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**SOUTHWEST RESEARCH INSTITUTE**

Department of Fire Technology

POST OFFICE DRAWER 28510, 6220 CULEBRA RD. SAN ANTONIO, TEXAS 78284

**INVESTIGATION OF SURFACE BURNING  
CHARACTERISTICS OF:**

A FIRE-RETARDANT COATING:  
CLEAR FIREPOLY (30-MINUTE TEST)

PROJECT NO. 01-8302-454

FINAL REPORT

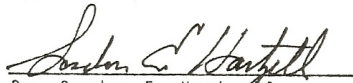
SEPTEMBER 3, 1985

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## I. INTRODUCTION

This report presents the results of a flame spread tunnel test on a fire-retardant coating, submitted for evaluation by Machemo Corporation of Fort Worth, Texas. 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 E84-84, "Standard Method of Test for Surface Burning Characteristics of Building Materials." This test method is similar to the test method specified in ANSI No. 2.5, NFPA No. 255, UL No. 723, 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 Client requested that the test be continued for 30 minutes although the ASTM E-84 test is 10 minutes.

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, fuel contribution, 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.

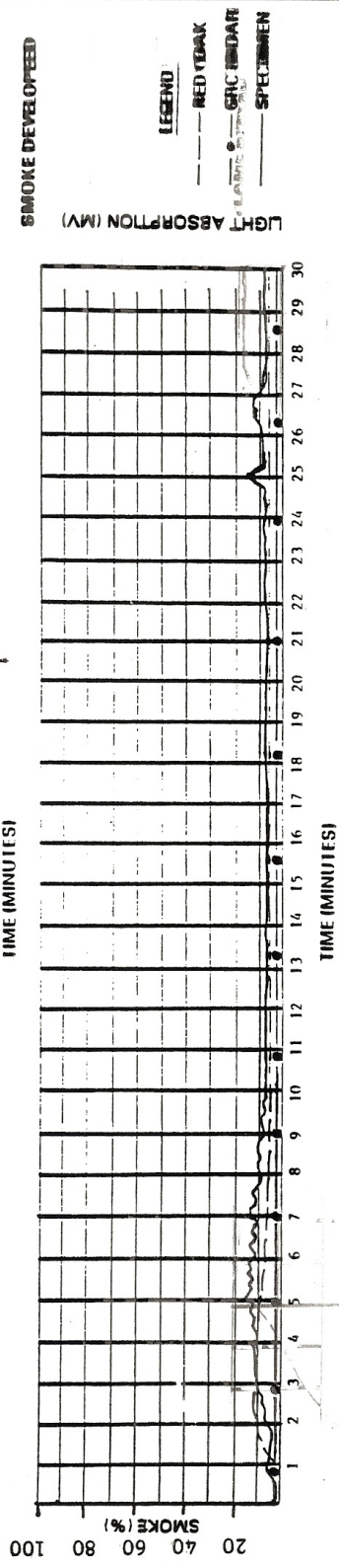
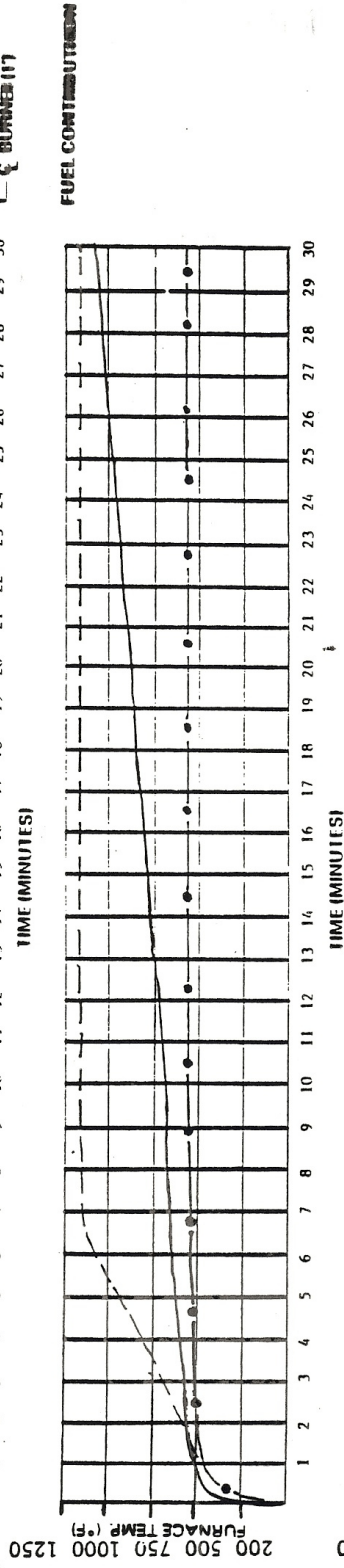
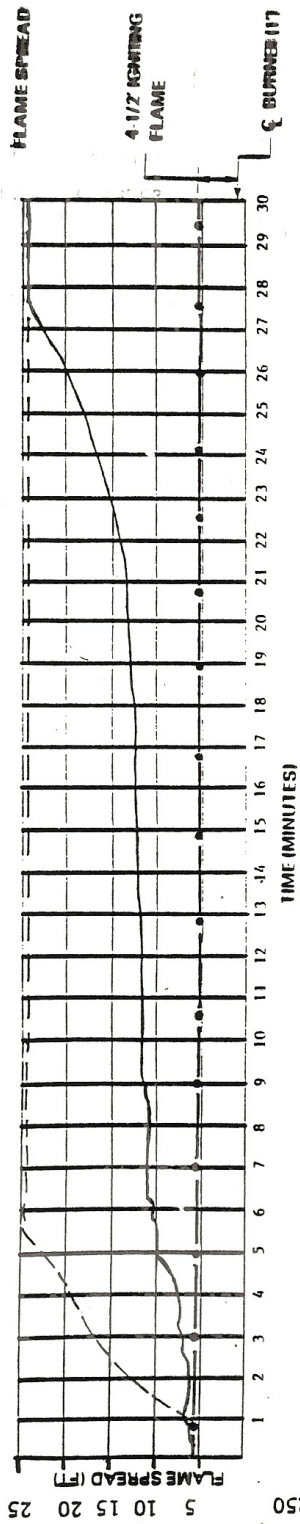
## II. DESCRIPTION OF MATERIALS

On July 23, 1985, the test material was received from the Client. It is described in Table 1 on the following page.

TABLE 3. OBSERVATIONS (Continued)

Event (Continued)	
Maximum Flame Front Advance,	
min:s	9:00
ft	12
(m)	(3.66)
Afterflame, min:s	**
Damage (After 30 Minutes)	
1/4-In. Char Intumescence, ft	
	20 to 25
(m)	(6.10 to 7.63)
Char Depth of Wood,	
1/4 in., ft	20
(m)	(6.10)
Heavy Char, ft	
	25
(m)	(7.63)

\*\*At the Client's request the test was continued, with fuel on, for 30 minutes. The wood burned through at approximately 25 minutes. The flame front advanced to 24.5 ft (7.42 m) at 27 minutes 45 seconds without reaching the end, 25 ft (7.63 m), during the 30-minute test. Pieces of wood began falling at 29 minutes. The flame advance, temperature rise at 24 ft (7.32 m) and smoke developed during the 30-minute test are shown in the graphs at the end of the report.



**LEGEND**

— RED YAK

— GFC REDDAR

— SPECIMEN



A FIRE-RETARDANT COATING: MACHENCO CLEAR  
FIREPOLY (30-MINUTE TEST)

