

KLAASWOOD FIRE TEST REPORT

SCOPE OF WORK

ASTM E84 TESTING ON RED OAK SIDING

REPORT NUMBER

105714053SAT-007

TEST DATE

March 27, 2024

ISSUE DATE

April 23, 2024

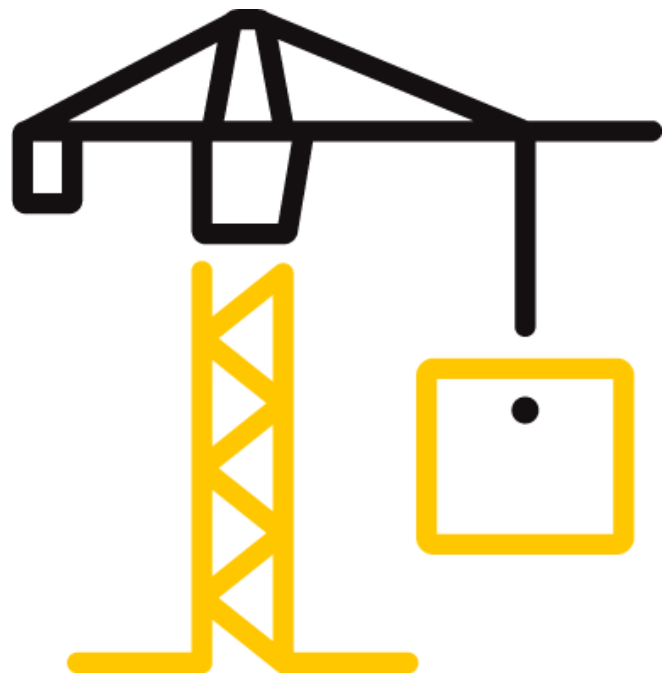
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DOCUMENT CONTROL NUMBER

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TEST REPORT FOR KLAASWOOD

Report No.: 105714053SAT-007

Date: April 23, 2024

REPORT ISSUED TO

KlaasWood
135 Hutton Ranch Rd
Kalispell, MT 59901
USA

SECTION 1



SCOPE

Intertek Building & Construction (B&C) was contracted by KlaasWood, 135 Hutton Ranch Rd, Kalispell, MT 59901, USA, to evaluate the flame spread and smoke developed properties of "Red Oak Siding". Testing was conducted at the Intertek B&C test facility in Elmendorf, Texas. Results obtained are tested values and were secured by using the designated test method(s). A summary of test results and the complete graphical test data is reported herein.

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For INTERTEK B&C:

COMPLETED BY:	Bryan Lopez	REVIEWED BY:	Servando Romo
TITLE:	Technician II	TITLE:	Project Engineer
SIGNATURE:		SIGNATURE:	
DATE:	April 23, 2024	DATE:	April 26, 2024

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SECTION 2

SUMMARY OF TEST RESULTS

Specimen I.D.: Red Oak Siding

ASTM E84 Test Results

FLAME SPREAD INDEX	SMOKE DEVELOPED INDEX
85	135

*See Section 8 for additional information and commentary

SECTION 3

TEST METHOD

The specimen was evaluated in accordance with the following:

ASTM E84-23, *Standard Test Method for Surface Burning Characteristics of Building Materials*

There were no deviations from the requirements prescribed in ASTM E84-23.

SECTION 4

MATERIAL SOURCE/INSTALLATION

The test specimen was submitted to Intertek directly from the client. Samples were not independently selected for testing. Intertek has not verified the composition, manufacturing techniques or quality assurance procedures. The specimen, identified as "Red Oak Siding", was received in good order at the Evaluation Center on March 7, 2024 and given identification number SAT2403071149-002.

SECTION 5

LIST OF OBSERVERS

NAME	COMPANY
Bryan Lopez	Intertek B&C

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SECTION 6

TEST PROCEDURE

This report describes the results of testing conducted in accordance with ASTM E84-23, Standard Test Method for Surface Burning Characteristics of Building Materials. The test method is for comparative surface burning behavior of building materials by determining a flame spread index (FSI) and a smoke developed index (SDI). This test is generally applicable to exposed surfaces, such as finish materials for 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 use of supporting materials on the underside of the test specimen has the ability to lower the flame spread index from those which might be obtained if the specimen could be tested without such support. These test results do not necessarily relate to indices obtained by testing materials without such support. 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.” – ASTM E84-23 Sections 1.4 – 1.5

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

It is the expressed intent of the test method to provide only comparative measurements of surface flame spread and smoke density of the tested material against measurements for select grade red oak flooring and fiber-cement board when tested under specific fire exposure conditions. The test method exposes a nominal 24-ft (7.32-m) long by 20-in. (508-mm) wide test specimen to a controlled air flow and flaming fire exposure adjusted to produce a specific flame spread distance vs. time calibration using select grade red oak flooring.

