



“The test report attached verifies the fire performance for Armstrong BioBased Tile[®]. The product tested is representative of, but may not be identical to the product you are purchasing. Changes in product formulation that occur for a variety of reasons may cause fluctuations in results. The above referenced data is representative of the current formulation of these products. Specifications and interpretation of fire test methods are subject to ongoing development. To assure that the information continues to be current, it is suggested that you request product certification for a specific project. The certification will reference the current applicable independent laboratory test reports.”



HARDWOOD PLYWOOD & VENEER ASSOCIATION
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Report On
Critical Radiant Flux
Of Floor Covering Systems
Using A Radiant Heat Energy Source

Determined By

ASTM E 648

Test Method

PREPARED FOR:

Armstrong World Industries, Inc
Innovation Center
Lancaster, PA

TEST NUMBER FRP-745

MATERIAL TESTED:

Lot #274 Armstrong Lot E199G
Armstrong Migrations T3509
Produced 7/19/07

DATE OF ISSUE 10/17/07

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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 a 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 exitways of buildings and is not intended for routine use in estimating flame spread behavior of floor covering in building areas other than corridors or exitways.

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.

V. PREPARATION AND CONDITIONING OF TEST SAMPLES

The test specimen is 42" long and 10" wide and is mounted in a stainless steel holder which exposes 100 cm. x 20 cm. The floor covering system specimen should simulate actual installation practices. Typical examples follow:

- a) A carpet mounted over the standard cushion or the standard simulated concrete floor.
- b) A carpet with or without integral cushion pad bonded to high density inorganic sheet simulating a concrete subfloor.
- c) A resilient floor bonded to a high density inorganic sheet simulating a concrete subfloor.
- d) A hardwood floor nailed to a plywood subfloor, then sanded and finished according to standard practice.

A minimum of three specimens per sample are tested after conditioning to standard laboratory conditions of $70^{\circ}\text{F} \pm 5^{\circ}\text{F}$ and $50\% \text{RH} \pm 5\%$.



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VI. MATERIAL TESTED

1 Manufacturer: Armstrong World Industries, Inc
Lancaster, PA

2) Nominal Dimensions N/A
(inches)

3 Average Thickness .395*
(inches)

4 Average Density 2.92*
(lbs/sq ft)

5) Product Description: Lot #274 Armstrong Lot E199G
Armstrong Migrations T3509; Produced 7/19/07

*The samples were adhered to 1/4" cement board using Armstrong S-515 adhesive applied by the manufacturer.

6) Color White

7) Surface Face side exposed

8) Sample Selection Manufacturer

9) Material Description by Manufacturer

10) Date of Selection 09/2007

11) Purpose of Test Critical Radiant Flux Determination

12) Method Of Mounting: Backed with 1/2" millboard

REMARKS:



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DATE OF TEST 10/08/07

MATERIAL TESTED

Lot #274 Armstrong Lot E199G
Armstrong Migrations T3509
Produced 7/19/07

VII OPERATING DATA

Burn Number	1	2	3
1 Days in Conditioning	6	6	6
2) Date Flux Profile Run	10/02/07	10/02/07	10/02/07
3 Specimen Preheat Time (min)	5:00	5:00	5:00
4 Initial Chamber Temperatures (degrees C)	135	134	135
5 Room Temperature (degrees F)	74	74	74
6) Total Burn Length (cm)	5.6	4.9	6.2
7 Time to Maximum Burn Length (minutes)	5:53	5:45	5:50

VIII. TEST RESULTS

Burn Number	1	2	3
1 Critical Radiant Flux	1.00+	1.00+	1.00+
2) Average Critical Radiant Flux	1.00+		
3) Standard Deviation	N/A+		
4) Coefficient of Variation (%)	N/A+		

REMARKS: 1 Ignited at 5:15 2) Ignited at 5:20 3) Ignited at 5:20

REPORT PREPARED BY:

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REPORT REVIEWED BY:

BRIAN SAUSE
DIRECTOR - TESTING, CERTIFICATION
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