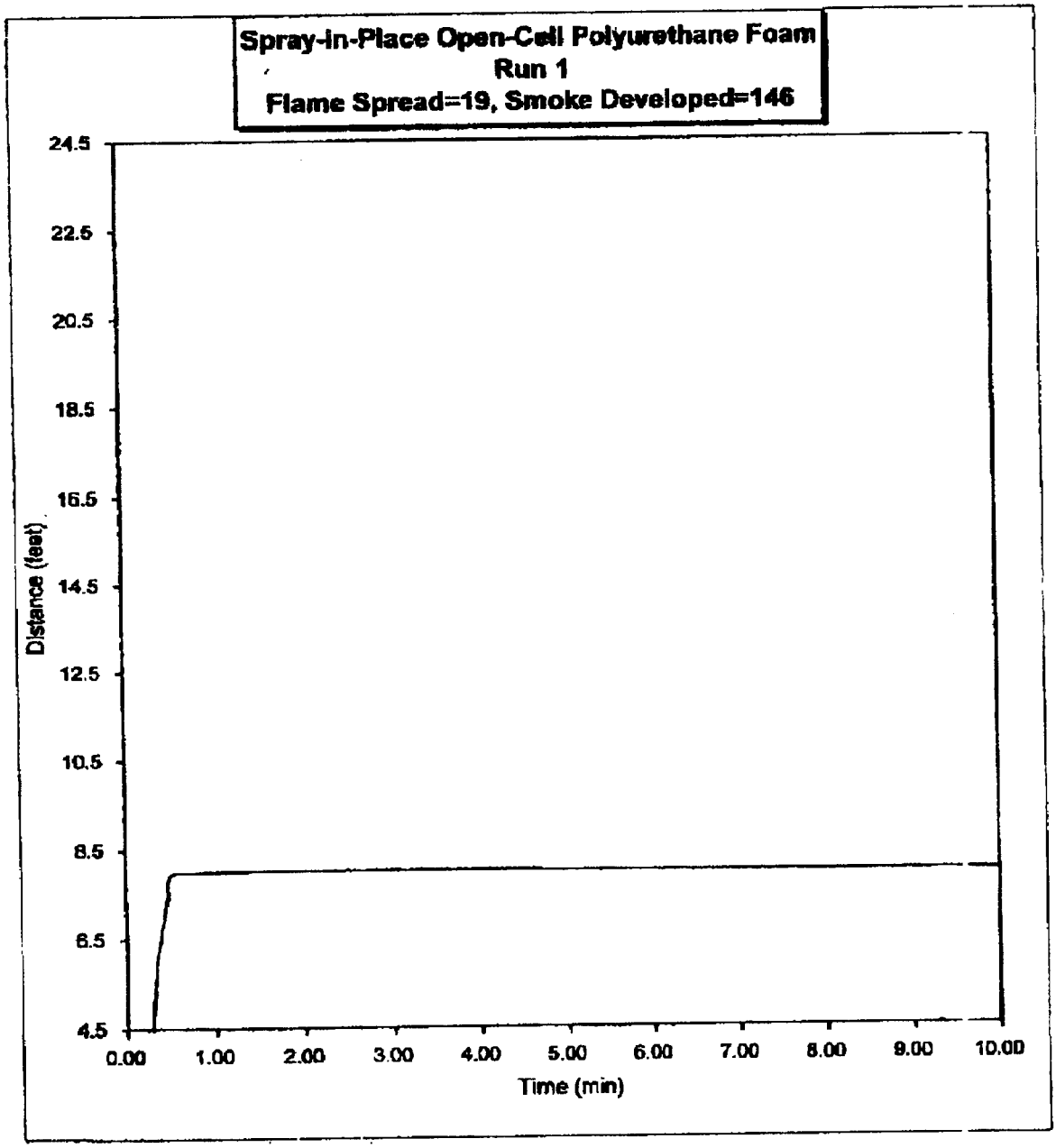
Spray-in-Place Open-Cell Polyurethane Foam	Flame Spread	Flame Spread Classification
Run 1	19	20
Run 2	18	
Run 3	18	

