The Wallquest Inc. DECLARATION OF CONFORMITY (DoC) issued in accordance with Wallcovering Association (USA) & complaint per EU and UK Fire Hazard classification

Wallquest Inc. located in Wayne, Pennsylvania, USA, certifies that the wallcovering products named within are manufactured at its facilities in King of Prussia, Pennsylvania, USA. This item is produced using the highest quality materials and adhering to strict standards of quality control and can be used in Hospitals and Hotels.

Questex 20 oz Vinyl Wallcovering with non-woven backed

The above item also meets the following performance and fire hazards classifications.

Performance Specifications

Total Weight: 619 grams per linear meter/20 oz. per linear yard

Width: 1.32m- 1.37m /52" -54"

Fabric: Non-woven

Tensile strength: meets ASTMD 4034

Tear Strength: meets ASTMD 2261

Seam Slippage: meets ASTM D4034

VOC: meets CA 01350

Mildew Resistance (anti-microbial)

This product exceeds G.S.A. Federal Specification CCC-W-408D for Type II materials using test procedures detailed in Federal Specifications CCC-T-191-B. Vinyl wallcoverings contain bactericides and mildew inhibitors to discourage the growth of mold and mildew under normal conditions.

Fire Hazard Classification Reports:

FIRE RATINGS: ASTM E84

FIRE RATINGS: BS EN 13501-1

FIRE RATINGS: BS EN 13823:2010+A1:2014

VOC Test Reports:
Standard Method Version 1.2 for CDPH 01350

WA standard Testing: CCC-W-408D Test Report
PASS TYPE II wallcovering Tests: Colorfastness to Light, Washability, Abrasion resistance, Scrubbability, Crocking, Coating Adhesion, and Tear resistance.

LEED Credit Contribution

20 Oz Commercial Vinyl Wallcovering, NW backed

20Oz Commercial Vinyl Wallcovering, Osnaburg backed

Wallquest Inc. 1976 Wayne, Pennsylvania USA

Type text here

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WALLQUEST, INC.
FIRE TEST REPORT

SCOPE OF WORK
ASTM E84 TESTING ON TYPE II 20oz. VINYL WALLCOVERING WITH NONWOVEN BACKING

REPORT NUMBER
105373748SAT-001A

TEST DATE
March 23, 2023

ISSUE DATE
March 29, 2023

PAGES
11

DOCUMENT CONTROL NUMBER
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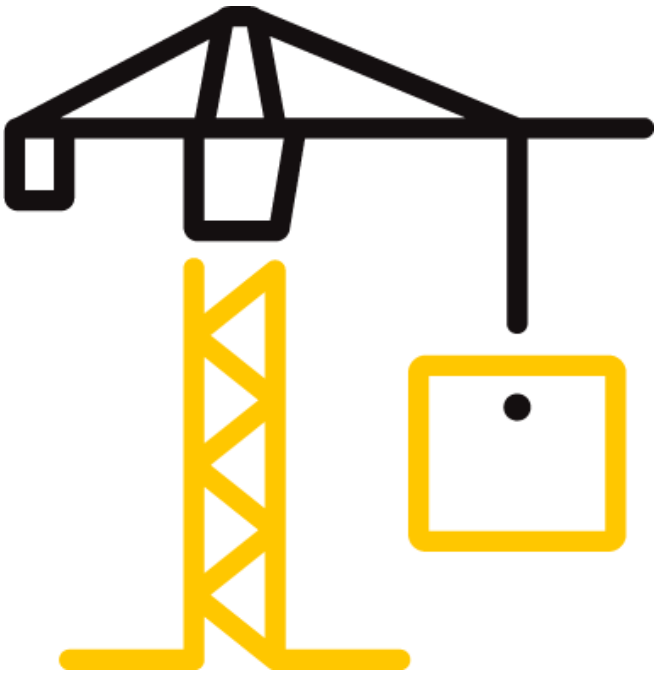

16015 Shady Falls
Elmendorf, Texas 78112

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

TEST REPORT FOR [redacted].
Report No.: 105373748SAT-001A
Date: March 29, 2023

REPORT ISSUED TO

[redacted]
USA

SECTION 1
SCOPE

Intertek Building & Construction (B&C) was contracted by [redacted] USA, to evaluate the flame spread and smoke developed properties of "**Type II 20oz. Vinyl Wallcovering with Nonwoven Backing**". 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.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

This report does not constitute performance certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Bryan Lopez	**REVIEWED BY:**	Servando Romo
TITLE:	Technician II	**TITLE:**	Project Engineer
SIGNATURE:		**SIGNATURE:**	
DATE:	March 29, 2023	**DATE:**	March 30, 2023

16015 Shady Falls
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TEST REPORT FOR [redacted]C.
Report No.: 105373748SAT-001A
Date: March 29, 2023

SECTION 2
SUMMARY OF TEST RESULTS

Specimen I.D.: Type II 20oz. Vinyl Wallcovering with Nonwoven Backing

ASTM E84 Test Results

FLAME SPREAD INDEX	SMOKE DEVELOPED INDEX
5	30

*See Section 8 for additional information and commentary

SECTION 3
TEST METHOD

The specimen was evaluated in accordance with the following:
ASTM E84-22a, *Standard Test Method for Surface Burning Characteristics of Building Materials*

There were no deviations from the requirements prescribed in ASTM E84-22a.

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 **"Type II 20oz. Vinyl Wallcovering with Nonwoven Backing"**, was received in good order at the Evaluation Center on March 8, 2023 and given identification number SAT2303081124-001.

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 E84-22a, 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 E84-22a 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 REPORT FOR [redacted].
Report No.: 105373748SAT-001A
Date: March 29, 2023

SECTION 7
TEST SPECIMEN DESCRIPTION

SPECIMEN I.D.*	Type II 20oz. Vinyl Wallcovering with Nonwoven Backing
CONDITIONING TIME	6 days
SPECIMEN LENGTH	24 ft. (3, 8 ft. long sections)
SPECIMEN WIDTH	24 in.
THICKNESS	0.02 in.
TOTAL WEIGHT	100 lbs. (sample + substrate)
SIDE TO FLAME	Wallcovering side to flame
SUPPORT USED*	The sample was adhered to substrate
SUBSTRATE USED*	1/4 in. thick fiber cement board
ADHESIVE USED*	Roman Pro 838
COVERAGE RATE	280 ft^2/gal
MOUNTING METHOD	Standard
CEMENT BOARD	1/4 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 E84-22a.

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TEST REPORT FOR [redacted]
Report No.: 105373748SAT-001A
Date: March 29, 2023

SECTION 8
TEST RESULTS

TEST RESULTS	
Test Date	March 23, 2023
Test Operator	Bryan Lopez
Flame Spread Index (FSI)	5
Smoke Developed Index (SDI)	30

TEST DATA	
FSI (unrounded)	4.2
SDI (unrounded)	27.8
FS * Time Area (Ft * Min)	8.2
Smoke Area (% * Min)	21.2
Total Fuel Burned (Cubic Ft.)	45.37
Max Flame Front Advance (Ft.)	1.5
Time to Max Flame Front (sec)	286
Max Temp At Exposed T/C (°F)	549
Time To Max Temp (sec)	583

TEST OBSERVATIONS	
Ignition Time	0:08 Minutes: Seconds
Transient Ignition	4:12 Minutes: Seconds
Observations After the Test:	
0 – 3 ft.	Consumed
3 – 8 ft.	Partially Consumed/Charred
8 – 16 ft.	Blistered/Charred
16 – 24 ft.	Blistered/Discolored

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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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TEST REPORT FOR [redacted]
Report No.: 105373748SAT-001A
Date: March 29, 2023

SECTION 11
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	March 29, 2023	N/A	Original Report Issue

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Testing. Advising. Assuring.

Title:

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN ACCORDANCE WITH EN 13501-1:2007+A1: 2009.

Notified Body No:

0833

Product Name:

"[redacted] 20oz Non-woven Commercial Vinyl"

Report No:

WF 401158

Issue No:

1

Prepared for:

[redacted]
[redacted]
[redacted]
United States of America

Date:

20th June 2018

UKAS TESTING
0249

1. Introduction

This classification report defines the classification assigned to "[redacted] 20oz Non-woven Commercial Vinyl", a vinyl wallcovering, in line with the procedures given in EN 13501-1:2007+A1: 2009.

2. Details of classified product

2.1 General

The product, "[redacted] 20oz Non-woven Commercial Vinyl", is defined as being suitable for construction applications, excluding flooring and linear pipe thermal insulation.

2.2 Product description

The product, "[redacted] 20oz Non-woven Commercial Vinyl", is fully described below and in the test reports provided in support of classification listed in Clause 3.1.

General description			Vinyl wallcovering bonded to one face of an 8mm thick fibre cement board substrate
Thickness of composite			8.4mm (determined by **Exova Warringtonfire**)
Weight per unit area of composite			15.7kg/m^2 (determined by **Exova Warringtonfire**)
Wallcovering	Product reference		"Questex 20 oz Non-woven Commercial Vinyl"
	Name of manufacturer		Wallquest Inc
	Thickness		0.43mm (17 mils, stated by sponsor) 0.39mm (determined by **Exova Warringtonfire**)
	Weight per unit area		450g/m^2 (20oz, stated by sponsor) 436g/m^2 (determined by **Exova Warringtonfire**)
	Vinyl	Product reference	"Vinyl Film For Wallcovering"
		Generic type	Vinyl film
		Name of manufacturer	**See Note 1 below**
		Thickness	0.254mm (10 mils)
		Weight per unit area	390g/m^2 (17.3oz/yd^2)
		Flame retardant details	**See Note 2 below**
	Backing	Product reference	"Non-woven"
		Generic type	Non-woven
		Detailed description / composition details	58% cellulose, 19% pes fibre, 22% binder, 1% wet strength agents
		Name of manufacturer	**See Note 1 below**
		Thickness	0.178mm (7 mils)
		Weight per unit area	60g/m^2 (2.7oz/yd^2).
		Flame retardant details	**See Note 2 below**

Continued on next page

Adhesive	Product reference	"DreamGRIP -F10"
	Generic type	Heavy duty, ready mixed adhesive with starch and polymer base
	Name of manufacturer	Dream Scape
	Application rate	100g/m^2
	Application method	Brush
	Flame retardant details	Exova Warringtonfire were unable to provide this information
Substrate	Product reference	"NT D4 604"
	Generic type	Fibre cement board
	Name of manufacturer	Scheerders van de Kerkhove (SVK)
	Thickness	8mm
	Density	1800kg/m^3
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		**See Note 1 below**

Note 1. The sponsor of the test was unwilling to provide this information.