The test method does not provide information regarding heat transmission through the tested surface, the effect of aggravated flame spread behaviour resulting from the proximity of combustible walls and ceilings, or the classification or definition of materials as non-combustible using flame spread index alone.

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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TEST SPECIMEN DESCRIPTION

SPECIMEN I.D.*	Red Oak Siding
SPECIMEN DESCRIPTION*	Red Oak Siding
CONDITIONING TIME	20 days
SPECIMEN LENGTH	24 ft. (3, 8-ft. long sections)
SPECIMEN WIDTH	20 in. (4, 5-in. wide boards)
THICKNESS	0.76 in.
TOTAL WEIGHT	112 lbs.
SIDE TO FLAME	Finished side to flame
SUPPORT USED	The sample consisted of 4 boards secured together with metal battens screwed to the back
MOUNTING METHOD	Standard
CEMENT BOARD	0.25-in. thick fiber cement board was placed on top of the sample

*From the client's material description and/or instructions

Note: Specimens were conditioned as per the requirements of Section 6.4 of ASTM E84-23.

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SECTION 8

TEST RESULTS

TEST RESULTS	
Test Date	March 27, 2024
Test Operator	Bryan Lopez
Flame Spread Index (FSI)	85
Smoke Developed Index (SDI)	135

TEST DATA	
FSI (unrounded)	85.8
SDI (unrounded)	133.2
FS * Time Area (Ft * Min)	137.9
Smoke Area (% * Min)	109.1
Total Fuel Burned (Cubic Ft.)	44.79
Max Flame Front Advance (Ft.)	19.5
Time to Max Flame Front (sec)	348
Max Temp At Exposed T/C (°F)	1192
Time To Max Temp (sec)	599

TEST OBSERVATIONS	
Steady Ignition	0:32 Minutes: Seconds
After Flame	0:60+ Minutes: Seconds
Observations After the Test:	
0 – 9 ft.	Heavily Charred/Cracked
9 – 24 ft.	Charred

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SECTION 8 (Continued)

TEST RESULTS

COMMENTARY ON CLASSIFICATION

Neither ASTM E84 nor UL 723 include classification criteria for the results obtained from testing. The International Building Code® (IBC), NFPA 101: Life Safety Code® (NFPA 101), and NFPA 5000: Building Construction and Safety Code® (NFPA 5000) all describe a set of classification criteria required for interior wall and ceiling finish materials based on Flame Spread Index and Smoke Developed Index when tested in accordance with ASTM E84 or UL 723. The classification criteria for all three model codes is the same:

Class	Flame Spread Index	Smoke Developed Index
A	0-25	0-450
B	26-75	0-450
C	76-200	0-450

Note that classification under this scheme for interior wall and ceiling finishes does not strictly apply to all products or materials tested in accordance with ASTM E84 or UL 723 because not all products or materials are recommended or suitable for use as interior wall or ceiling finish materials in buildings, regardless of the surface burning characteristics. Consult with the product manufacturer and the local authority having jurisdiction (AHJ) regarding specific applications of a given product or material.

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SECTION 9 PHOTOGRAPHS



Photo No. 1
Exposed Surface of the Test Specimen (Pre-test)



Photo No. 2
Unexposed Surface of the Test Specimen (Pre-test)

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SECTION 9 (Continued) PHOTOGRAPHS



Photo No. 3
Unexposed Surface of the Test Specimen (Post-test)



Photo No. 4
Exposed Surface of the Test Specimen (Post-test)