SMOKE DEVELOPED

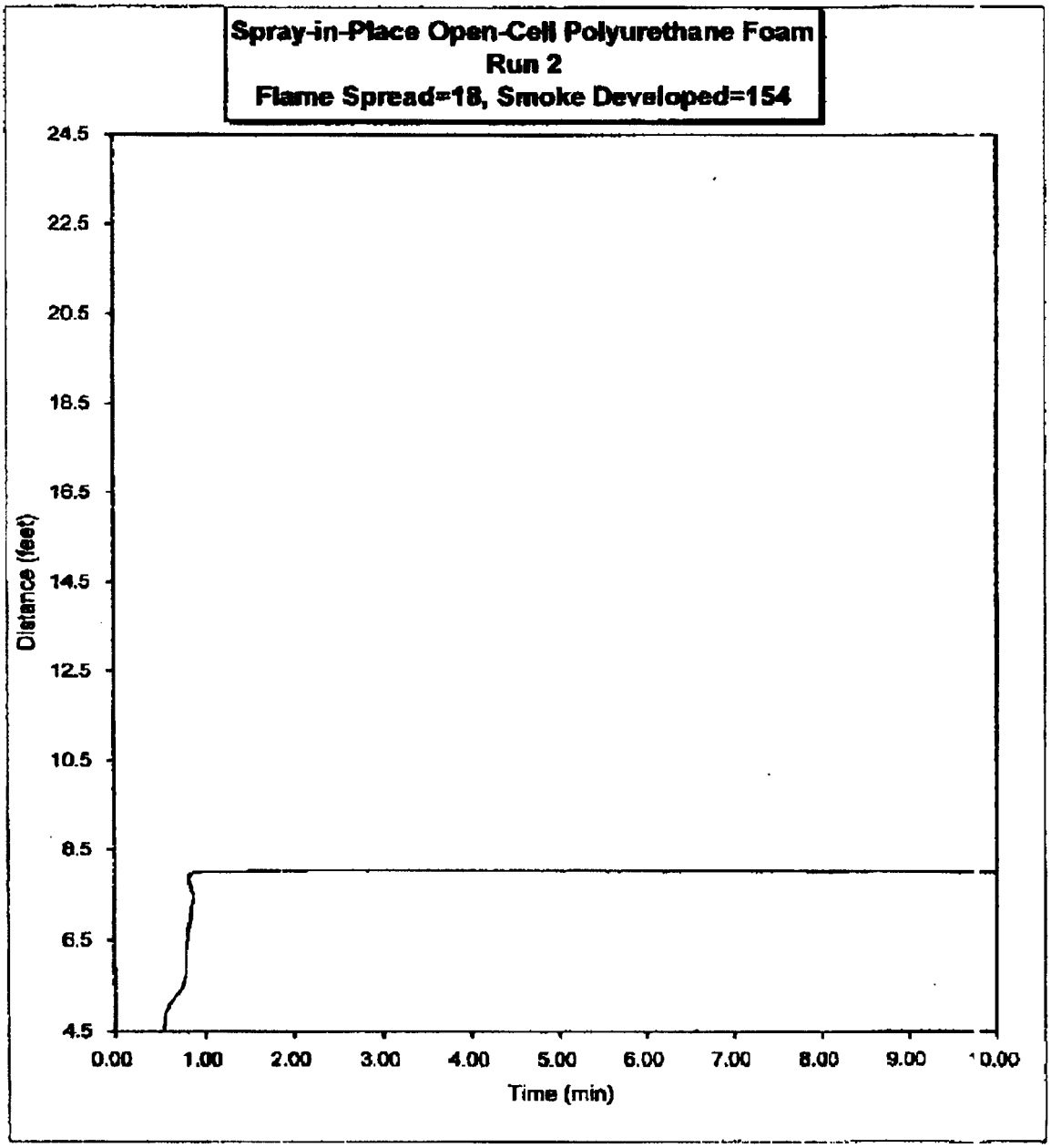
The areas beneath the smoke developed curve and the related classifications are as follows:
(classification rounded to nearest 5)

Spray-in-Place Open-Cell Polyurethane Foam	Smoke Developed	Smoked Developed Classification
Run 1	146	150
Run 2	154	
Run 3	157	