Note 2. The sponsor has confirmed that no flame retardant additives were utilised in the production of the component.

3. Test reports & test results in support of classification

3.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/ extended application report Nos.	Test method / extended application rules & date
Exova warringtonfire	[redacted]	WF 399254	EN ISO 11925-2
Exova warringtonfire	[redacted]	WF 399253	EN 13823

3.2 Test results

Test method & test number	Parameter	No. tests	Results	
			Continuous parameter - mean (m)	Compliance parameters
EN ISO 11925-2 (30s exposure - surface)	F_s	6	35	Compliant
	Flaming droplets/ particles		None	Compliant
EN ISO 11925-2 (30s exposure – edge)	F_s	6	19.2	Compliant
	Flaming droplets/ particles		None	Compliant
EN 13823	FIGRA $_{0.2MJ}$	3	8.37	Compliant
	FIGRA $_{0.4MJ}$		8.37	Compliant
	THR $_{600s}$		1.45	Compliant
	LFS		None	Compliant
	SMOGRA		3.05	Compliant
	TSP_{600s}		49.79	Compliant

4. Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with clause 8 of EN 13501-1:2007+A1: 2009 and EN 15102.

4.2 Classification

The product, "[redacted] 20oz Non-woven Commercial Vinyl", a vinyl wallcovering, in relation to its reaction to fire behaviour is classified:

B

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

The format of the reaction to fire classification for construction applications, excluding flooring and linear pipe thermal insulation is:

Fire Behaviour		Smoke Production			Flaming Droplets	
B	-	s	1	,	d	0

i.e. B – s1 , d0

Reaction to fire classification: B – s1, d0

4.3 Field of application

This classification is valid for the following end use applications:

i) Construction applications used over any substrate with a density equal to or greater than 1800kg/m^3, having a minimum thickness of 8mm and a fire performance of A2-s1, d0 or better.

ii) Product installed utilising "DreamGRIP -F10", a starch / polymer based wall covering adhesive, at an application rate of 100g/m^2.

This classification is also valid for the following product parameters:

Product thickness	No variation allowed
Product weight per unit area	No variation allowed
Product colour/pattern	Any variation allowed
Product composition	No variation allowed
Product construction	No variation allowed

5. Limitations

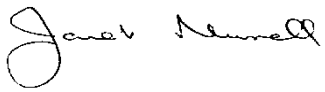
This document does not represent type approval or certification of the product.

SIGNED

……

Matthew Dale
Senior Certification Engineer
Technical Department

APPROVED



……

Janet Murrell
Technical Manager
Technical Department
on behalf of **Exova warringtonfire**

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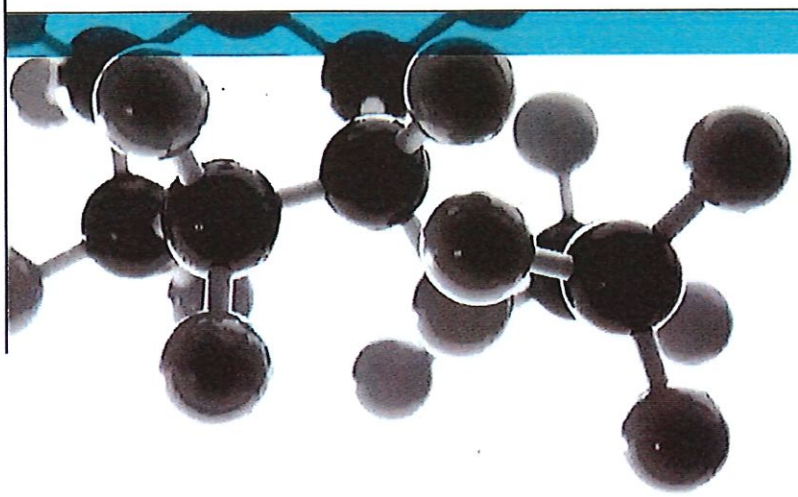
BS EN 13823:2010+A1:2014



Reaction to Fire Tests for Building Products - Building Products Excluding Floorings Exposed to the Thermal Attack by a Single Burning Item

A Report To [redacted]c.

Document Reference: 399253

Date: 12th June 2018

Issue No.: 1

Testing
Advising
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UKAS TESTING
0249

Executive Summary

Objective To determine the fire performance of the following product when tested in accordance with BS EN 13823:2010+A1:2014.

Generic Description	Product reference	Thickness	Weight per unit area or density
Vinyl wallcovering bonded to one face of an 8mm thick fibre cement board substrate	[redacted] 20 oz Non-woven Commercial Vinyl"	8.4mm *	15.7kg/m^2 *
Individual components used to manufacture composite:			
Wallcovering	[redacted] 20 oz Non-woven Commercial Vinyl"	0.43mm (17 mils)	450g/m^2 (20oz)
Adhesive	"DreamGRIP -F10"	Not stated	100g/m^2
Fibre cement board	"NT D4 604"	8mm	1800kg/m^3
Please see pages 5 & 6 of this test report for the full description of the product tested			

Test Sponsor Wallquest Inc., 465 Devon Park Drive, Wayne, PA 19087, United States of America

Test Results (average) :

FIGRA (w/s)		THR 600s (MJ)	SMOGRA (m²/s²)	TSP 600s (m²)
(0.2MJ)	(0.4MJ)	1.45	Recalculated	Recalculated
8.37	**8.37**		**3.05**	**49.79**

Lateral Flame Spread to End of Specimen? **None**
Fall of Flaming Drop/Particle? **None**
Flaming of Fallen Particle Exceeding 10s? **None**

Date of Test: 25th May 2018

Signatories

K Hughes

Responsible Officer
K. Hughes *
Technical Officer

S M Deeming

Authorised
S. Deeming*
Business Unit Head

* For and on behalf of **Exova Warringtonfire.**

Report Issued: 12th June 2018

Test Details

Purpose of test	To provide data which, in conjunction with data from other test methods, will enable building products excluding floorings, to be classified in accordance with the Classification requirements specified in BS EN 13501-1:2007+A1:2009. The test was performed in accordance with the procedure specified in BS EN 13823:2010+A1:2014 and this report should be read in conjunction with that standard.
Scope of test	To determine the reaction-to-fire performance of construction products, excluding floorings and excluding products which are indicated in the EC Decision 2000/147/EC, when exposed to thermal attack by a single burning item (SBI) utilising the test procedures defined in BS EN 13823:2010+A1:2014.
Fire test study group/EGOLF	Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.
Instruction to test	The test was conducted on the 25th May 2018 at the request of [redacted], the sponsor of the test.
Provision of test specimens	The specimens were supplied by the sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure. **Exova Warringtonfire** supplied the substrate, and adhesive and bonded the composite together.
Conditioning of specimens	The specimens were received on the 27th April 2018 and were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5% prior to testing.
Intended application	Wall lining
Test facility	The Single Burning Item (SBI) test facility at **Exova Warringtonfire** is constructed in accordance with the specifications detailed in BS EN 13823: 2010+A1:2014.
Deviations from the test standard	None
Exposed face	The decorative face of the specimens was exposed to the heating conditions of the test when the specimens were mounted in the test position.

Description of Test Specimens

Test specimens

The description of the system given below has been prepared from information provided by the sponsor of the test. This information has not been independently verified by **Exova Warringtonfire.**
All values quoted are nominal, unless tolerances are given.

The test specimen comprised two walls (or wings) mounted into an aperture in a specimen trolley such that they formed a vertical 90° corner. The dimensions of the walls were as follows:

Short wall - 495 ± 5 mm long x 1500 ± 5 mm high
Long wall - 1000 ± 5 mm long x 1500 ± 5 mm high

Each wall (or wing) consisted of the following product:

General description			Vinyl wallcovering bonded to one face of an 8mm thick fibre cement board substrate
Thickness of composite			8.4mm (determined by **Exova Warringtonfire**)
Weight per unit area of composite			15.7kg/m^2 (determined by **Exova Warringtonfire**)
Wallcovering	Product reference		[redacted]"Questex 20 oz Non-woven Commercial Vinyl"
	Name of manufacturer		[redacted]nc
	Thickness		0.43mm (17 mils, stated by sponsor) 0.39mm (determined by **Exova Warringtonfire**)
	Weight per unit area		450g/m^2 (20oz, stated by sponsor) 436g/m^2 (determined by **Exova Warringtonfire**)
	Vinyl	Product reference	"Vinyl Film For Wallcovering"
		Generic type	Vinyl film
		Name of manufacturer	**See Note 1 below**
		Thickness	0.254mm (10 mils)
		Weight per unit area	390g/m^2 (17.3oz/yd^2)
		Flame retardant details	**See Note 2 below**
	Backing	Product reference	"Non-woven"
		Generic type	Non-woven
		Detailed description / composition details	58% cellulose, 19% pes fibre, 22% binder, 1% wet strength agents
		Name of manufacturer	**See Note 1 below**
		Thickness	0.178mm (7 mils)
		Weight per unit area	60g/m^2 (2.7oz/yd^2).
		Flame retardant details	**See Note 2 below**
	Adhesive	Product reference	"DreamGRIP -F10"
		Generic type	Heavy duty, ready mixed adhesive with starch and polymer base
		Name of manufacturer	Dream Scape
		Application rate	100g/m^2
		Application method	Brush
		Flame retardant details	Exova Warringtonfire were unable to provide this information

Continued on next page

Substrate	Product reference	"NT D4 604"
	Generic type	Fibre cement board
	Name of manufacturer	Scheerders van de Kerkhove (SVK)
	Thickness	8mm
	Density	1800kg/m³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		**See Note 1 below**

Note 1. The sponsor of the test was unwilling to provide this information.

Note 2. The sponsor has confirmed that no flame retardant additives were utilised in the production of the component.

The specimen walls (or wings) were placed in the trolley in accordance with the requirements of section 5.3 of the Standard.

Photographs of the installed product are appended as Plates 1 and 2 in Appendix 1 of this report.

Each wing was retained in the trolley using mechanical clamps which pushed the wing against a lip at the top and bottom of the aperture in the trolley.

The trolley incorporated a triangular propane sand burner of side length 250mm, which was positioned in the base of the corner formed by the two wings of the test specimen, with a horizontal separation of 40mm between the edge of the burner and the lower edges of the wings. The burner is referred to as the primary burner and has an output of 30kW. A secondary propane sand burner was attached to the fixed frame, beneath the hood but at the furthest possible distance from the specimen when the trolley was in place. The purpose of this burner is to obtain base line data without affecting the assembled specimen. The trolley incorporated a grill in its base and this was the sole source of ventilation for the test enclosure whilst the test was in progress.

