Intertek ETL SEMKO

REPORT OF A

FLAME SPREAD TEST PROGRAM

CONDUCTED ON A

POLYUREA FLAME RESISTANT COATING

CLIENT:

QUANTUM TECHNICAL SERVICES
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PREFACE

This report describes the tests, standards, and details for the samples of Polyurea flame resistant coating, submitted by Quantum Technical Services.

This report does not automatically imply product certification. Products must bear labels in order to demonstrate Intertek/Warnock Hersey certification, and the company must be authorized under the Intertek/Warnock Hersey Follow-up Certification Program.

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INTRODUCTION

On October 26, 2005 Intertek Testing Services NA Ltd./Warnock Hersey conducted a flame spread test program to determine the surface burning characteristics of a Polyurea flame resistant coating, identified by the client as "650 X2". The material tested was selected and submitted by Quantum Technical Services.

Testing was conducted in accordance with ASTM E84-05, *Standard Test Method for Surface Burning Characteristics of Materials.*

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.

One trial run was conducted on the sample material.

MATERIAL SPECIFICATIONS

The sample material consisted of three 20-1/2 in. wide by 96 in. long by 3/8 in. thick fibreglass reinforced cement boards coated with a Polyurea flame resistant coating, described by the client as "650 X2".

SAMPLE MOUNTING

Three 8 ft. panels were placed on the upper ledge of the flame spread tunnel and butted together to form the required 24 ft. sample length. The tunnel lid was lowered into place, and the samples were tested in accordance with ASTM E84-05.

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 E84-05

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 $0.515 \times A_t$.

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:

$$\frac{10{,}000 - (\text{smoke integrator reading}) \times 100}{1500} = \text{smoke developed}$$

TEST RESULTS

FLAME SPREAD

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

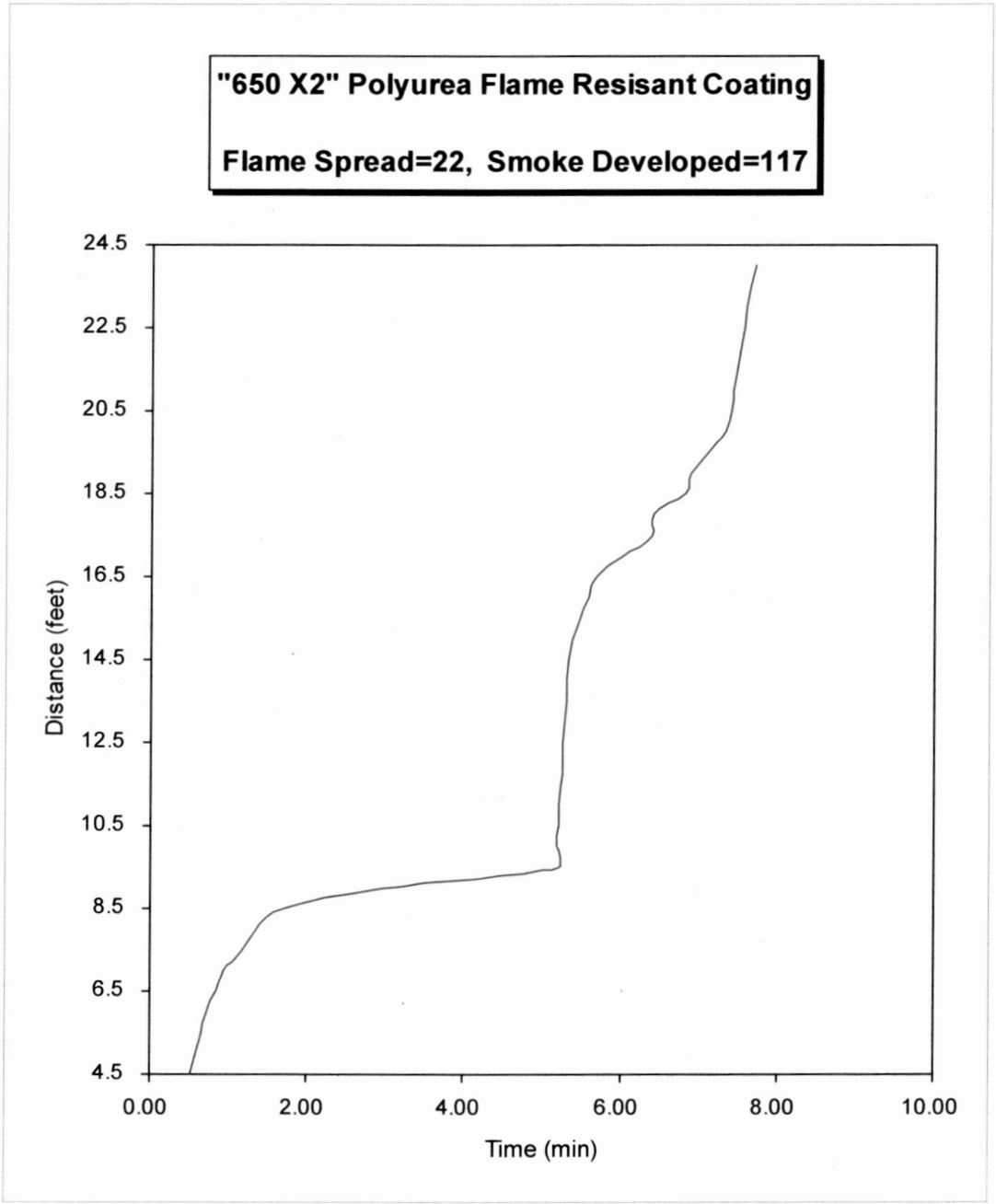
Polyurea Flame Resistant Coating "650 X2"	Flame Spread	Flame Spread Classification
Run 1	22	20