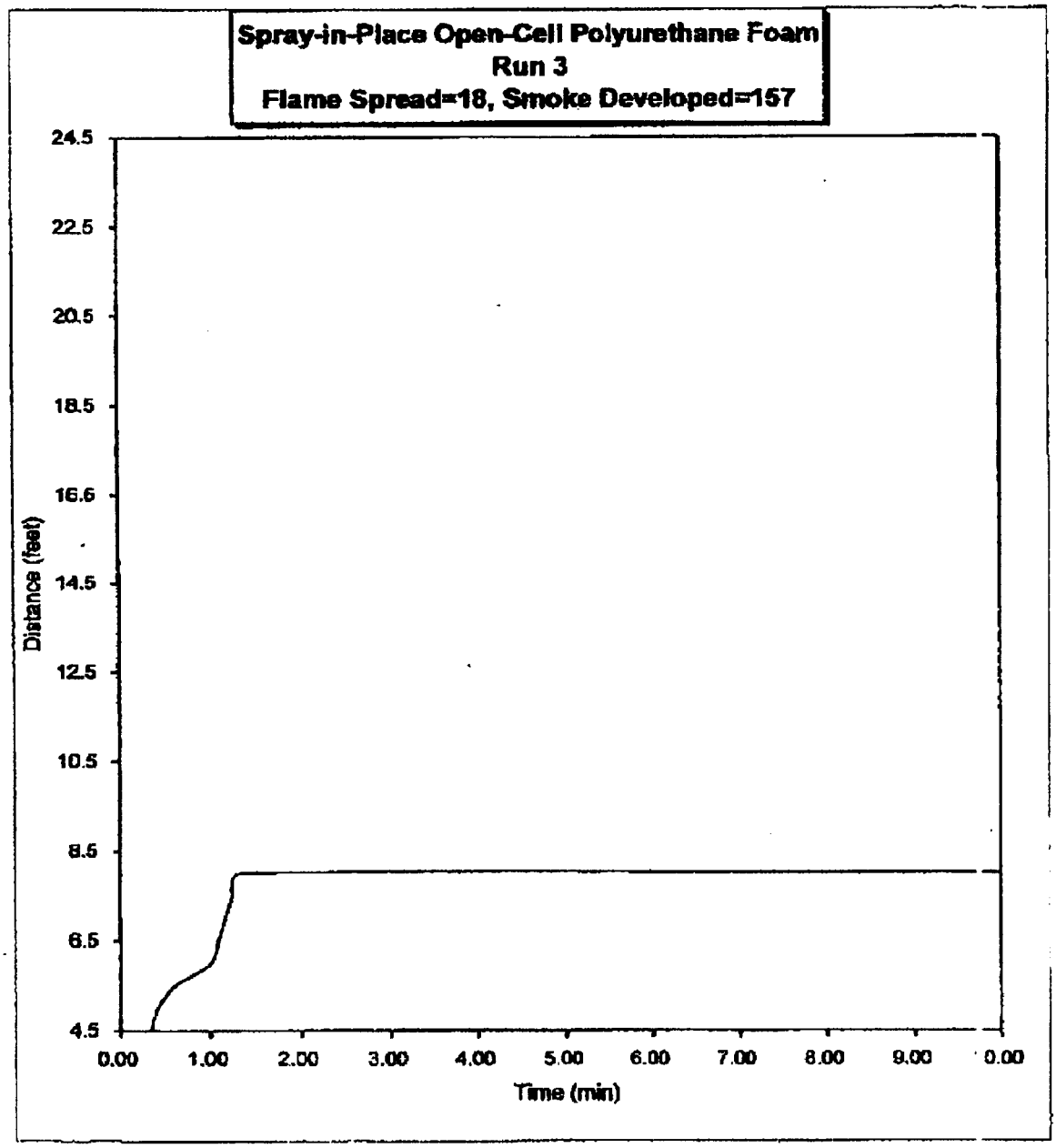
FLAME SPREAD
DISTANCE IN FEET VS. TIME IN MINUTES
RUN 1



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

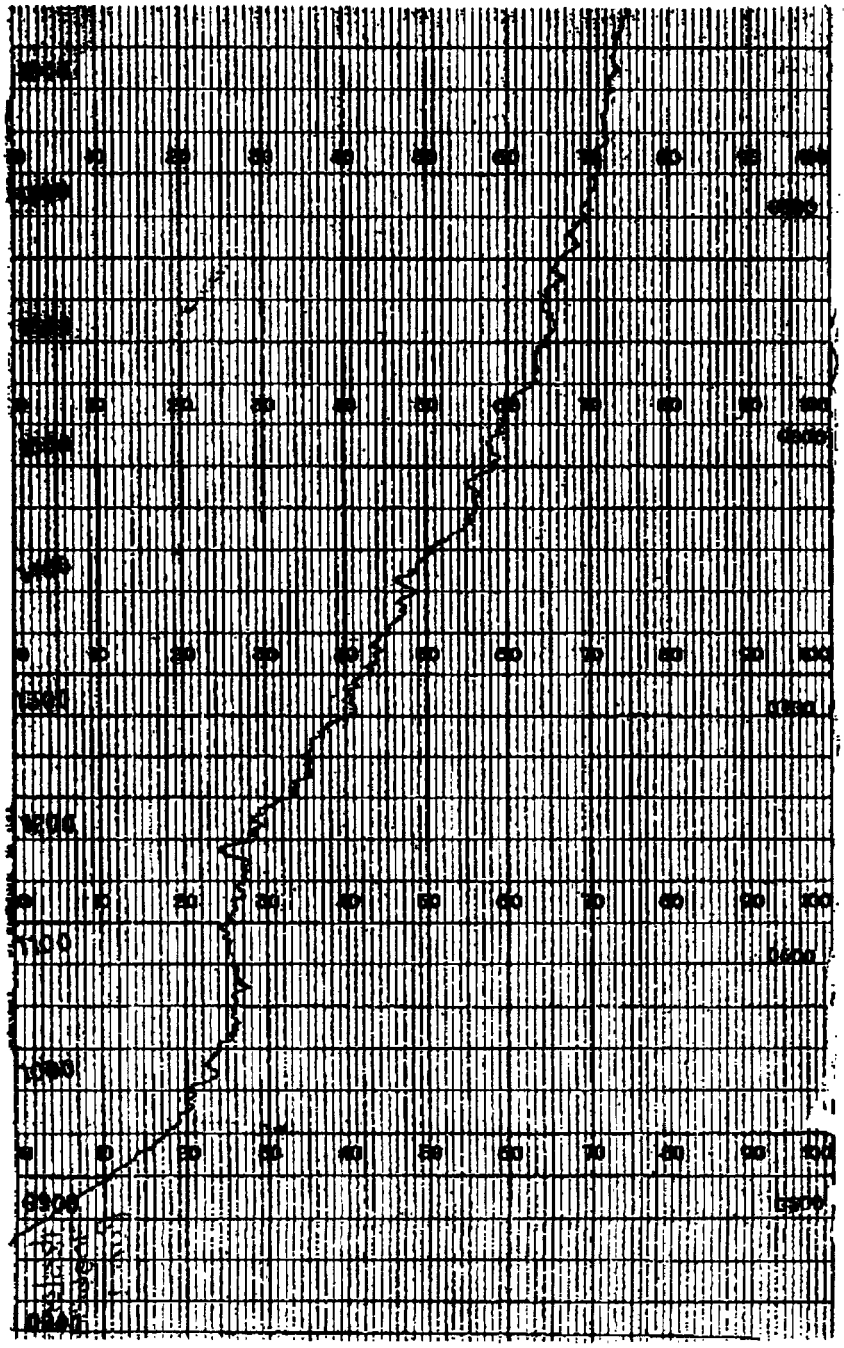


FLAME SPREAD
DISTANCE IN FEET VS. TIME IN MINUTES