Test Results

Results and observations

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

A total of three specimens were tested. The results obtained, relevant to the 'Euroclassification' of Building Products are given in Table 1.

Observations made during the test and comments on any difficulties encountered during the test are given in Table 2.

Table 1

Parameter	Result			
	Specimen 1	Specimen 2	Specimen 3	Mean
FIGRA (W/s) *(THR(t) threshold of 0.2MJ)*	10.36	6.71	8.03	8.37
FIGRA (W/S) *(THR(t) threshold of 0.4MJ)*	10.36	6.71	8.03	8.37
THR 600s (MJ)	1.82	1.17	1.35	1.45
SMOGRA (m^2/s^2) (Recalculated results)	3.59	1.98	3.57	3.05
TSP 600s (m^2) (Recalculated results)	49.09	50.22	50.05	49.79
Lateral Flame Spread to End of Specimen?	None	None	None	-
Fall of Flaming Drop/Particle?	None	None	None	-
Flaming of Fallen Particle Exceeding 10s?	None	None	None	-

Curves of time averaged rate of heat release contribution of the specimen (HRRav(t)), cumulative heat release (THR(t)), and Fire Growth Rate (FIGRA) are appended as Figures 1 to 3. Curves of time averaged rate of smoke production (SPRav(t)), cumulative smoke production (TSP(t)) and smoke growth rate (SMOGRA) are appended as Figures 4 to 6 in appendix 2 of this report.

Interpretation of the test results given above in the context of Euroclassification of building products should be carried out using BS EN 13501–1:2007+A1:2009.

Table 2

Time		Observations during test of Specimen 1
min	Sec	
00	00	Pre-checks performed on analysers
02	00	Auxiliary burner switched on to check correct burner operating conditions
05	00	Gas flow switched from auxiliary burner to main burner & test flames impinge on specimen
05	12	Discolouration of the surface of the product occurred.
05	45	Flaming was observed in the region of the burner
26	00	End of test conditions. All flaming ceased.

Time		Observations during test of Specimen 2
min	Sec	
00	00	Pre-checks performed on analysers
02	00	Auxiliary burner switched on to check correct burner operating conditions
05	00	Gas flow switched from auxiliary burner to main burner & test flames impinge on specimen
05	12	Discolouration of the surface of the product occurred.
05	45	Flaming was observed in the region of the burner
26	00	End of test conditions. All flaming ceased.

Time		Observations during test of Specimen 3
min	Sec	
00	00	Pre-checks performed on analysers
02	00	Auxiliary burner switched on to check correct burner operating conditions
05	00	Gas flow switched from auxiliary burner to main burner & test flames impinge on specimen
05	12	Discolouration of the surface of the product occurred.
05	51	Flaming was observed in the region of the burner
26	00	End of test conditions. All flaming ceased.

Note: Impingement of the burner flame onto all three specimens commenced at 5 minutes.

Validity

The specification and interpretation of fire test methods is the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

Appendix 1

Photographs

Plate 1: Total View of the exposed surface of the long wing.

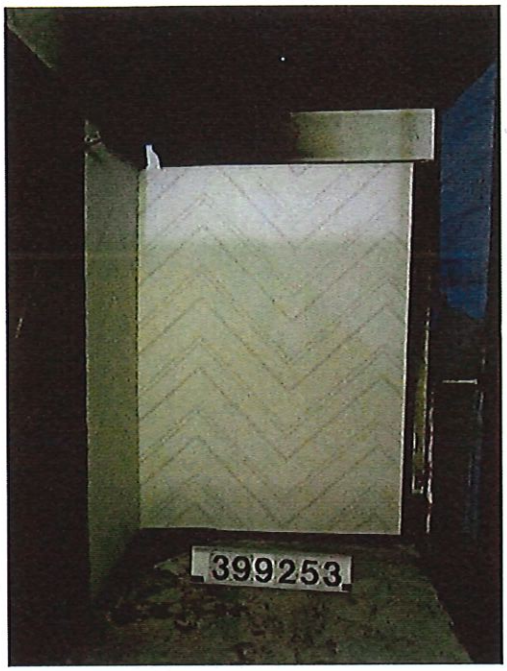
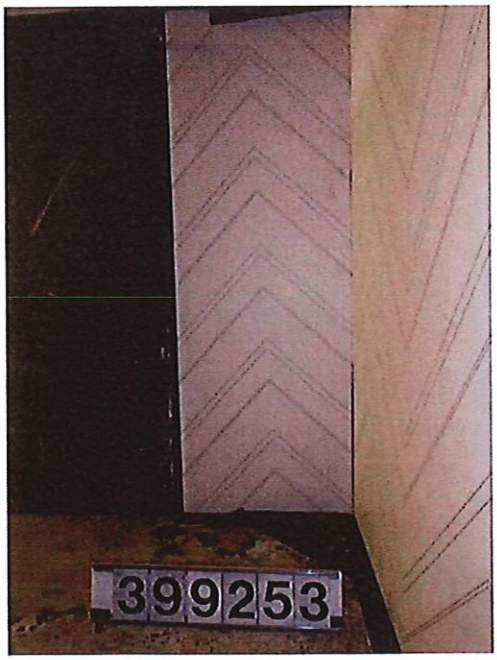


Plate 2: Close up view of the vertical outer edge of the long wing at a height of 500mm



Appendix 2

Graphs

Figure 1. $HRR_{av}(t)$ (kW)

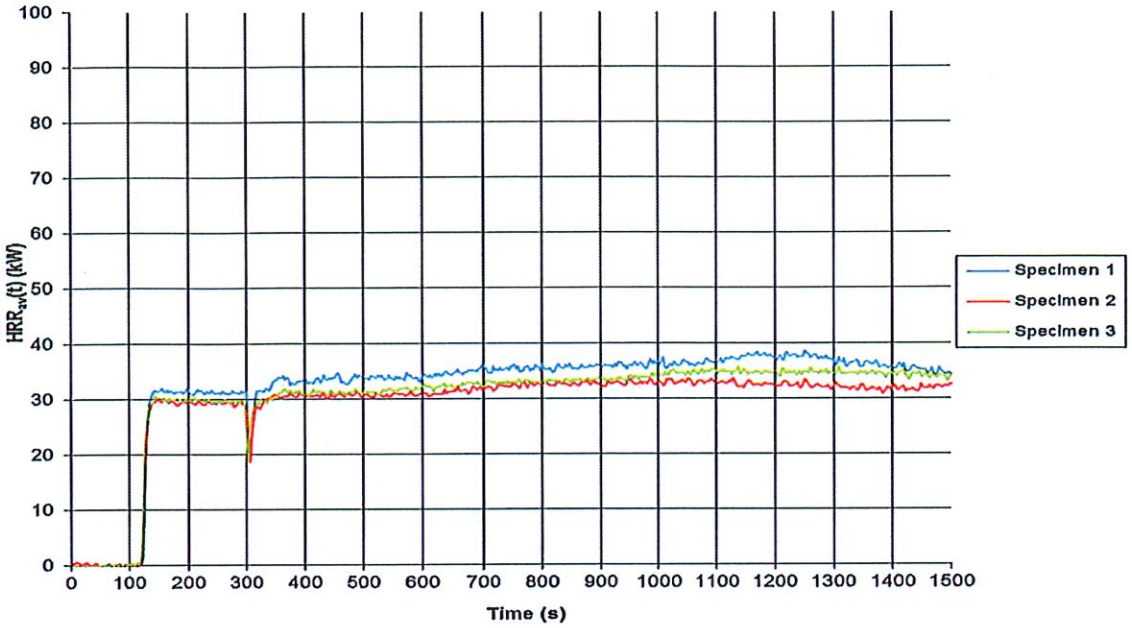


Figure 2. THR(t) (MJ)

