



DuCHÂTEAU®
FLOORS



FIRE RATINGS
EUROPEAN OAK



Report On
Critical Radiant Flux of Floor-Covering Systems
Using a Radiant Heat Energy Source
As Determined By
ASTM E 648 Test Method

PREPARED FOR:
DuChateau Floors
San Diego, CA
TEST NUMBER: FRP-830
5/8" Oak Engineered Wood Flooring

Date of Issue:
12/8/2011





I. SCOPE

This report contains the reference to the test method, purpose, test procedure, preparation and conditioning of test samples, description of materials, test and post test observation data, and test results.

II. TEST METHOD

The test was conducted in accordance with ASTM Designation E 648, "Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source." The test is also described by NFPA No. 253.

III. PURPOSE

The purpose of the test is to determine the critical radiant flux of horizontally-mounted floor covering systems exposed to a flaming ignition source in a graded radiant heat energy environment maintained in a test chamber. The specimen may be mounted over underlayment, a simulated concrete structural floor, bonded to a simulated structural floor, or otherwise mounted in a typical and representative way.

The test method provides a basis for estimating one aspect of fire exposure behavior for floor covering systems. The imposed radiant flux is designed to simulate the thermal radiation levels likely to impinge on the floors of a building whose upper surfaces are heated by flames and/or hot gases from fully developed fire in an adjacent room or compartment. The method was developed to simulate an important fire exposure component of fires which may develop in corridors or exit ways of buildings and is not intended for routine use in estimating flame spread behavior of floor covering in building areas other than corridors or exit ways.

IV. TEST PROCEDURE

The basic elements of the test chamber are: 1) an air-gas, fueled radiant heat energy panel inclined at 30° to and directed at 2) a horizontally-mounted floor covering system specimen. The radiant panel generates a radiant energy flux distribution ranging along the 100-cm length of the test specimen from a nominal maximum of 1.0 watts/cm² to a minimum of 0.1 watts/cm². The test is initiated by open flame ignition from a pilot burner. The distance burned to flame-out is converted to watts/cm² and reported as **critical radiant flux**.



**Report on Critical Radiant Flux of Floor Covering Systems Using a
Radiant Heat Energy Source as Determined by the ASTM E 648 Flooring Radiant Panel**

Test Number: FRP-830

Test Date: 12/05/11

Report Prepared For:	DuChateau Floors San Diego, CA
Material Tested:	5/8" Oak Engineered Wood Flooring

Sample Information:

Detailed Product Description: Oak Products (Including Oak wood from the Chateau, Vernal, Terra, Riverstone, Heritage Timber, and Fine Sawn Collections) Product description provided by the manufacturer.
Sample Preparation: Samples were backed with 1/4" inorganic millboard.

Sample Selection:	Manufacturer
Number of Samples:	3
Surface Exposed:	Face Side Exposed
Average Thickness (in.):	0.603

Flux Profile Run Date:	12/5/11
Conditioning Days:	3
Sample Color:	Brown
Average Density (lbs/ft ²):	1.522

Test Data

	Burn 1	Burn 2	Burn 3
Preheat Time (min):	5:00	5:00	5:00
Starting Temp. (°C):	132	131	130
Burn Length (cm):	49.4	55.4	51.2
Time to Max Burn Length (min):	34:50	50:36	47:16

Test Results

	Burn 1	Burn 2	Burn 3
Critical Radiant Flux (W/cm ²):	.37	.3	.34
Average Critical Radiant Flux (W/cm²):			0.34
Standard Deviation:			0.04
Coefficient of Variation:			12%

Observations:	None.
Remarks:	None.
Test Operator:	AP

Report Prepared By:

Senior Fire Technologist

Report Reviewed By:

Director of Testing Certification and Standards



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TEST REPORT

ASTM E84-05

SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS

Report No. 3121341SAT-002

EGRPYR5, AKA "LUGANO"

April 26, 2007

Prepared for:
DuChateau Floors
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DuChateau Floors**ABSTRACT**Test Specimen: **EGRPYR5, AKA "LUGANO"**Test Standard: **ASTM E84-05**Test Date: **April 25, 2007**Test Sponsor: **DuChateau Floors**


Test Results:

FLAME SPREAD INDEX	=	150
SMOKE DEVELOPED INDEX	=	110
	=	N/A ft. Beyond Burners Centerline

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Teodoro Alvarado Jr.
E84 OperatorApril 26, 2007

Reviewed and approved:


Stephanie Martinez-Diaz
Technical WriterApril 26, 2007

I INTRODUCTION

This report describes the results of the ASTM E84-05 Standard Test Method for SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS, 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 8-1 (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.