RUN 3



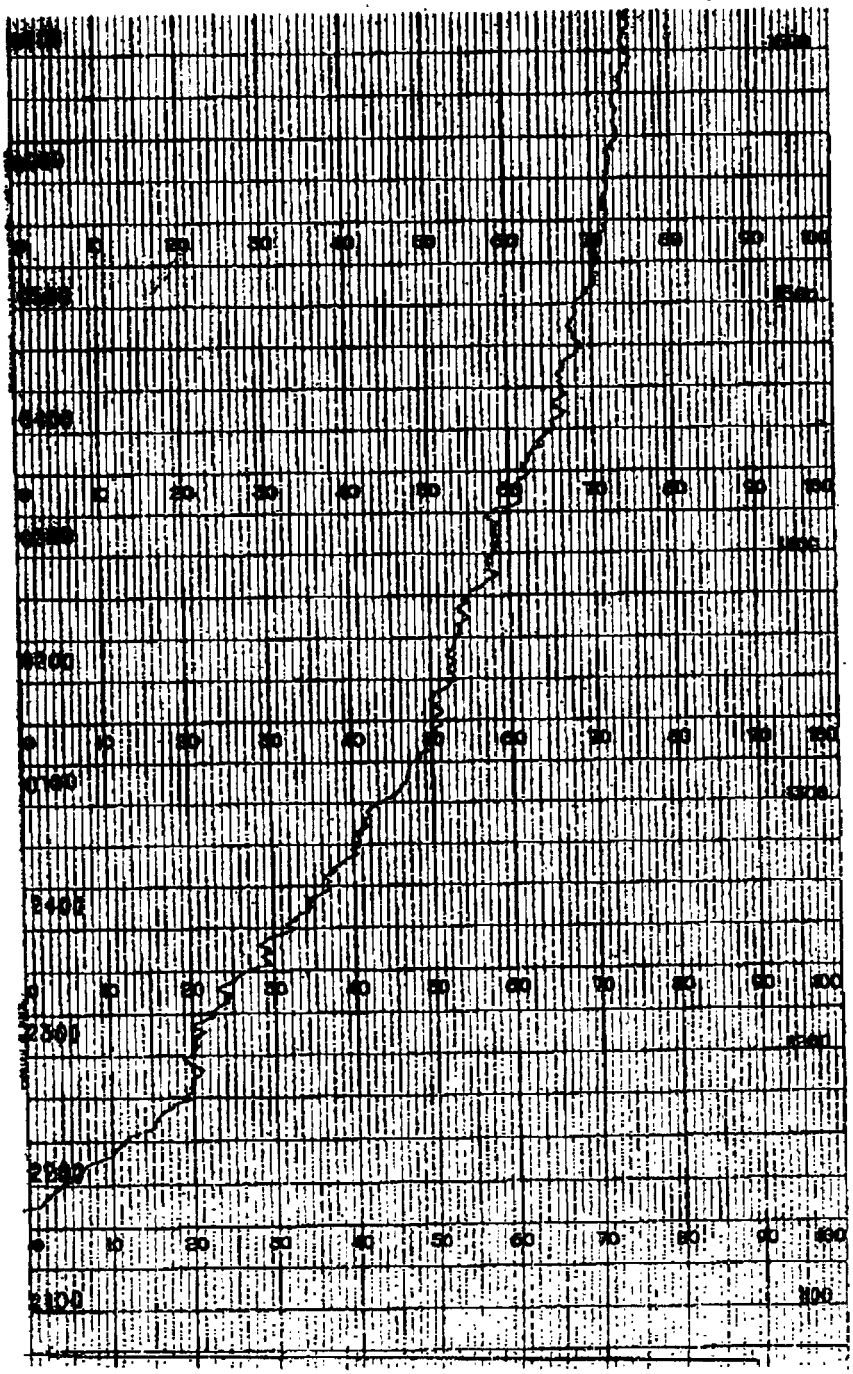
SMOKE DEVELOPED CURVE

RUN 1



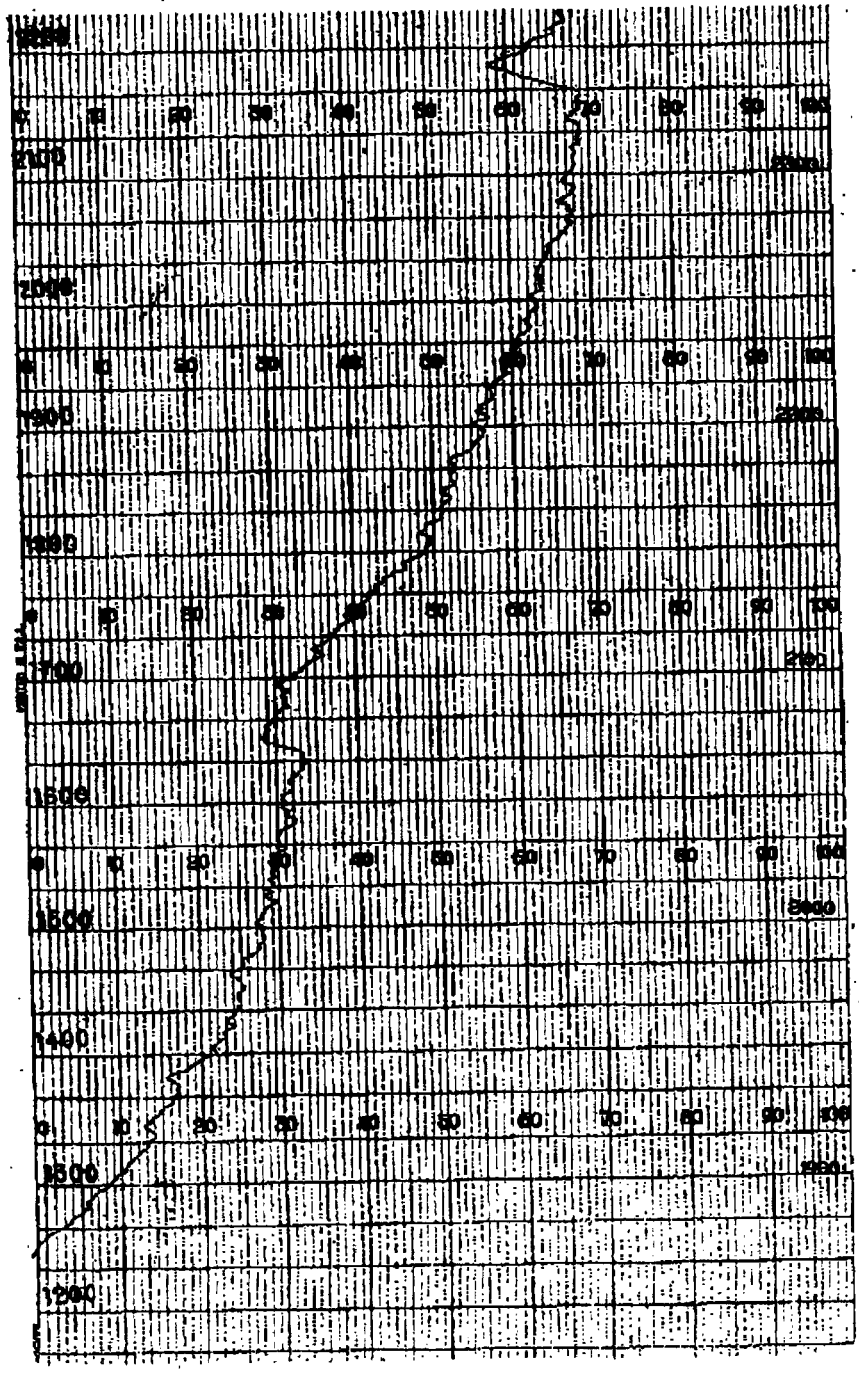
SMOKE DEVELOPED CURVE

RUN 2



SMOKE DEVELOPED CURVE

RUN 3



CONCLUSIONS

The samples of spray-in-place open-cell polyurethane foam (OPF), submitted by Hesterman Technical Service Inc., exhibited the following flame spread characteristics when tested in accordance with CAN/ULC S102-M88; *Standard Method of Test For Surface Burning Characteristics of Building Materials and Assemblies*.

Sample Material	Flame Spread Classification	Smoke Developed Classification
Spray-in-Place Open-Cell Polyurethane Foam	20	150

INTERTEK TESTING SERVICES NA LTD.

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