ASTM E84-89a
SURFACE BURNING CHARACTERISTICS

Glasbord 4 Ounce RE*, .120" Thick

Report No. 9013 - 90180

March 13, 1990

Prepared For:

Crane/Kemlite Company
P.O. Box 3849
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ABSTRACT

TEST MATERIAL:	Glasbord 4 Ounce RE*, .120" Thick
TEST METHOD:	ASTM E84-89a Standard Test Method for SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (NFPA 255, UL 723, UBC 42-1)
TEST DATE:	March 13, 1990
TEST FOR:	Crane/Kemlite Company
TEST RESULT:	FLAME SPREAD INDEX = 145 SMOKE DEVELOPED INDEX = 345

The description of the test procedure and specimen evaluated, as well as the observations and results obtained, contained herein are true and accurate within the limits of sound engineering practice.

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Manager, Listing Services

Date: March 13, 1990

OMEGA POINT LABORATORIES

I. INTRODUCTION

This report describes the results of the ASTM E84-89a Standard Test Method for SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS [1], a method for determining the comparative surface burning behavior of building materials. This test is applicable to exposed surfaces, such as ceilings or walls, provided that the material or assembly of materials, by its own structural quality or the manner in which it is tested and intended for use, is capable of supporting itself in position or being supported during the test period.

The purpose of the method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke density developed are reported, however, there is not necessarily a relationship between these two measurements.

"The use of supporting materials on the underside of the test specimen may lower the flame spread index from that which might be obtained if the specimen could be tested without such support... This method may not be appropriate for obtaining comparative surface burning behavior of some cellular plastic materials... Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place."

This test method is also published under the following designations:

ANSI 2.5
NFPA 255
UBC 42-1
UL 723

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

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[1] American Society for Testing and Materials (ASTM), Committee E-5 on Fire Standards

II. PURPOSE

The ASTM E84-89a (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of mineral fiber cement board and select grade red oak flooring. The test specimen surface (18 inches wide and 24 feet long) is exposed to a flaming fire exposure (adjusted to cause a 25 foot spread of flame along a red oak calibration specimen in 5.5 minutes) during the 10 minute test duration, while flame spread over its surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials. The mineral fiber cement board forms the zero point, while the red oak flooring is set as 100 for smoke measurements. The furnace conditions are considered under calibration when a 10 minute test of red oak decking will pass flame out the end of the tunnel in five minutes, 30 seconds, plus or minus 15 seconds. Thus, with a relative zero established by the non-combustible cement board, all test specimens are compared to select grade red oak flooring, and the results expressed as Flame Spread Index and Smoke Developed Index.

III. DESCRIPTION OF TEST SPECIMENS

Specimen Identification: Glasbord 4 Ounce RE*, .120" Thick

Project Number:	90180
Date Received:	3/13/90
Date Prepared:	3/13/90
Date Tested:	3/13/90
Conditioning (73°F & 50% R.H.):	0 days
Specimen Width (in):	24
Specimen Length (ft):	24
Specimen Thickness:	.10"
Entire Specimen Weight:	n/a
Application Rate:	n/a

Mounting Method:
Panels were placed directly on the tunnel ledges for testing.

Specimen Description:
Specimens consisted of thin, fairly rigid plastic panels, and were described as Glasbord 4 Ounce RE*, .120" Thick.

IV. TEST RESULTS

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table. In recognition of possible variations and limitations of the test method, the results are computed to the nearest number divisible by five, as outlined in the test method.

While no longer a part of this standard test method, the Fuel Contributed Value has been computed, and may be found on the computer printout sheet in the Appendix.

TEST SPECIMEN	FLAME SPREAD INDEX	SMOKE DEVELOPED INDEX
Mineral Fiber/Cement Board	0	0
Red Oak Flooring	n/a	100
Glasbord 4 Ounce RE, .120" Thick*	145	345

The data sheets are included in Appendix. These sheets are actual printouts of the computerized data system which monitors the ASTM E84 furnace, and contain all calibration and specimen data needed to calculate the test results.

V. OBSERVATIONS

Steady ignition occurred on the face of the first panel at 1:00 min:sec. Maximum flame spread of 19.5 feet occurred at 2:29 min:sec. At the end of the test the sample was observed to be discolored to 24'. It was completely charred to 6', with moderate char to 14' 4".

APPENDIX

ASTM E84

DATA SHEETS

ASTM E84

DATA SHEET

Client: Crane-Kemlite
Date: 14:50:41 03-13-1990
Test Number: 5
Project Number: 9013-90180
Operator: DH/KH
Material ID:

4 oz. RE* K-900302-1 **GLASBORD 4oz RE* (.120" Thickness)**
6 @ 24"x48"x.10" Gray panels

TEST RESULTS:

FLAMESPREAD INDEX	=	145
SMOKE DEVELOPED INDEX	=	345

SPECIMEN DATA . . .

Time to Ignition	=	01:00	(Min:Sec)
Time to Max FS	=	02:29	(Min:Sec)
Maximum FS	=	19.5	(Feet)
Time To 980 F	=	03:50	(Min:Sec)
Max Temp	=	1142	(deg F)
Time To Max Temp	=	06:01	(Min:Sec)
Total Fuel Burned	=	46.97	(cubic feet)
FS*Time Area	=	161.1	(Ft*Min)
Smoke Area	=	392.3	(%T*Min)
Fuel Area	=	7296.0	(F*Min)
Unrounded FSI	=	144.57	

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak	=	00:48	(Min:Sec)
Red Oak Smoke Area	=	114.30	(%T*Min)
Red Oak Fuel Area	=	8536	(F*Min)
Glass Fiber Board Fuel Area	=	4618	(F*Min)