SMOKE DEVELOPED

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

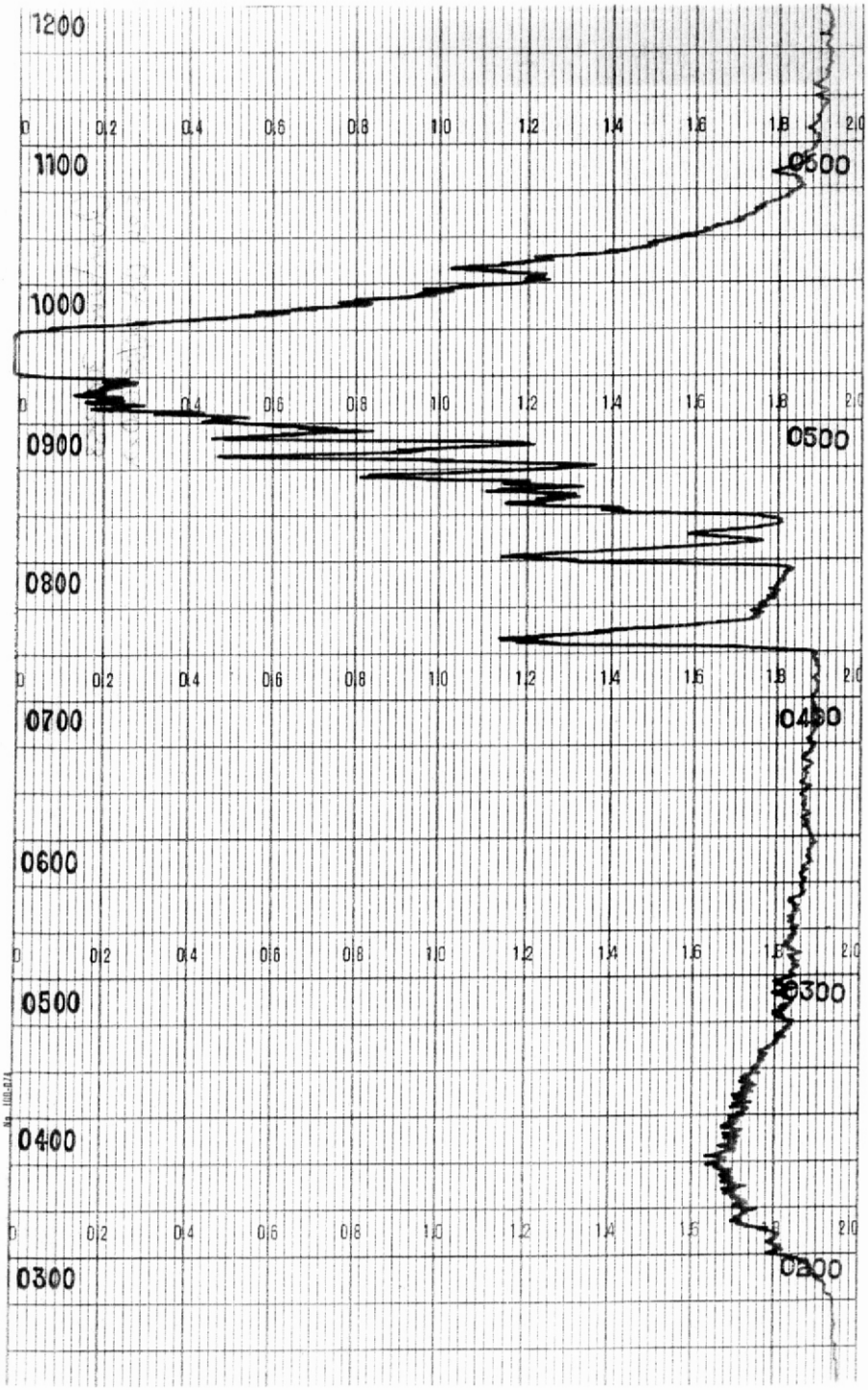
Polyurea Flame Resistant Coating "650 X2"	Smoke Developed	Smoked Developed Classification
Run 1	117	115

FLAME SPREAD
DISTANCE IN FEET VS. TIME IN MINUTES



SMOKE DEVELOPED

RUN 1



CONCLUSIONS

The samples of "650 X2" Polyurea flame resistant coating, submitted by Quantum Technical Services, exhibited the following flame spread characteristics when tested in accordance with ASTM-E84-05a, *Standard Test Method for Surface Burning Characteristics of Materials.*

Sample Material	Flame Spread Classification	Smoke Developed Classification
Polyurea Flame Resistant Coating "650 X2"	20	115

INTERTEK TESTING SERVICES NA LTD.

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