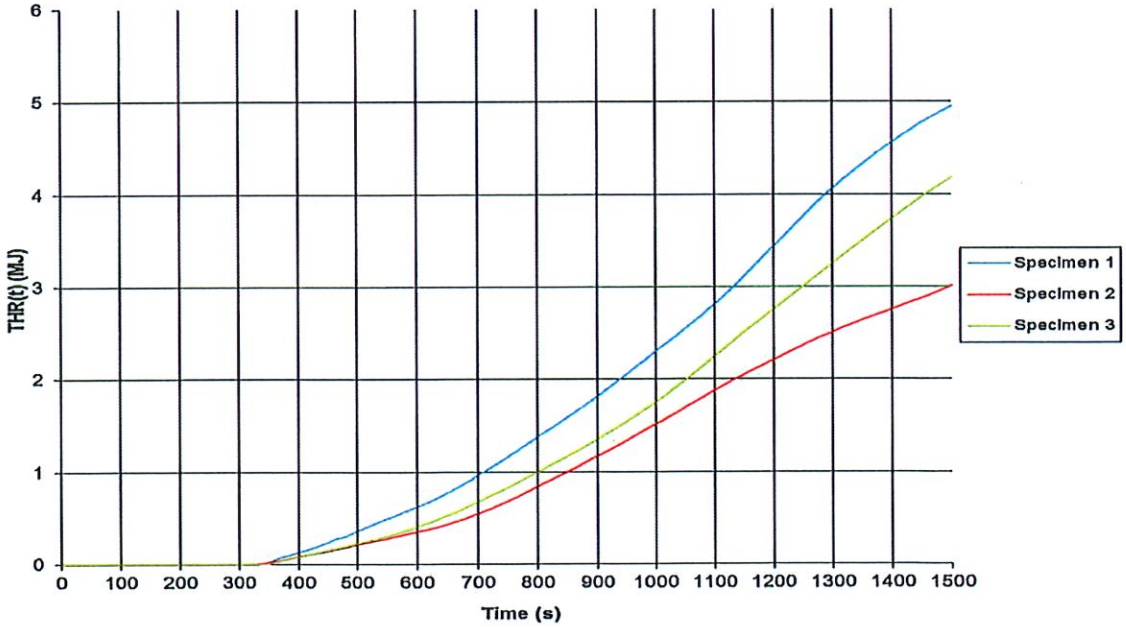


Figure 3. FIGRA

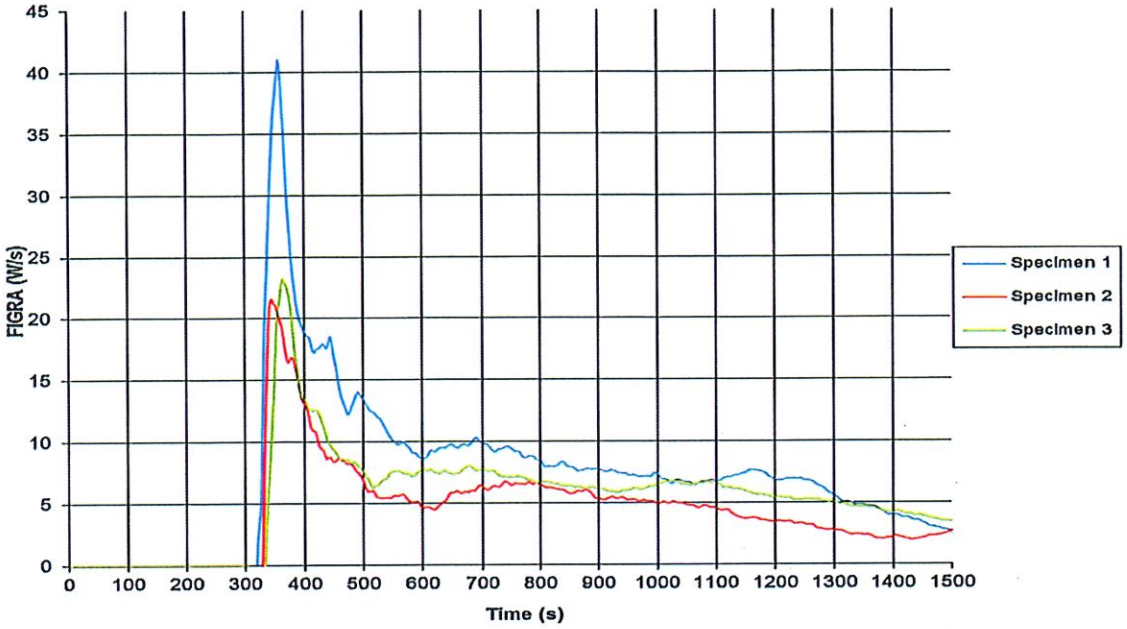


Figure 4. $SPR_{av}(t)$ (m^2/s)

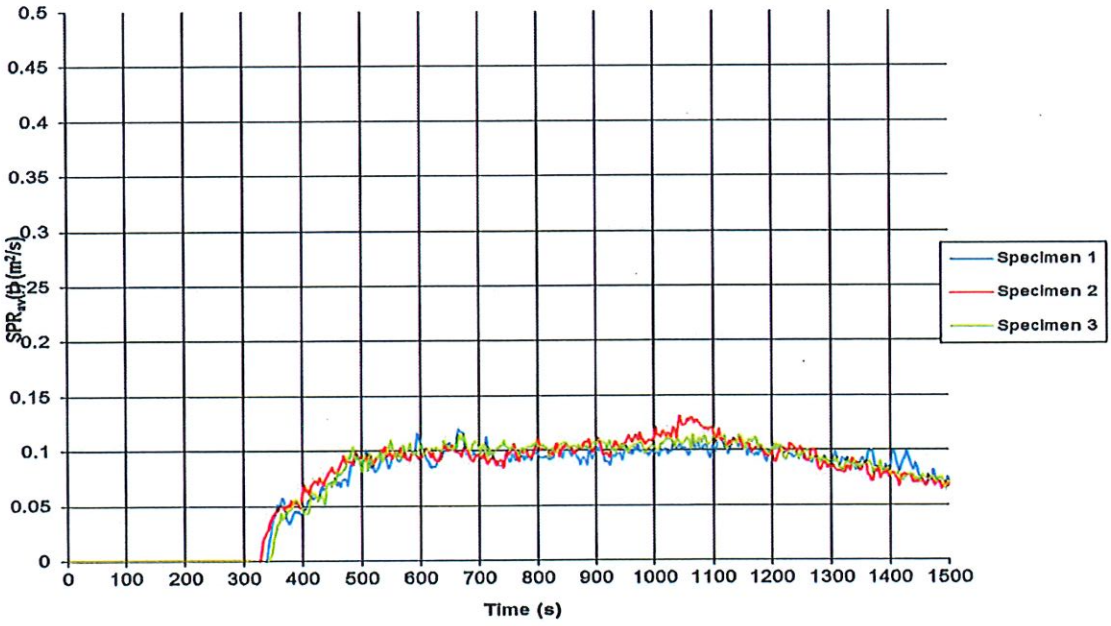


Figure 5. TSP(t) (m²)

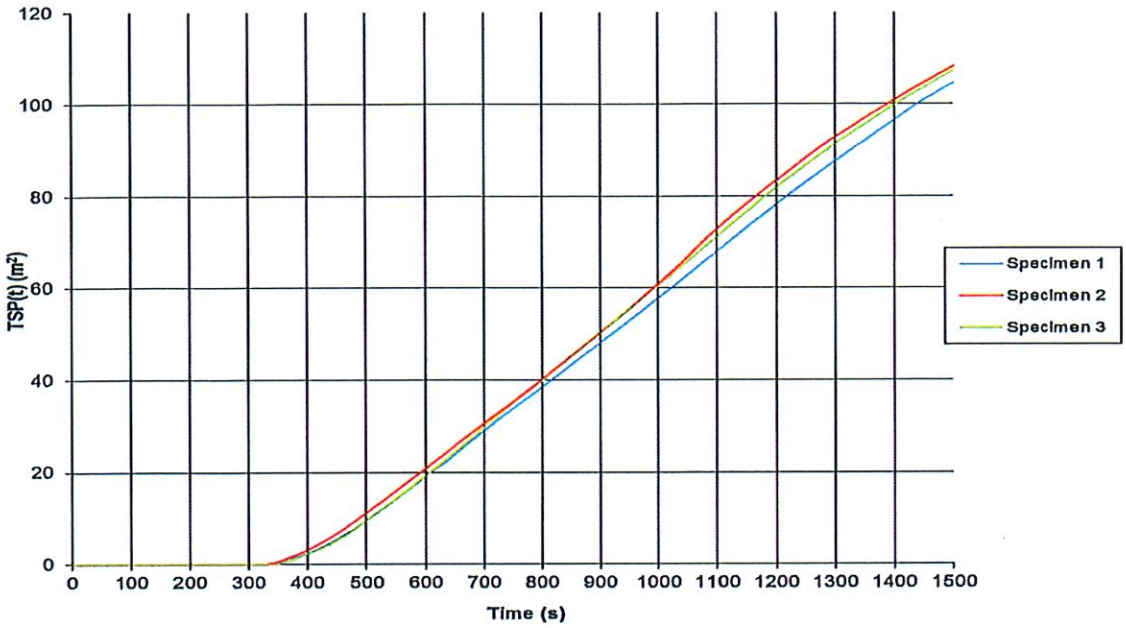
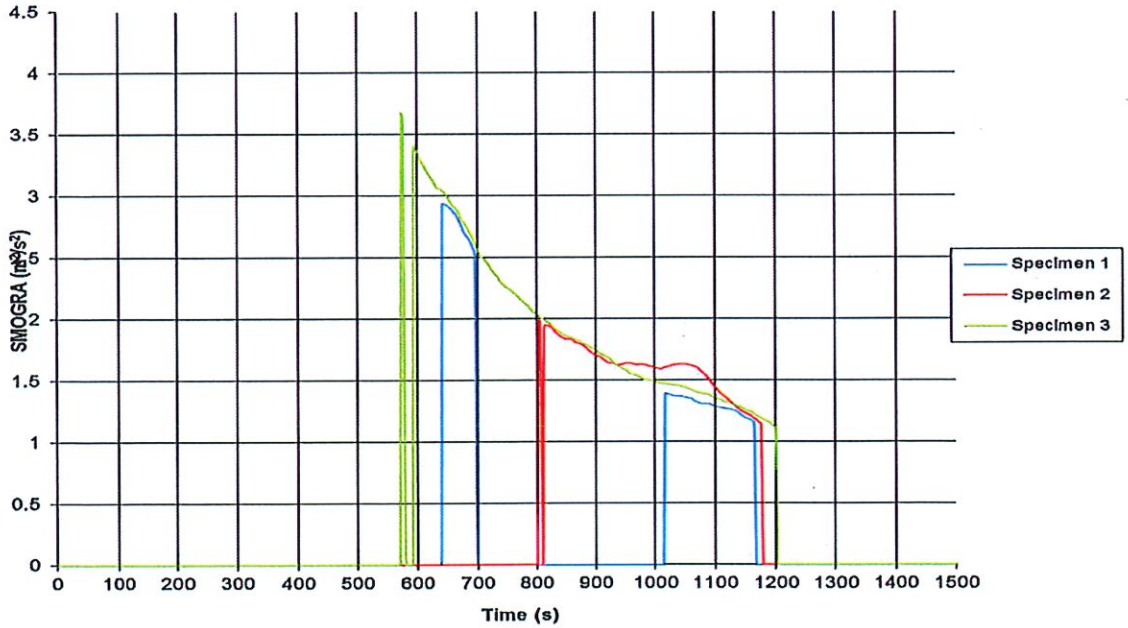


Figure 6. SMOGRA Graph.



Revision History

Issue No :	Re-issue Date:
Revised By:	Authorised By:
Reason for Revision:	

Issue No :	Re-issue Date:
Revised By:	Authorised By:
Reason for Revision:	

intertek
Total Quality. Assured.

WALLQUEST
TEST REPORT

SCOPE OF WORK
CDPH 01350 Standard Method Version 1.2 on 20 oz Nonwoven Backing

REPORT NUMBER
105069741GRR-001b

ISSUE DATE
06-July-2022

PAGES
12

DOCUMENT CONTROL NUMBER
Per GFT-OP-10 (6-March-2017)

4700 Broadmoor Ave SE, Suite 200
Kentwood, MI 49512

Telephone: +1 616 656 7401
www.intertek.com

TEST REPORT FOR [redacted].
Report No.: 105069741GRR-001b
Date: 06-July-2022
P.O.: Fjdd051122

SECTION 1
CLIENT INFORMATION

[redacted]

Amanda Tongen
Project Engineer

Taylor Gebben
Project Reviewer

SECTION 2
SUMMARY AND CONCLUSION

Test Method:	Standard Method Version 1.2 for CDPH 01350
Modeling Scenario:	Private office (PO), school classroom (SC) and single family residence (R)

DESCRIPTION OF SAMPLES

Manufacturer / Location	[redacted]
Product Name	20 oz Nonwoven Backing
Product Number	20 oz Nonwoven Backing
Date of Manufacture	19-May-2022
Date of Collection	19-May-2022
Date of Shipment	19-May-2022
Date Received by Lab	20-May-2022
Date of Test Start	02-June-2022
As Received Sample Condition	Good Condition
Lab Sample ID	GRR2205200006

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC Emissions Analysis:	CDPH Standard Method v1.2
Intertek Quote:	Qu-01214406

TEST RESULTS

MODELING SCENARIO	RESULT (PASS/FAIL)	TVOC (mg m^{-3})
Private Office (PO)	**PASS**	**0.2**
School Classroom (SC)	**PASS**	**0.1**
Single Family Residence (R)*	**PASS**	**0.6**

*Note: The single family residence scenario is not yet a CDPH requirement. It is provided for informational purposes only.