DuChateau Floors**II PURPOSE**

The ASTM E84-05 (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of 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 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 furnace is 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. Fiber cement board forms the zero point for both flame spread and smoke developed indexes, while the red oak flooring smoke developed index is set as 100.

III DESCRIPTION OF TEST SPECIMEN

Specimen Identification: **EGRPYR5, AKA "LUGANO"**

Date Received:	4/11/2007
Date Prepared:	4/11/2007
Conditioning (73°F & 50% R.H.):	14 days
Specimen Width (in):	22.5
Specimen Length (ft):	24
Specimen Thickness:	0.5935-in.
Material Weight:	N/A oz./sq. yd
Total Specimen Weight:	66.0-lbs.
Adhesive or coating application rate:	N/A

Mounting Method:

The specimen was supported on 1/4 inch Steel rods spaced every 2 ft down the length of the apparatus.

Specimen Description:

The test specimen was described by the client as the "ENGINEERED 4 MM TOPLAYER OAK (LUGANO)." The specimen consisted of (1) 24-ft. long x 22.5-in. wide x 0.5935-in. thick, wood panel. The specimen was identified by the client as "EGRPYR5 LUGANO." The test specimen was received by our personnel in good condition.

DuChateau Floors**IV TEST PROCEDURE**

The tests were conducted in accordance with the procedures outlined in the American Society for Testing and Materials ASTM E84-05. The self-supporting specimens were placed directly on the tunnel ledges. As required by the standard, one or more layers of 0.25 inch thick reinforced concrete board was placed on top of the test sample between the sample and the tunnel lid. After the tests, the samples were removed from the tunnel, examined and disposed of.

The test was conducted on 4/25/2007, and not witnessed by any third parties.

V 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 for smoke developed index results greater than 200 the calculated value is rounded to the nearest 50 points.

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.

(30Minute) Test Specimen	E84 (10 Minute) Flame Spread Index	E84 (10 Minute) Smoke Developed Index	NFPA 703 ft
Fiber Cement Board	0	0	N/A
Red Oak Flooring		100	N/A
EGRPYR5, AKA "LUGANO"	150	110	N/A

The data sheets are included in the Appendix. These sheets are actual print-outs of the computerized data system which monitors the ASTM E84-05 apparatus, and contain all calibration and specimen data needed to calculate the test results.

VI OBSERVATIONS

During the test, the specimen was observed to behave in the following manner: The wood panel ignited at 0:34 (min:sec.). Flames reached the end of the tunnel at 2:41 (min:sec.). Flaking was observed at 3:03 (min:sec.). Charred pieces of the specimen began to fall at 3:21 (min:sec.). The floor of the apparatus ignited at 3:22 (min:sec.). The test continued for the 10:00 duration. After the test burners were turned off, a 60 second afterflame was observed.

After the test the specimen was observed to be damaged as follows:
The sample was consumed from 0-ft. - 24-ft.

APPENDIX

ASTM E84-05 Data Sheets

Client: DuChateau Floors

Date: 4-25-2007

Project Number: 3121341SAT-002

Test Number: 7

Operator: TA/EA

Specimen ID: "EGRPYR5 LUGANO, ENGINEERED 4 MM TOPLAYER OAK
(LUGANO)". THE SPECIMEN WAS SUPPORTED WITH RODS.

TEST RESULTS

FLAMESPREAD 150

SMOKE DEVELOPED INDEX: 110

SPECIMEN DATA . . .

