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TEST REPORT
for
ASTM C297 and ASTM E2485

Rendered to:

VIPEQ HISPANIA 2008 S.L. LP

PRODUCT:

Vipeq F08 Corkshield

Report No.: V102120-83(R0)
Test Date(s): 04/26/2021 - 05/12/2021
Report Date: 05/25/2021
19 pages

Test Report

V102120-83(R0)
05/25/2021

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TEST REPORT

Rendered to:

VIPEQ HISPANIA 2008 S.L. LP
Calle Berroa Nº2-Oficina 110
Tajonar, Navarra 31192

Report No.: V102120-83(R0)
Test Date: 04/26/2021 - 05/12/2021
Report Date: 05/25/2021

1.0 General Information

1.1 Product

Vipeq F08 Corkshield

1.2 Project Summary

ICC NTA, LLC was contracted by VIPEQ HISPANIA 2008 S.L. LP to evaluate *Vipeq F08 Corkshield* in accordance with ASTM C297 and ASTM E2485. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at ICC NTA's facility in Nappanee, IN.

1.3 Product Description

The material tested herein was *Vipeq F08 Corkshield*. Material arrived in good condition on March 25th, 2021. The sample marking can be seen in Photo 1.

1.4 Qualifications

ICC NTA in Nappanee, IN has demonstrated compliance with ISO/IEC 17025 and is consequently accredited as a Testing Laboratory.

1.5 Product Sampling

A representative of ICC NTA visited 's facility located in Tajonar, Navarra on February 25th and March 2nd, 2021 and selected the materials for the testing reported herein. All test specimens were supplied by VIPEQ HISPANIA 2008 S.L. LP. See photograph in Appendix A for typical sampling mark.

1.6 Witnessing

No representatives of VIPEQ HISPANIA 2008 S.L. LP were present for testing reported herein.

1.7 Conditions of Testing

Unless otherwise indicated, all testing reported herein was conducted in a laboratory set to maintain temperature in the range of $73.4 \pm 3.6^{\circ}\text{F}$ and humidity in the range of $50 \pm 5\% \text{RH}$. All test specimen materials were stored in the laboratory environment for no less than 40 hours prior to testing.

2.0 Referenced Standards

ASTM C297-16, Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions

ASTM E2485-13, Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistance Barrier Coatings

ASTM E2568-09, Standard Specification for PB Exterior Insulation and Finish Systems

3.0 Summary of Results and Conclusions

Standard	Variable	Results		Conclusions
ASTM C297: Tensile Bond Strength	Average Ultimate Tensile Strength (psi)	Metal	70	Meets ASTM E2568
		Stucco	67	
ASTM E2485: Resistance to Freeze-Thaw Cycling	Observation under 5x Microscope	No Visual Failures		Meets ASTM E2568

4.0 ASTM C297: Tensile Bond Strength

4.1 General

This test method determines the flatwise tensile strength of assembled sandwich panels.

4.2 Test Specimens

Specimens were constructed by client by adhering Vipeq F08 Corkshield to a 2-in. x 2-in. corrugated metal siding and to a sand cement stucco. Specimens were adhered to self-aligning loading blocks on arrival as seen in Photo 3 and then conditioned at $73.4 \pm 5^{\circ}\text{F}$ and $50 \pm 3\%$ R.H. until moisture equilibrium. Specimen details can be seen in the table below.

Test Parameters	Values
Number of Sets	2 (Sand Cement Stucco and Corrugated Metal Siding)
Number of specimens per set	5
Displacement Rate	0.015-in./min for Sand Cement Stucco 0.010 in./min for Corrugated Metal Siding

4.3 Test Setup and Procedure

Each specimen was placed into the test machine after conditioning. The specimen was subjected to a uniform displacement rate which caused the specimen to reach ultimate load within three to six minutes from the start of the test. The displacement rate for each set can be seen in the table above. A load cell measured the force in the specimen; the data was continuously recorded by software. Data was used to calculate the ultimate tensile strength of the specimen. A photograph of the test setup is provided in Photo 2.

The conditions of acceptance for testing, per ASTM E2568, were that there was no failure in the adhesive coat, base coat, or finish coat. The insulation board shall fail cohesively except that 25 % adhesive failure is acceptable. For tested values of 15 psi (103 kPa) or greater, adhesive failure up to 100 % is acceptable.