SAMPLE DISPOSITION

At the completion of testing, samples were disposed of in a routine manner.

SECTION 3
CDPH STANDARD METHOD V1.2

Date Received:	20-May-2022
Dates Tested:	02-June-2022 to 16-June-2022

DESCRIPTION OF SAMPLES:

Product Description:	20 oz Nonwoven Backing Wallcovering
Material Submitted:	One (1) Piece of Wallpaper

ACCEPTANCE CRITERIA:

Referencing:	CDPH Standard Method v1.2, Table 4.1 LEED v4 - Low Emitting Materials
LEED v4 - TVOC Ranges:	≤ 0.5 mg m^{-3} 0.5 to 5.0 mg m^{-3} ≥ 5.0 mg m^{-3}

TEST NOTES OR DEVIATIONS:

Testing performed without deviation unless noted below.

TEST SUMMARY:

The emissions testing was performed according to "Standard Method for the Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers Version 1.2". A photograph of the tested sample is included herein. The sample was attached to a stainless-steel plate using strips of aluminized tape and placed into the test chamber with top surface exposed. Air samples were collected prior to the sample being placed in the test chamber (0 hours) and at 264, 288, and 336 hours after being placed in the test chamber. Samples analyzed for individual VOCs and TVOC were collected on multi-sorbent tubes containing glass wool, Tenax TA 35/60 and Carbograph 5 TD 40/60. These VOC samples were analyzed by thermal desorption-gas chromatography/mass-spectrometry, TD-GC/MS. TVOC was calculated through integration of the chromatogram from n-pentane through n-heptadecane using toluene as a surrogate. Individual VOCs were calculated using calibration curves based on pure standards unless otherwise noted. Samples analyzed for low molecular weight aldehydes were collected on cartridges treated with 2,4-di-nitrophenylhydrazine (DNPH). Low molecular weight aldehydes were analyzed using high performance liquid chromatography, HPLC.

Table 1: Conditioning and test timing

EXPERIMENT PHASE	START DATE	DURATION
Conditioning	02-June-2022	8 days
Chamber Testing	10-June-2022	6 days

RESULTS:

Table 2: Sample and Chamber Conditions during Test Period

PARAMETER		SYMBOL	VALUE	UNITS
Sample Dimensions	Length	-	0.285	m
	Width	-	0.284	m
	Thickness	-	-	m
Exposed Sample Surface Area		*A*	0.081	m^2
Chamber Volume		*V*	0.116	m^3
Chamber Loading Factor		*L*	0.70	$m^2\ m^{-3}$
Inlet Air Flow Rate		*Q*	0.116	$m^3\ h^{-1}$
Air Change Rate		N_{ACH}	1.00	h^{-1}
Area Specific Flow Rate		q_A	1.43	$m\ h^{-1}$
Chamber Pressure (Range)		P	17.1 (10.7-20.8)	Pa
Average Temperature (Range)		T	23.5 (23.4-23.6)	°C
Average Humidity (Range)		RH	50.0 (46.6-52.0)	% RH
Testing Duration		t	336	h

Table 3: Parameters of Conditioning

PARAMETER	VALUE	UNITS
Average Temperature (Range)	23.4 (23.0-24.4)	°C
Average Humidity (Range)	50.8 (45.4-52.3)	% RH

Note: Conditioning air is passed through both particulate and activated charcoal filtration to remove background VOCs.

Table 4: Test chamber background VOC concentrations in µg m^{-3}.

COMPOUND	CAS No.	C_{i0}
Formaldehyde	50-00-0	0.5
TVOC	-	22.1

Table 5: Test chamber TVOC and formaldehyde concentrations in µg m^{-3}.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	< 2.0	< 2.0	< 2.0
TVOC	-	104	123	120

Table 6: Test chamber TVOC and formaldehyde emission factors in µg $m^{-2}\ h^{-1}$.

COMPOUND	CAS No.	264 H	288 H	336 H
Formaldehyde	50-00-0	< 2.2	< 2.2	< 2.2
TVOC	-	117	145	140

Individual emitted VOCs identified above the lower limits of quantitation are listed in Table 5; VOCs which are listed on chemical of concern lists or have CRELs are indicated.

The measured chamber concentrations and corresponding emission factors of identified individual VOCs and TVOCs are listed in Table 6.

In Tables 4, 6 and 7, emission factors were calculated using equation 3.1 in CDPH Standard Method V1.2:

$$EF_{Ai} = \frac{Q \times (C_{it} - C_{i0})}{A_C}$$

The inlet flow rate, Q ($m^3\,h^{-1}$), is the measured flow rate of air into the chamber. The chamber concentration, C_{it} (µg m^{-3}), is the concentration of a target VOC_i, formaldehyde and other carbonyl compounds measured at time t. The chamber background concentration, C_{i0} (µg m^{-3}), is the corresponding concentration measured with the chamber operating without a test specimen. The exposed surface area of the test specimen in the chamber, A_C (m^2), is determined from the measurements made at the time of specimen preparation.

Table 7: VOCs detected above lower limits of quantitation in air samples at 336 hours.

VOC	CAS No.	SURROGATE[1]	CREL[2] (µg m^{-3})	CARB TAC[3]	PROP 65 LIST[4]
Alkene, Alcohol, or Cycloalkane	-	Yes	NA	NA	NA
Ester	-	Yes	NA	NA	NA
Ester	-	Yes	NA	NA	NA
Ester	-	Yes	NA	NA	NA
Neodecanoic acid	26896-20-8	Yes	NA	No	No
Ester	-	Yes	NA	NA	NA
Alkene, Alcohol, or Cycloalkane	-	Yes	NA	NA	NA
Pentadecane	629-62-9	Yes	NA	No	No
Butylated Hydroxytoluene	128-37-0	Yes	NA	No	No
Siloxane	-	Yes	NA	NA	NA

[1]Indicates which non-listed VOCs were quantified using surrogate compounds, all other compounds were quantified using pure compounds.
[2]Chronic Reference Exposure Level (CREL) as defined by California Office of Environmental Health Hazard Assessment.
[3]Substance is listed on California Air Resource Board's (CARB) Toxic Air Contaminate (TAC) identification list.
[4]Substance known to the state of California to cause cancer or reproductive toxicity according to California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
In total, 11 non-target compounds were detected above 2 µg/m^3. Only the top 10 individual VOCs were identified per Section 4.1.4 of the test method.

Table 8: Measured chamber concentrations and corresponding emission factors of individual VOCs listed in Table 4-1 of CDPH 01350 V1.2. at 336 hours.

VOC	CAS No.	CHAMBER CONCENTRATION ($\mu g\ m^{-3}$)	EMISSION FACTOR ($\mu g\ m^{-2}\ h^{-1}$)
Formaldehyde	50-00-0	< 2.0	< 2.2
Acetaldehyde	75-07-0	< 3.9	< 5.6
Vinyl acetate	108-05-4	< 0.4	< 0.6
Epichlorohydrin	106-89-8	< 0.3	< 0.4
Ethanol, 2-methoxy-, acetate	110-49-6	< 0.4	< 0.6
Isopropyl Alcohol	67-63-0	< 0.4	< 0.6
Ethene, 1,1-dichloro-	75-35-4	< 0.3	< 0.5
Methylene chloride	75-09-2	< 0.9	< 1.4
Carbon disulfide	75-15-0	< 0.4	< 0.6
Methyl tert-butyl ether	1634-04-4	< 0.9	< 1.3
n-Hexane	110-54-3	< 0.4	< 0.5
Trichloromethane (Chloroform)	67-66-3	< 0.3	< 0.4
Ethanol, 2-methoxy-	109-86-4	< 1.0	< 1.4
Ethane, 1,1,1-trichloro-	71-55-6	< 0.3	< 0.4
Benzene	71-43-2	< 0.3	< 0.4
Carbon Tetrachloride	56-23-5	< 0.3	< 0.4
2-Propanol, 1-methoxy-	107-98-2	< 0.8	< 1.2
Ethylene glycol	107-21-1	< 20	< 28.6
Trichloroethylene	79-01-6	< 0.3	< 0.4
1,4-Dioxane	123-91-1	< 0.3	< 0.4
Ethanol, 2-ethoxy-	110-80-5	< 0.8	< 1.1
Toluene	108-88-3	< 0.3	< 0.4
Formamide, N,N-dimethyl-	68-12-2	< 0.3	< 0.4
Tetrachloroethylene	127-18-4	< 0.3	< 0.4
Benzene, chloro-	108-90-7	< 0.3	< 0.4
Ethylbenzene	100-41-4	< 0.3	< 0.4
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 0.3	< 0.5
Styrene	100-42-5	< 0.3	< 0.4
2-Ethoxyethyl acetate	111-15-9	< 0.4	< 0.5
Phenol	108-95-2	< 0.5	< 0.8
Benzene, 1,4-dichloro-	106-46-7	< 0.3	< 0.4
Isophorone	78-59-1	< 0.3	< 0.4
Naphthalene	91-20-3	< 0.3	< 0.4

Table 9: Measured chamber concentrations and corresponding emission factors of identified non-listed individual VOCs and TVOC at 336 hours.

VOC	CAS No.	CHAMBER CONCENTRATION (µg m^{-3})	EMISSION FACTOR (µg m^{-2} h^{-1})
Alkene, Alcohol, or Cycloalkane	-	3.6	5.1
Ester	-	3.2	4.6
Ester	-	8.3	11.9
Ester	-	4.2	6.0
Neodecanoic acid	26896-20-8	11.3	16.2
Ester	-	3.9	5.6
Alkene, Alcohol, or Cycloalkane	-	8.2	11.8
Pentadecane	629-62-9	2.2	3.2
Butylated Hydroxytoluene	128-37-0	3.5	5.0
Siloxane	-	2.4	3.4
TVOC	-	120	140

Exposure Scenario Modeling and Evaluation:

Estimated building concentrations for the listed scenarios were calculated using equation 3.2a of CDPH Standard Method V1.2:

$$C_{Bi} = \frac{EF_{Ai} \times A_B}{Q_B}$$

The area specific emission rate EF_A at 336 hours (14 days) total exposure time is multiplied by the ratio of the exposed surface area of the installed material in the building, A_B (m^2), to the flow rate of outside ventilation air, Q_B (m^3 h^{-1}).