Time to Ignition (sec): 34

Time to Max FS (sec): 161

Maximum FS (feet): 19.5

Time to 980 F (sec): 209

Time to End of Tunnel (sec): 161

Max Temperature (F): 1270

Time to Max Temperature (sec): 598

Total Fuel Burned (cubic feet): 48.94

FS*Time Area (ft*min): 162.5

Smoke Area (%A*min): 129.9

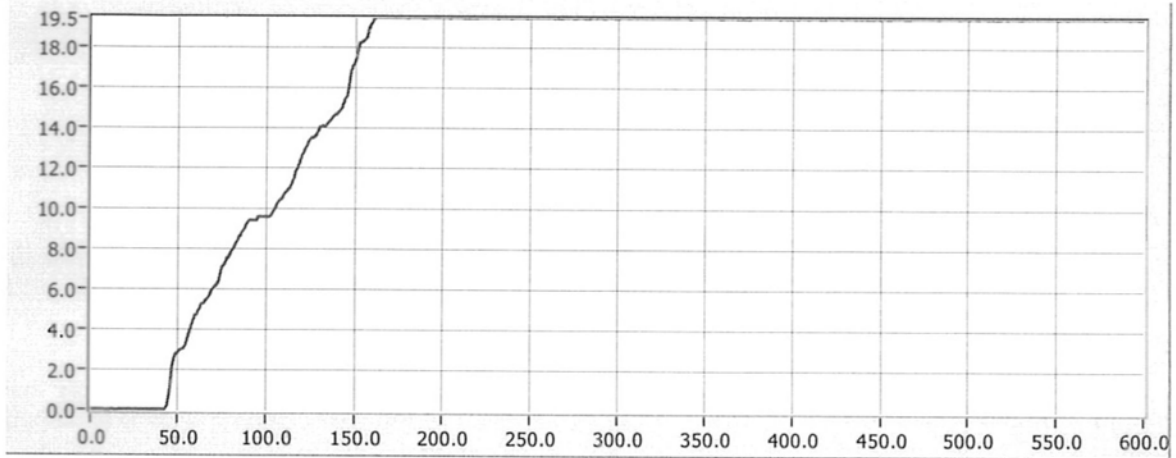
Unrounded FSI: 150.8

CALIBRATION DATA . . .

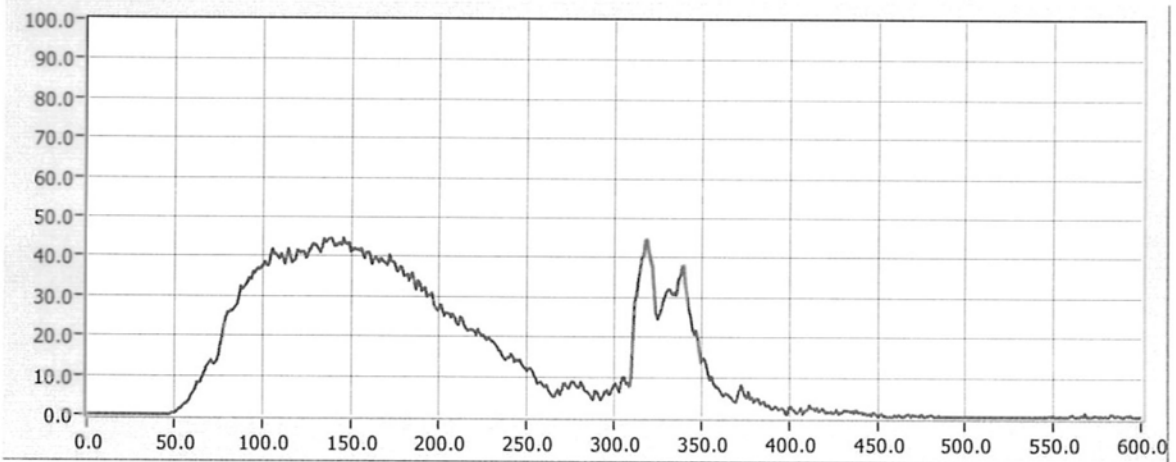
Time to Ignition of Last Red Oak (Sec): 40.0

Red Oak Smoke Area (%A*min): 119.0

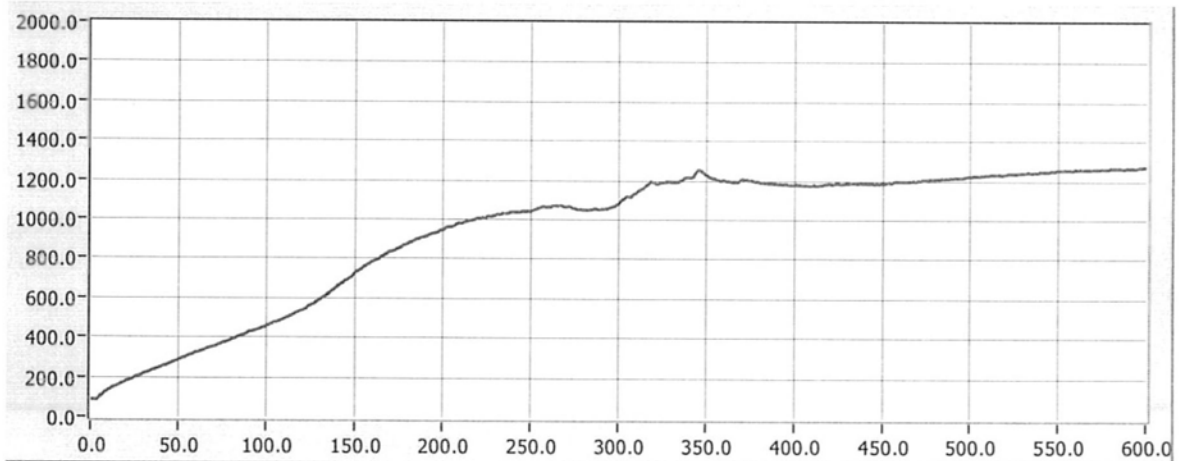
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600