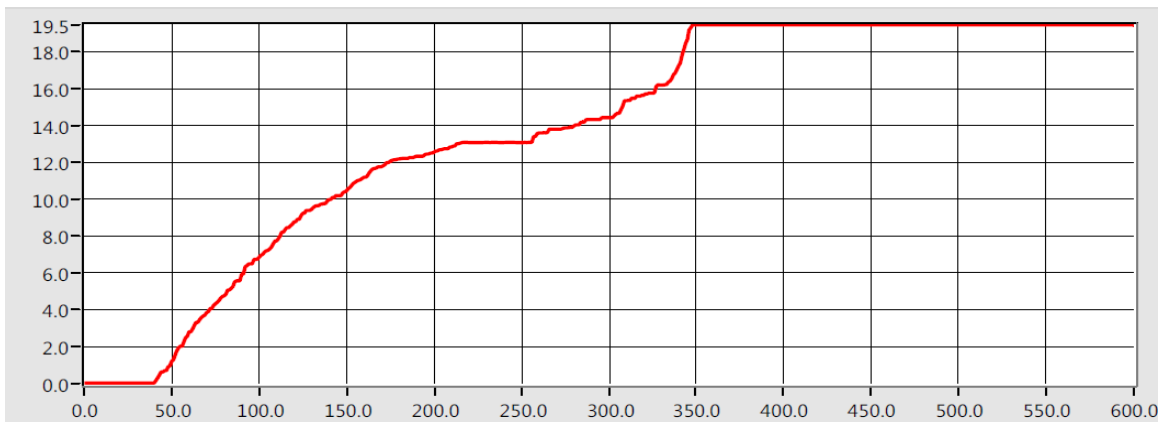
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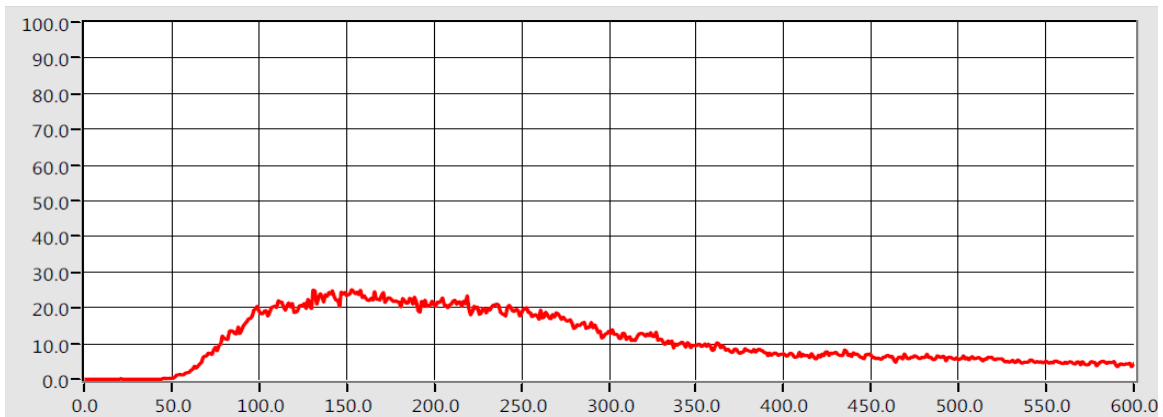
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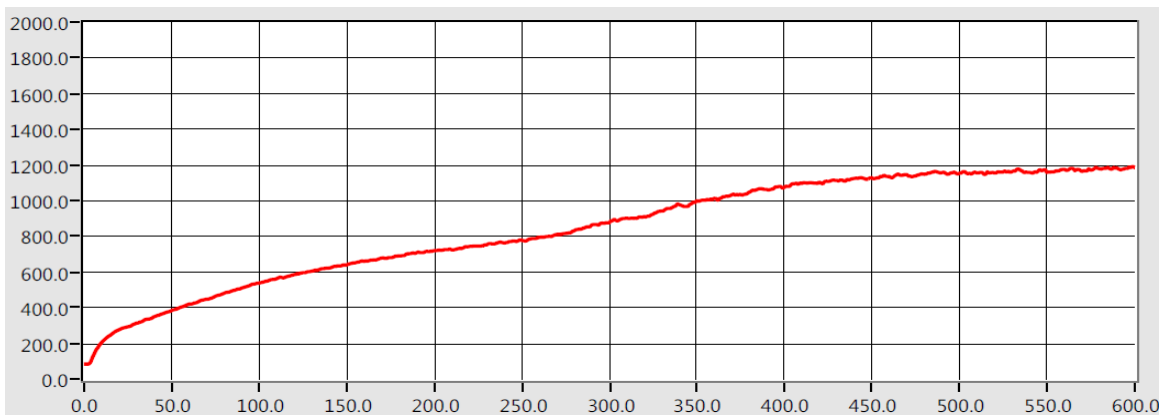
GRAPHS



Graph No. 1 - Flame Spread Distance (ft) Versus Time (sec)



Graph No. 2 - Light Obscuration (%) Versus Time (sec)



Graph No. 3 - Tunnel Air Temperature (F) Versus Time (sec)



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16015 Shady Falls
Elmendorf, Texas 78112

Telephone: 210-635-8100
Facsimile: 210-635-8101
www.intertek.com/building

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REVISION LOG

REVISION #	DATE	PAGES	REVISION
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