The modeling parameters used for the given scenarios are listed in Table 8. The modeled concentrations of identified individual VOCs are listed in Tables 9 & 10. Whether the modeled concentrations meet the maximum allowable concentration requirements specified in Table 4.1 of CDPH Standard Method V1.2 are also indicated.

Table 10: Standard modeling parameters for wallcovering.

PARAMETER	SYMBOL	VALUE	UNITS
Exposed Surface Area Installed in *Private Office (PO)*	A_B	33.4	m^2
Air flow rate of *Private Office (PO)*	Q_B	20.7	m^3 h^{-1}
Exposed Surface Area Installed in *Classroom (SC)*	A_B	94.6	m^2
Air flow rate of *Classroom (SC)*	Q_B	191	m^3 h^{-1}
Exposed Surface Area Installed in *Residence (R)*	A_B	562	m^2
Air flow rate of *Residence (R)*	Q_B	127	m^3 h^{-1}

Table 11: Modeled concentrations of individual VOCs specified in Table 4-1 of CDPH 01350 V1.2.

VOC	CAS NO.	MODELED CONCENTRATION (µg m^{-3})			CONC. LIMIT (µg m^{-3})	RESULT Pass (P) /Fail (F)		
		PO	SC	R		PO	SC	R
Formaldehyde	50-00-0	< 4.6	< 1.4	< 12.7*	9	P	P	P
Acetaldehyde	75-07-0	< 9.0	< 2.8	< 24.8	70	P	P	P
Vinyl acetate	108-05-4	< 0.9	< 0.3	< 2.6	100	P	P	P
Epichlorohydrin	106-89-8	< 0.6	< 0.2	< 1.6*	1.5	P	P	P
Ethanol, 2-methoxy-, acetate	110-49-6	< 0.9	< 0.3	< 2.5	45	P	P	P
Isopropyl Alcohol	67-63-0	< 0.9	< 0.3	< 2.6	3,500	P	P	P
Ethene, 1,1-dichloro-	75-35-4	< 0.8	< 0.2	< 2.1	35	P	P	P
Methylene chloride	75-09-2	< 2.2	< 0.7	< 6.0	200	P	P	P
Carbon disulfide	75-15-0	< 1.0	< 0.3	< 2.8	400	P	P	P
Methyl tert-butyl ether	1634-04-4	< 2.1	< 0.6	< 5.7	4,000	P	P	P
n-Hexane	110-54-3	< 0.8	< 0.2	< 2.2	3,500	P	P	P
Trichloromethane (Chloroform)	67-66-3	< 0.6	< 0.2	< 1.6	150	P	P	P
Ethanol, 2-methoxy-	109-86-4	< 2.3	< 0.7	< 6.4	30	P	P	P
Ethane, 1,1,1-trichloro-	71-55-6	< 0.6	< 0.2	< 1.6	500	P	P	P
Benzene	71-43-2	< 0.6	< 0.2	< 1.6*	1.5	P	P	P
Carbon Tetrachloride	56-23-5	< 0.6	< 0.2	< 1.6	20	P	P	P
2-Propanol, 1-methoxy-	107-98-2	< 1.9	< 0.6	< 5.3	3,500	P	P	P
Ethylene glycol	107-21-1	< 46.2	< 14.2	< 127	200	P	P	P
Trichloroethylene	79-01-6	< 0.6	< 0.2	< 1.6	300	P	P	P
1,4-Dioxane	123-91-1	< 0.6	< 0.2	< 1.6	1,500	P	P	P
Ethanol, 2-ethoxy-	110-80-5	< 1.8	< 0.5	< 4.8	35	P	P	P
Toluene	108-88-3	< 0.6	< 0.2	< 1.6	150	P	P	P
Formamide, N,N-dimethyl-	68-12-2	< 0.6	< 0.2	< 1.6	40	P	P	P
Tetrachloroethylene	127-18-4	< 0.6	< 0.2	< 1.6	17.5	P	P	P
Benzene, chloro-	108-90-7	< 0.6	< 0.2	< 1.6	500	P	P	P
Ethylbenzene	100-41-4	< 0.6	< 0.2	< 1.6	1,000	P	P	P
Xylene (-m, -p, & -o)	108-38-3, 95-47-6, 106-42-3	< 0.8	< 0.2	< 2.2	350	P	P	P
Styrene	100-42-5	< 0.6	< 0.2	< 1.6	450	P	P	P
2-Ethoxyethyl acetate	111-15-9	< 0.9	< 0.3	< 2.4	150	P	P	P
Phenol	108-95-2	< 1.2	< 0.4	< 3.4	100	P	P	P
Benzene, 1,4-dichloro-	106-46-7	< 0.6	< 0.2	< 1.6	400	P	P	P
Isophorone	78-59-1	< 0.6	< 0.2	< 1.6	1,000	P	P	P
Naphthalene	91-20-3	< 0.6	< 0.2	< 1.6	4.5	P	P	P

*Individual VOC of concern is below lower LOQ for modeled scenario.

Table 12: Modeled concentrations of identified non-listed individual VOCs.

VOC	CAS NO.	MODELED CONCENTRATION ($\mu g\ m^{-3}$)		
		PO	SC	R
Alkene, Alcohol, or Cycloalkane	-	8.2	2.5	22.5
Ester	-	7.5	2.3	20.5
Ester	-	19.2	5.9	52.5
Ester	-	9.6	2.9	26.3
Neodecanoic acid	26896-20-8	26.1	8.0	71.6
Ester	-	9.0	2.8	24.8
Alkene, Alcohol, or Cycloalkane	-	19.0	5.8	52.1
Pentadecane	629-62-9	5.2	1.6	14.2
Butylated Hydroxytoluene	128-37-0	8.0	2.5	21.9
Siloxane	-	5.5	1.7	15.1
$TVOC_{Toluene}$	-	226	69.5	621

PHOTOGRAPHS:

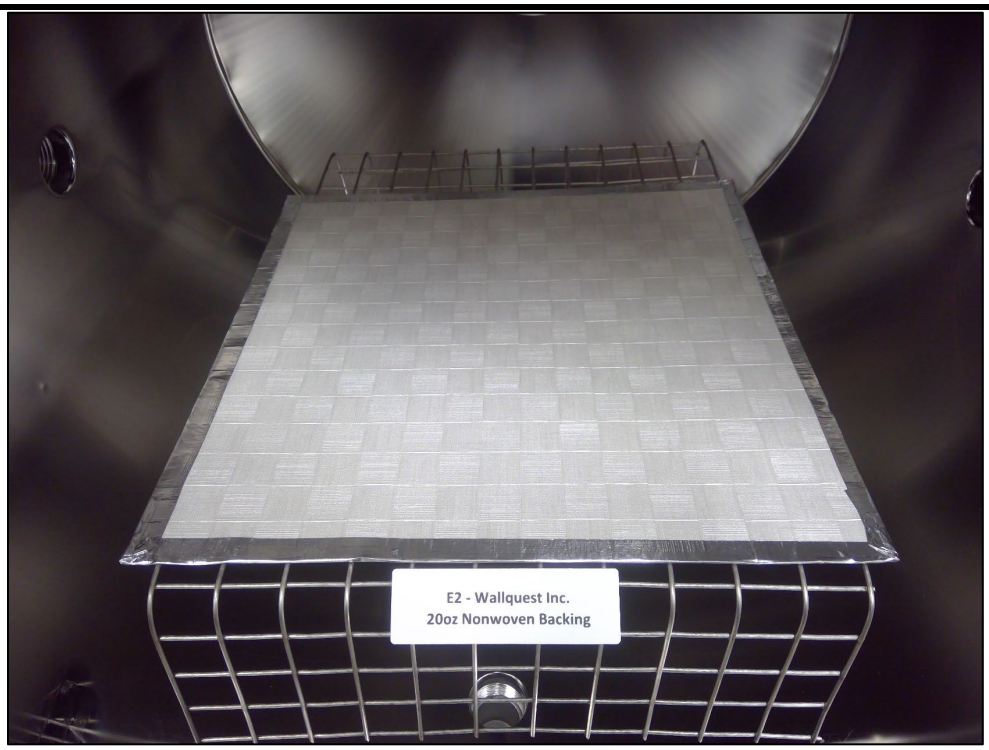


Figure 1: Photograph of sample in test chamber.

SECTION 4

FACILITIES AND EQUIPMENT:

GCMS	
INSTRUMENTATION USED:	Markes TD-100 Thermal Desorption Agilent 7890A GC Agilent 5975C MS
COLUMN USED:	AGILENT HP-5MS (GC)
HPLC	
INSTRUMENTATION USED:	Agilent 1260 Infinity Series
COLUMN USED:	Poroshell 120 EC-C18

SECTION 5
CHAIN OF CUSTODY

Ship To:
Attn: VOC Laboratory
4700 Broadmoor Ave SE
Suite 200
Kentwood, MI 49512
Phone: 616-656-7401

Chain of Custody for Chemical Testing
Intertek Quotation Number: QU - 01214406-0
Purchase Order (enter Company and Number): [redacted]

Shipping Details	
Packed & Shipped By:	[redacted]
Shipping Date:	5/19/22
Carrier/Airbill Number:	

Requested Testing	
Test to be performed:	CDPH 01350

Customer Request for Certification	
Clean Air™ Certification:	☒ YES

Customer Information	
Company:	[redacted]
Street Address:	[redacted]
City/State/Postal code:	[redacted]
Country:	[redacted]
Contact Name & Title (for reporting):	[redacted]
Contact Phone/Fax Numbers:	[redacted]
Contact E-mail Address:	[redacted]
Financially Responsible Co.:	[redacted]

Manufacturer Information (If Different)
Company:
City/State/Country:
Contact Name/Title:
Phone Number/E-mail Address:

Special Customer Instructions

Sample Details	
Product Commercial Name*:	20 oz Nonwoven Backing
Product Commercial Part No.(if not part of the name)*:	20 oz Nonwoven Backing
Manufacturer Sample Tracking ID:	
Date Manufactured*:	5/19/22
Product Category & Use*:	Wallcovering
Sample Construction Materials*:	
Plant Name & Location*:	[redacted]
Collection Location within Plant:	Manufacturing Press
Date & Time Collected*:	10 AM 5/19/22
Number of Sample Pieces*:	1
Sample Collected by*:	[redacted]
Phone/Fax Numbers*:	[redacted]
E-mail Address*:	[redacted]

Customer Authorizes Laboratory to Submit Copies of Test Reports To:	
Contact:	[redacted]
Email Address:	[redacted]
Organization:	[redacted]
Contact:	[redacted]
Email Address:	[redacted]
Organization:	[redacted]

Intertek Use Only	
Condition of Shipping Package:	Good
Condition of Sample:	Good
Sample ID:	GKK22G5200006
GIN:	G105069741

*Indicates required field

Sample Handling*

	Printed Name*	Signature*	Date*	Company*
Relinquished By:	[redacted]	[redacted]	[redacted]	[redacted]
Received by:	Amanda Tegen	Amanda Tegen	20-May-2022	Intertek

COMMERCIAL TESTING COMPANY
1215 South Hamilton Street • Dalton, Georgia 30720
Telephone (706) 278–3935 • Facsimile (706) 278–3936

Evaluation of Vinyl–Coated Wallcovering
Federal Specification CCC–W–408D

20 oz. Osnaburg Backed Vinyl Wallcovering

Report Number 20–11019.1

Test Number 5609–6856
October 30, 2020

[redacted]

Commercial Testing Company

(Authorized Signature)

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INTRODUCTION

This report is a presentation of results on a woven backed vinyl wallcovering conducted for [redacted] Inc. of [redacted]. The material was tested to determine compliance with Federal Specification CCC–W–408D, *Wall Covering, Vinyl–Coated*, dated January 14, 1994. Section 1.2 of CCC–W–408D which classifies a material **Type I** – Light Duty, **Type II** – Medium Duty, or **Type III** – Heavy Duty.

