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DEPARTMENT OF FIRE TECHNOLOGY

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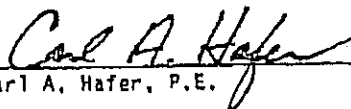
INVESTIGATION OF SURFACE BURNING CHARACTERISTICS OF:

AN ENCAPSULATED FIBERGLASS: 3-LB DENSITY
CERTAINTeed FIBERGLASS CORE WITH 2-OZ NYLON
RIP STOP FABRIC

PROJECT NO. 01-1373-392-d


FINAL REPORT

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I. INTRODUCTION

This report presents the results of a flame spread tunnel test on an encapsulated fiberglass core.

The report contains a description of the material tested, the preparation and conditioning of the specimen, the test procedure, and finally, the test results. Note that the results only apply to the specimen tested, in the manner tested, and not to the entire production of this or similar materials, nor to this material's performance when used in combination with other materials. All test data are on file and are available for review by authorized persons.

The test was conducted in accordance with the provisions of ASTM Designation E84, "Standard Method of Test for Surface Burning Characteristics of Building Materials." This test method is similar to the test method specified in NFPA No. 255, UL No. 723 and UBC No. 42-1. ASTM E84 is a test procedure method only and does not set requirements for materials. Therefore, SwRI does not assign a classification to the material tested. Building codes, such as the Uniform Building Code, have requirements dependent on building type, occupancy, etc. The building code having jurisdiction in the location a material is to be used will determine compliance of the test results.

The purpose of the test was to evaluate performance of the test specimen in relation to that of glass-reinforced-cement board and red oak flooring under similar fire exposure. The results are expressed in terms of flame spread and smoke developed during a 10-minute exposure and are recorded as a ratio with glass-reinforced-cement board 0 and red oak flooring 100.

II. DESCRIPTION OF MATERIALS

On August 26, 1987, the test material was received from the Client. It is described in Table 1 on the following page.

TABLE 1. DESCRIPTION

Type:	Encapsulated fiberglass
Trade Name:	Certainteed Fiberglass
Identification:	3-1b density Certainteed fiberglass core with 2-oz nylon rip stop fabric
Color:	Purple
Construction:	Nylon fabric sewn around a fiberglass core
No./Size Received:	12 pieces, 20.25 x 24.25 in. (0.514 x 0.62 m) nominal
Thickness:	1.0 in. (25.4 mm)
Total Weight:	11.6 lb (5.266 kg)
Unit Weight:	40.82 oz/yd ² (1.384 kg/m ²)
Density:	3.402 lb/ft ³ (54.493 kg/m ³)
Substrate Used:	0.25-in. (6.35-mm) glass-reinforced-cement board placed between the specimen and the furnace lid

III. PREPARATION AND CONDITIONING OF TEST SPECIMEN

The specimen was supported in the tunnel furnace over continuous 2-in. (50.8-mm) hexagonal wire mesh with 0.19-in. (4.76-mm) stainless steel rods interlaced with the mesh at 1-ft (0.31-m) intervals for the first 10 ft and thereafter at 3-ft (0.92-m) intervals. A 14 x 21-in. (0.36 x 0.53-m) section of 16-ga (1.6-mm) sheet metal was placed over the burner and under the leading edge of the first section to deter flame impingement on the unexposed surface in accordance with the test procedure.

The specimen was conditioned for 1 day in an atmosphere maintained between 68 and 78°F (20 and 26°C) temperature and 45- to 55-percent relative humidity.

IV. TEST PROCEDURE

The test was conducted on September 2, 1987. Reference data were obtained and furnace operation checked by conducting a 10-minute test with glass-reinforced-cement board on the day of the test and by periodic tests with red oak flooring. These tests provided the 0 and 100 references for flame spread and smoke developed. Ignition over the burners was noted 40 seconds after the start of the test in the most recent calibration with red oak flooring. Each specimen to be evaluated

was tested in accordance with the standard procedure.

V. TEST RESULTS

The test results were calculated on the basis of observed flame travel and the measurement of areas under the recorder curves of furnace temperature and smoke developed (see Table 2). To allow for possible variations in results due to limitations of the test method, the numerical results were adjusted to the nearest figure divisible by 5.

Recorded data for flame spread, smoke developed and temperature for the specimen are shown in the figures at the end of this report as a solid line on each graph.

TABLE 2. CLASSIFICATION

Test Specimen	Flame Spread Index E84-86	Smoke Developed
Glass-Reinforced-Cement Board	0	0
Red Oak Flooring	100	100
An Encapsulated Fiberglass:		
3-LB Density Certainteed Fiberglass		
Core With 2-OZ Nylon Rip Stop Fabric	15	35

OBSERVATIONS DURING AND AFTER TEST

Observations made during and after the test are presented in Table 3 below.

TABLE 3. OBSERVATIONS

Event	
Steady Ignition, min:s	0:03
Color Change, min:s	0:03
Dripping, min:s	0:10
Burning on Floor, min:s	8:49

TABLE 3. OBSERVATIONS (Continued)

Event (Continued)	
Maximum Flame Front Advance, min:s	9:00
ft	9.0
(m)	(2.75)
Afterflame, min:s	--
Damage	
Consumed/Complete Char, ft	3.0
(m)	(0.92)
Surface Char, ft	13.0
(m)	(3.97)
Melting, ft	18.5
(m)	(5.64)
Discoloration, ft	25.0
(m)	(7.63)
Wrinkles, ft	25.0
(m)	(7.63)