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REPORT OF A FLAMESPREAD TEST PROGRAM

CONDUCTED ON

GOLDSEAL 50
FOAMED PLASTIC

CLIENT

ICYNENE INC
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Mississauga, Ontario
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REPORT PREPARED BY

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TEST STANDARDS: ASTM E84

Warnock Hersey Professional Services Ltd.

PREFACE

This report describes the tests, standards and details for the sample of foamed plastic insulation manufactured by Icynene Inc.

The report does not automatically imply product certification. Products must bear WHI labels in order to demonstrate Warnock Hersey certification.

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INTRODUCTION

The Fire Laboratories Division of Warnock Hersey has conducted a test program to determine the surface burning characteristics of Icynene Inc. Goldseal 50 foamed-in-place insulation.

Testing was conducted in accordance with ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials."

After aging for thirty days, the samples 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.

3 trial runs were conducted on the sample.

MATERIAL SPECIFICATIONS

The material tested was identified by the Warnock Inspector as being representative of the samples foamed during the pre test inspection.

IDENTIFICATION OF THE PRODUCT

Thickness: 2", 3", 5"

Density: 0.5 lbs. cu. ft.

Material: Two component composition of polyisocyanate, resins and catalysts

Blowing Agent: Carbon Dioxide

Color: Cream

Identification: WH logo stamped on each sample

TEST PROCEDURE

The results of the test are expressed by three indexes. Each index expresses the characteristics of the sample under test relative to that of select grade red oak flooring and asbestos-cement board.

(A) FLAME SPREAD INDEX:

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

(B) CALCULATIONS:

According to the test standard, the flame spread classification is equal to $4900/(195-A_t)$ when A 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 Cont'd:

(B) SMOKE DEVELOPED:

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

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

CALCULATIONS:

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

FUEL CONTRIBUTED:

This is a measure of how much heat energy is given off by the burning of the sample in addition to that which is supplied by the natural gas burners.

The air temperature at the vent end of the tunnel is monitored throughout the test and the results are plotted versus time and compared to the results for red oak.

CALCULATIONS:

$$\frac{[1.5 \times (\text{temperature integrator reading})] - 4968}{4195.5} \times 100 = \text{fuel contributed}$$

TEST RESULTS

FLAME SPREAD

The resultant flame spread classification, is as follows:
(rounded to nearest 5)

<u>SAMPLE</u>	<u>INDEX</u> <u>SAMPLE DESCRIPTION</u>	<u>FLAME SPREAD</u> <u>INDEX</u>
1	2" thick (1 3/4")	20
2	3" thick	20
3	5" thick	15

SMOKE DEVELOPED

The related classification, is as follows: (rounded to nearest 5)

<u>SAMPLE</u>	<u>SMOKE DEVELOPED</u>
1	180
2	350
3	400

TEST RESULTS: Cont'd:

FUEL CONTRIBUTED

The related classification, is as follows: (rounded to nearest 5)

<u>SAMPLE</u>	<u>FUEL CONTRIBUTED</u>
1	0
2	0
3	0

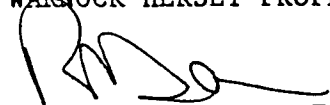
CONCLUSIONS

The sample of Icynene foam submitted, exhibited the following flame spread characteristics, when tested in accordance with ASTM E84

<u>SAMPLE</u>	<u>FLAME SPREAD CLASSIFICATION</u>	<u>SMOKE DEVELOPED</u>	<u>FUEL** CONTRIBUTED</u>
1	20	180	0
2	20	350	0
3	15	400	0

** This is an apparent value, not a real value

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