SAMPLING

The sampling was done by the client. One roll of wallcovering was submitted for testing and was identified as **20 oz. Osnaburg Backed Vinyl Wallcovering.**

TEST PROCEDURES

The procedures used to conduct these tests are described in CCC–W–408D. The purpose of these tests is to determine compliance with Section 3.4 Physical Properties, Table I. The physical properties are briefly outlined as:

Requirements	Type I	Type II	Type III
Colorfastness to Light[1]	200	200	200
Washability[2]	100	100	100
Scrubbability[3]	200	300	500
Abrasion Resistance[4]	200	300	1,000
Breaking Strength[5], Machine Direction	≥ 40 lb	≥ 50 lb	≥ 100 lb
Breaking Strength[5], Cross Machine	≥ 30 lb	≥ 55 lb	≥ 95 lb
Crocking, Dry[6]	Good	Good	Good
Stain Resistance Reagents[7]	1–9	1–12	1–12
Tear Resistance[8], Machine Direction	12	25	50
Tear Resistance[8], Cross Machine	12	25	50
Blocking Resistance[9]	≤ 2	≤ 2	≤ 2
Coating Adhesion[10], lbs/inch	≥ 2 lb/in	≥ 3 lb/in	≥ 3 lb/in
Cold Crack Resistance[11]	No Change	No Change	No Change
Heat Ageing Resistance[12]	Pass	Pass	Pass
Flame Spread[13], maximum	≤ 25	≤ 25	≤ 25
Smoke Development[13], maximum	≤ 50	≤ 50	≤ 50
Shrinkage[14], Machine Direction	≤ 2%	≤ 2%	≤ 2%
Shrinkage[14], Cross Machine	≤ 1%	≤ 1%	≤ 1.5%

1. *Colorfastness to Light* — The specimen shall show no appreciable change after carbon arc exposure to the specified Standard Fading Hours (SFH) when tested in accordance with Federal Test Method Standard 191A, Method 5660.

2. *Washability* — The material is exposed to the required number of cycles in a Gardner Washability Machine Model M–105 equipped with a WG–2000C detergent soaked sponge under a load of 1 pound. Prior to testing, the material has 1 tablespoon of detergent placed beneath the sponge. When the required cycles are finished, the specimen is rinsed with tap water and air dried at 70°F. When viewed from a distance of 4 feet in a Macbeth Spectralight viewing booth, there is no appreciable discoloration, change in gloss, blistering, softening, swelling or loss of adhesion.

3. *Scrubbability* — The material is exposed to the required number of cycles in a Gardner Washability Machine M–105 equipped with a WG2000NMA detergent soaked brush under a load of 1 pound. One tablespoon of detergent is added beneath the brush prior to testing. After the required number of cycles, the specimen is rinsed with tap water and air dried. When viewed from a distance of 4 feet in a Macbeth Spectralight viewing booth, there is no appreciable damage to the printed or base surface.

4. *Abrasion Resistance* — The number of required cycles (double rubs) is done using a Wyzenbeck Precision Wear Tester equipped with 220 grit silicon carbide abrasive sheet. The tester is operated with a tension of 6 pounds force and the pressure set at 2 pounds force. The wallcovering shall have no visual evidence of fiber show–through or damage to the supporting substrate.

5. *Breaking Strength* — The test was conducted in accordance with ASTM Test Method D 751, Section 11, Breaking Strength, using Procedure A – Grab Test Method. The test was conducted using an Instron CRE type tensile tester operating at an extension rate of 12 inches per minute.

6. *Crocking* — Resistance to dry crocking was determined in accordance with Federal Test Method Standard 191, Method 5651, using the crockmeter method. Crocking refers to the transfer of matter from the wallcovering to the standard white cotton crockmeter cloth.

7. *Stain Resistance* — Approximately 1 ml of each reagent is placed on the surface of the wallcovering, covered with a watch glass, and allowed to stand for 24 hours. The covers are removed from the reagents and the exposed areas cleaned using warm distilled water. After drying, the sample shall show no evidence of appreciable change. The staining reagents are: (1) 75°F distilled water; (2) 120°F distilled water; (3) 50% ethyl alcohol; (4) vinegar; (5) 1% NaOH solution; (6) 5% HCl; (7) standard soap solution; (8) detergent solution; (9) orange juice; (10) butter; (11) catsup; and, (12) tea.

8. *Tear Resistance* — The test is conducted in accordance with ASTM Test Method D 751, Method A, using an Elmendorf tear tester. The result is reported as the scale reading.

9. *Blocking Resistance* — The test is conducted in accordance with Federal Test Method Standard 191, Method 5872, *Temperature, High; Effect on Cloth Blocking*. Specimens are folded face to face, placed between glass plates, and the assembly placed in a circulating air oven for 30 minutes at 180°F. After 30 minutes, the specimens are removed, allowed to cool for 5 minutes, and examined for evidence of adhering or peeling of the coating. Resistance to blocking is evaluated by the following scale: 1 = No Blocking (surfaces are free); 2 = No Blocking (adhered slightly); 3 = Slight Blocking (must be lightly peeled to separate); and 4 = Blocking (surfaces separate with difficulty).

10. *Coating Adhesion* — The test was conducted in accordance with ASTM Test Method D 751, Section 50, *Adhesion of Coating to Fabric*. The test was conducted using an Instron CRE type tensile tester operated at an extension rate of 12 inches per minute.

11. *Cold Crack Resistance* — Specimens are placed in a cold chamber for 30 minutes at 20 ± 4°F. Immediately after removal from the chamber, the specimen is bent 180° around a 1/2–inch diameter mandrel. The sample shall not crack during folding around the mandrel.

12. *Heat Ageing Resistance* — The test sample shall not become stiff, brittle, soft, tacky, discolored, or show loss of grain after 168 hours in a circulating air oven maintained at 158°F.

13. *Flame Spread and Smoke Development* — The Flame Spread and Smoke Development are determined in accordance with ASTM Test Method E84–20, *Surface Burning Characteristics of Building Materials*. The test sample was prepared in accordance with ASTM E2404-17, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics*, Section 8.2, Wall or Ceiling Coverings Intended to be Applied Directly to a Noncombustible Wall or Ceiling Surface.

14. *Shrinkage* — Specimens are die cut from the test sample and conditioned for 24 hours at 70°F and 65% relative humidity. The initial dimensions are determined and recorded at three locations along the length and width of the specimen. After soaking for 30 minutes in distilled water and subsequent drying 30 minutes at 200°F, specimens are conditioned for 24 hours 70°F and 65% relative humidity and the final dimensional measurements determined. The shrinkage is calculated as $\% \text{ Shrinkage} = 100 \times (A - B)/A$ where A is the initial measurement and B is the final measurement.

TEST DATA AND TEST RESULT

The purpose of this evaluation was to determine compliance with requirements for a Type II Medium Duty wallcovering as defined by Federal Specification CCC–W–408D. The test results are presented in tabular form on the following page.

[redacted]

20 oz. Osnaburg Backed Vinyl Wallcovering

Characteristic	Type II Requirement	Test Data	Test Result
Colorfastness to Light	200	Good	Pass
Washability	100	100 cycles	Pass
Scrubbability	300	300 cycles	Pass
Abrasion Resistance	300	300 cycles	Pass
Breaking Strength, Machine Direction	≥ 50 lb	137 lb	Pass
Breaking Strength, Cross Machine	≥ 55 lb	138 lb	Pass
Crocking, Dry	Good	Good	Pass
Stain Resistance Reagents	1–12	(See Note 1)	Pass
Tear Resistance, Machine Direction	25	> 100	Pass
Tear Resistance, Cross Machine	25	> 100	Pass
Blocking Resistance	≤ 2	2	Pass
Coating Adhesion, Machine Direction	≥ 3 lb/in	3.0 lb/in	Pass
Coating Adhesion, Cross Machine	≥ 3 lb/in	3.6 lb/in	Pass
Cold Crack Resistance	No Change	No Change	Pass
Heat Ageing Resistance	Pass	Pass	Pass
Flame Spread, maximum	≤ 25	15	Pass
Smoke Development, maximum	≤ 50	20	Pass
Shrinkage, Machine Direction	≤ 2%	0.430%	Pass
Shrinkage, Cross Machine	≤ 1%	0.225%	Pass

Note 1 — Stain Resistance

Reagent	Rating
(1) 75°F distilled water	5
(2) 120°F distilled water	5
(3) 50% ethyl alcohol	5
(4) vinegar	4
(5) 1% NaOH solution	5
(6) 5% HCl	5

Reagent	Rating
(7) standard soap solution	5
(8) detergent solution	4
(9) orange juice	5
(10) butter	5
(11) catsup	4
(12) tea	5

The rating system is based on the AATCC *Nomenclature for Subjective Rating Processes* in which a rating of 5 = negligible or no staining, 4 = slight staining, 3 = noticeable staining, 2 = considerable staining, and 1 = severe staining. A rating of less than 4 is considered "appreciable" in relation to severity of change.

CONCLUSION

Based on the results of this evaluation, the wallcovering identified as **20 oz. Osnaburg Backed Vinyl Wallcovering** is classifiable as Type II.

June 2019

LEED CREDIT CONTRIBUTION

The following [redacted] Wallcovering commercial products have attributes that can be applied toward LEED credentials:

15 Oz Commercial Vinyl Wallcovering, Non-woven Backed

- LEED CI – MR Credit 5.1 – Regional Materials*
  - * Applies to sites within 500 miles of [redacted].
- LEED NC, CI, Schools – MR Credit 6 – Rapidly Renewable Materials
  - Backing is made of rapidly renewable materials
- LEED NC, CI, Schools – MR Credit 7 – Certified Wood
  - Backing is made of PEFC/FSC certified materials
- LEED NC, CI – IEQ Credit 4.1 – Low-Emitting Adhesives+
  - +Credit earned when installed with low-emitting primer & adhesives.
- LEED Schools – IEQ Credit 4.6 – Ceiling & Wall Systems
  - Wallcoverings compliant with California Department of Health Services Standard Practice.

20 Oz Commercial Vinyl Wallcovering, Non-woven Backed

- LEED CI – MR Credit 5.1 – Regional Materials*
  - * Applies to sites within 500 miles of [redacted]
- LEED NC, CI, Schools – MR Credit 6 – Rapidly Renewable Materials
  - Backing is made of rapidly renewable materials
- LEED NC, CI, Schools – MR Credit 7 – Certified Wood
  - Backing is made of PEFC/FSC certified materials
- LEED NC, CI – IEQ Credit 4.1 – Low-Emitting Adhesives*
  - * Credit earned when installed with low-emitting primer & adhesives.
- LEED Schools – IEQ Credit 4.6 – Ceiling & Wall Systems
  - Wallcoverings compliant with California Department of Health Services Standard Practice.

20 Oz Osnaburg Vinyl Wallcovering

- LEED NC, CI, Schools – Credit MR 5.1 – Regional Materials*
  - *Applies to sites within 500 miles of [redacted]
- LEED NC, CI – Credit IEQ 4.1 – Low-Emitting Adhesives+
  - +Credit earned when installed with low-emitting primer & adhesives
- LEED SCHOOLS – Credit IEQ 4.6 – Ceiling & Wall Systems
  - Wallcoverings compliant with California Department of Health Services Standard Practice.

[redacted]
465 Devon Park Drive Wayne, PA 19087-1871 USA
Phone: 610.293.1330 Fax 610.293.9690
orders@wallquest.com

SGS

Tested For:	**Phone:**	**Received:**	8/26/2024
Richloom Bailey Plant	**Fax:**	**Completed:**	9/6/2024
100 Bailey Plant Road	**Mobile:**	**Code:**	O
Clinton, SC 29325	**PO#:**	**Test Report:**	3-57170-0
USA	**Email:**		

Key Test: ASTM E84/ACT 775

Client's Identification:

Product Description: Wallcovering - 24.63 oz - Type 2 - Non Woven Backing.

Test Category: Tunnel Test Specifier: ACT LE 2024; V 08/24 BG PC: ME

TEST PERFORMED: ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials

As cited by the Association of Contract Textiles (ACT) Voluntary Performance Guidelines (December 2021)

APPROXIMATE THICKNESS OF SPECIMEN (as measured by SGS North America): 0.22"

SPECIMEN WEIGHT (to include substrate when applicable):

Prior to Conditioning: 89.9 lbs.

Stabilized Weight (taken twice within 24 hours): 88.6 lbs.

PRODUCT CATEGORY:

☒ Textile Type Product
☐ Vinyl Type Product
☐ Other than Textile Type or Vinyl Type Product: _____

BRIEF DESCRIPTION OF TEST: This test method is used to determine the relative burning behavior of a material under defined test conditions. The test is performed in a 25 ft. long tunnel/duct-like apparatus and is often referred to as the "tunnel test". The test contemplates a calibration where Red Oak burns to the 24 ft. mark in 5.5 minutes ± 15 seconds. During the actual test, a 24 ft. long x 23" wide specimen rests horizontally in a ceiling configuration inside the test chamber facing downward and toward two upward oriented burners. A furnace lid that rests in a water trough seals the chamber tight. A cement board placed on the backside of each specimen assembly protects the furnace lid during the test. The near face of the specimen is subjected to a 4.5 ft. flame insult of approximately 88 kW for ten minutes. The time and distance of the spread of flame along the length of the specimen and the smoke developed as read by the photometric system are all recorded. The Flame Spread and Smoke Developed are reported as an Index.

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Tested For:		**Phone:**		**Received:**	8/26/2024
	Richloom Bailey Plant	**Fax:**		**Completed:**	9/6/2024
	100 Bailey Plant Road	**Mobile:**		**Code:**	O
	Clinton, SC 29325	**PO#:**		**Test Report:**	3-57170-0
	USA	**Email:**			

Key Test: ASTM E84/ACT 775

SPECIMEN MOUNTING:

☐ Self-supporting: The test specimen was rigid enough to be self-supporting when placed into test position. No additional support was required.

☒ Adhered to IRC: The test specimen was bonded to ¼" Inorganic Reinforced Cement (IRC) boards.

☐ Adhered to Gypsum: The test specimen was adhered to $^{5}/_{8}$" thick Type X gypsum board.

☐ Unadhered: The specimen was not adhered to any substrate. Instead, it was laid over a 2" hexagonal wire mesh screen and ¼" rods.

☐ Other: _____

DISCUSSION: 3.2.1.1: Self-supporting specimens, after being mounted on the ledges of the test furnace, are structurally capable of supporting their own weight prior to the test and during the test without the use of additional supports. Examples of self-supporting specimen behavior include the ability to do the following without the use of additional supporting elements:

(1) Prior to and during the test, the specimen stays in its position to such an extent that it does not interfere with the effect of the burner flame.
(2) During the test, the specimen does not interrupt the progression of the flame front along the specimen. A specimen may still be considered self-supporting if it sags during the test or if debris falls from the specimen as long as this behavior does not interfere with the progress of the flame front.

SPECIMEN LENGTH: The 24 ft. length was comprised of:

☐ Continuous unbroken 24 ft. length
☒ Sections: ☒ Three 8 ft. sections butted end to end
☐ Three 8 ft. sections positively joined
☐ Four 5 ft. and one 4 ft. sections butted end to end
☐ Other: _____

ADHESIVE (applied by SGS North America): ☐ No
☒ Yes (specify): Roman Pro-880

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	Clinton, SC 29325	**PO#:**		**Test Report:**	3-57170-0
	USA	**Email:**			

Key Test: ASTM E84/ACT 775

OBSERVATIONS: ☐ No unusual observations
☒ Burning Drips to Floor further qualified as: ☐ Minor; ☐ Moderate; ☒ Major
☐ Delamination
☐ Sagging
☐ Shrinkage
☐ Fallout (specimen displacement from ceiling mount)
☐ Other: _____

REMARKS: ☒ None
☐ Other: _____

RESULTS: Flame Spread Index: 10
Smoke Developed: 50

ROUNDING: Flame Spread Index value has been rounded to the nearest multiple of 5.
Smoke Developed value has been rounded to:

Raw Data	Rounded
Less than 200	Nearest multiple of 5
200 or more	Nearest multiple of 50

ACCEPTANCE CRITERIA (as cited by ACT):

	Flame Spread Index	Smoke Developed
Class A	0 - 25	450 or less

NOTE: Class A is also known as Class 1 and may be so specified in some Codes.

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	Richloom Bailey Plant	**Fax:**		**Completed:**	9/6/2024
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	Clinton, SC 29325	**PO#:**		**Test Report:**	3-57170-0
	USA	**Email:**			

Key Test: ASTM E84/ACT 775

CONCLUSION: Based on the reported Results and cited Acceptance Criteria, the item tested:

☒ Complies ☐ Does not comply

DATA SUMMARY:

Time to Ignition (minutes:seconds): 00:11
Maximum Flame Spread "Distance" (feet): 2.6
Maximum Flame Spread "Time" (seconds): 154

CODE CLASSIFICATION: Based on the reported Results and cited Code Classification System, the item tested is assigned a:

☒ Class I or A rating
☐ Class II or B rating
☐ Class III or C rating
☐ Fails to achieve a minimum classification thereby rendering the product unsuitable in terms of code requirement.
☐ Based on product performance*, ASTM E84 is not a suitable test method for the material.

* Severe melt, drip, delamination or other behavior that destroys the continuity of the flame front such that a valid flame spread is unobtainable (See "Remarks" on Page 2 of 4.)

CODE CLASSIFICATION SYSTEM:

	Flame Spread Index	Smoke Developed
Class I or A:	0 - 25	450 or less
Class II or B:	26 - 75	450 or less
Class III or C:	76 - 200	450 or less

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Key Test: ASTM E84/ACT 775

LIMITATIONS OF THE ASTM E84 CLASSIFICATION SCHEME: Most building codes will accept the ASTM E84 classifications when the interior finish product is used in a sprinklered area. Certain local authorities such as NYC have more stringent requirements, i.e. Smoke Developed ranges from a maximum 25 to 100.

If the interior finish product is a textile or vinyl wall covering used in a non-sprinklered area, the NFPA 265 room corner fire test applies.

Certain products which give off excessive heat such as but not limited to cellular plastics, cellular foam (either with or without coverings as applicable), polypropylene, and high density polyethylene should be tested by NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth. In SGS North America's opinion, the codes require NFPA 286 for such products, even in sprinklered areas.

CERTIFICATION: I certify that the reported results were obtained after testing specimens in accordance with the procedures and equipment specified above.

DocuSigned by:
Michael Magee
1D12C24670FA402...

9/9/2024

AUTHORIZED SIGNATURE
SGS NORTH AMERICA
/gb /dv

Test Engineer: Chris Gangi

DS

Enclosure: Graphs

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Program: Steiner Tunnel (Version 1.0.3.0)

Test Method	:	ASTM E84
Report #	:	3-57170-0-O
Test Date	:	9/6/2024
Client	:	Richloom Bailey Plant
Operator	:	Chris Gangi
Details of Preparation	:	The test specimen was bonded to 1/4" Inorganic Reinforced Cement (IRC) boards. The 24 ft. length was comprised of three 8 ft. sections butted end to end.
Observations	:	Minor burning drips onto tunnel floor.

Results

Area Under Flame Curve (ft min)	:	20.83
Raw Flame Spread Index	:	10.73
Ignition Time (mm:ss)	:	00:11
Area Under Smoke Curve (%A min)	:	34.59
Raw Smoke Developed Index	:	47.86
Total Gas Flow (ft^3)	:	56.4
Maximum Flame Front Achieved (ft)	:	2.6 @ 154s
Flame Spread Index	:	**10**
Smoke Developed Index	:	**50**
Material Classification	:	**A**

CERTIFICATION : I certify that the above results were obtained after testing the specimens in accordance with the procedures and equipment specified by ASTM E84

Chris Gangi

AUTHORIZED SIGNATURE

Program: Steiner Tunnel (Version 1.0.3.0)

Test Method : ASTM E84
Test Report # : 3-57170-0-O