Deviations from the standard include: None.

4.4 Test Results

Results from testing are provided in the table below.

Specimen Number	Substrate	Ultimate Load (lbf)	Ultimate Tensile Strength (psi)	Failure Mode
131143	Metal	324	80	Cohesion Failure of the F08 Corkshield
131144	Metal	245	61	Cohesion Failure of the F08 Corkshield
131145	Metal	296	75	Cohesion Failure of the F08 Corkshield
131146	Metal	345	84	Cohesion Failure of the F08 Corkshield
131147	Metal	194	47	Cohesion Failure of the F08 Corkshield
131148	Stucco	267	68	Cohesion Failure of the F08 Corkshield
131149	Stucco	263	67	Cohesion Failure of the F08 Corkshield
131150	Stucco	295	76	Cohesion Failure of the F08 Corkshield
131151	Stucco	295	72	Cohesion Failure of the F08 Corkshield
131152	Stucco	223	55	Cohesion Failure of the F08 Corkshield

5.0 ASTM E2485: Resistance to Freeze-Thaw Cycling

5.1 General

The test method herein looks at the effects of freezing and thawing on exterior insulation and finish systems.

5.2 Test Specimens

Five 6-inch square specimens were constructed by the client by adhering Vipeq F08 Corkshield to PVC. Each specimen was sealed with a nonpermeable coating around the back and edge. Test specimens were then stored in a laboratory set to maintain temperature in the range of 73.4 ± 3.6°F and humidity in the range of 50 ± 5% RH until testing.

5.3 Test Setup and Procedure

Specimens were subjected to 10 freeze-thaw cycles. Each cycle consisted of air drying at 120°F for a minimum of eight hours, followed by total immersion in water at 70°F to 80°F for minimum of eight hours and then exposed to -20°F in air for minimum of 16 hours. After 10 freeze thaw cycles each specimen was checked under a 5x magnification for any cracking or delamination.

The conditions of acceptance for testing, per ASTM E2568, were that after exposure there had to be no evidence of cracking, checking, crazing, erosion, or other characteristics that might affect performance as an exterior wall covering in each specimen.

Deviations from the standard include: None.

5.4 Test Results

Results from testing are provided in the table below.

Specimen Number	Pass/Fail
131215	Pass
131216	Pass
131217	Pass
131218	Pass
131219	Pass

6.0 Closing Statement

This report contains only findings and results arrived at after employing the specific test procedures listed herein. It does not constitute a recommendation for, endorsement of, or certification of the product or material tested. Unless differently required, ICC NTA, LLC reports apply the "Simple Acceptance" rule, also called "Shared Risk approach", of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity. ICC NTA makes no warranty, expressed or implied, except that the test has been performed, and a report prepared, based upon the specimen specified by the client. Extrapolation of data, from the test data provided herein, to the batch or lot from which the specimens were obtained may not correlate and should be interpreted with extreme caution. ICC NTA assumes no responsibility for variations in quality, composition, appearance, performance, or other features of similar materials produced by the client, other persons, or under conditions over which ICC NTA has no control. ICC NTA has issued this report for the exclusive use of the client to whom it is addressed. Any use or duplication of this report shall not be made without their consent. This report shall only be reproduced in its entirety.

For ICC NTA, LLC:

Cody Meyer
Senior Test Engineer

05/25/2021

Lucas Ward
Test Engineer

05/25/2021

Appendix A - Photographs

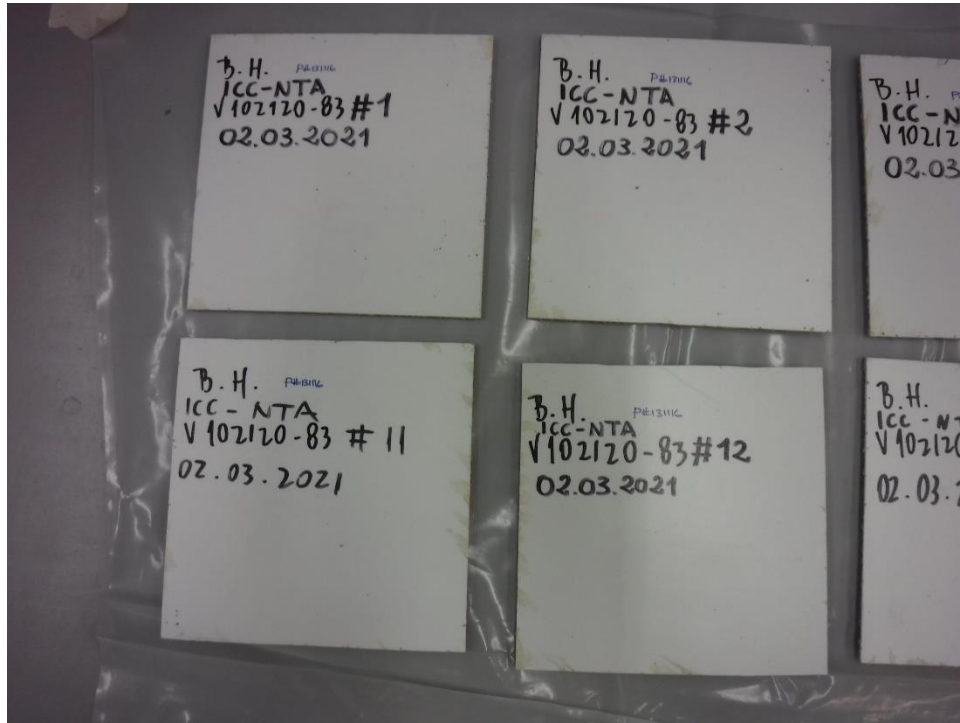


Photo No. 1
Sample Marking



Photo No. 2
ASTM C297 Test Setup



Photo No. 3
Cohesive Failure of F08 Corkshield During Testing (Metal)



Photo No. 4
Cohesive Failure of F08 Corkshield During Testing (Stucco)



Photo No. 5
Common Failure During Testing

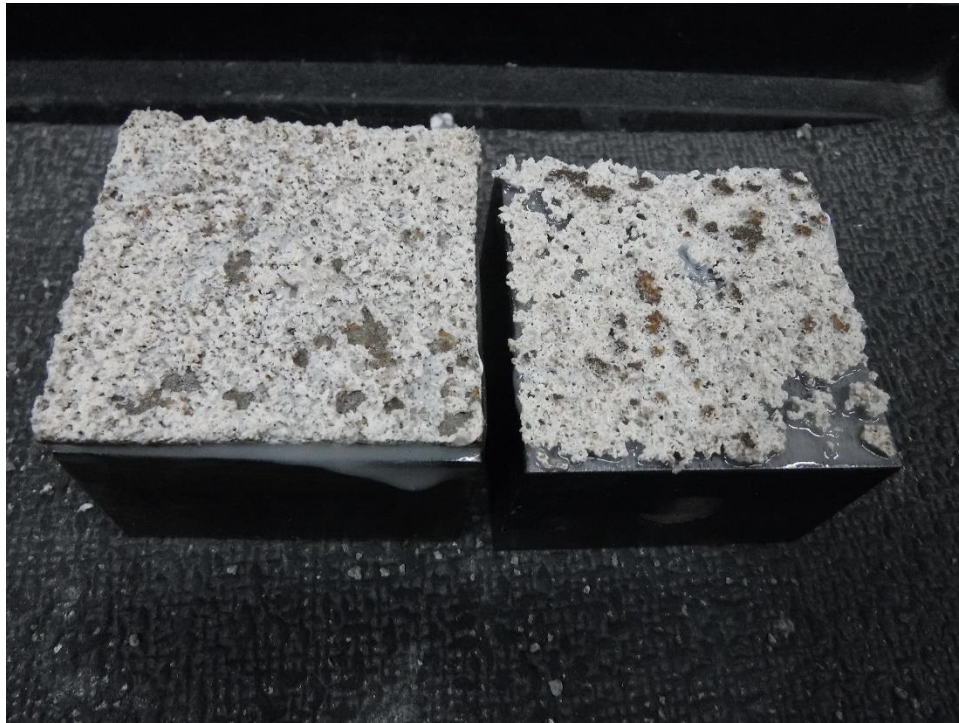


Photo No. 6
Failure Mode After Test

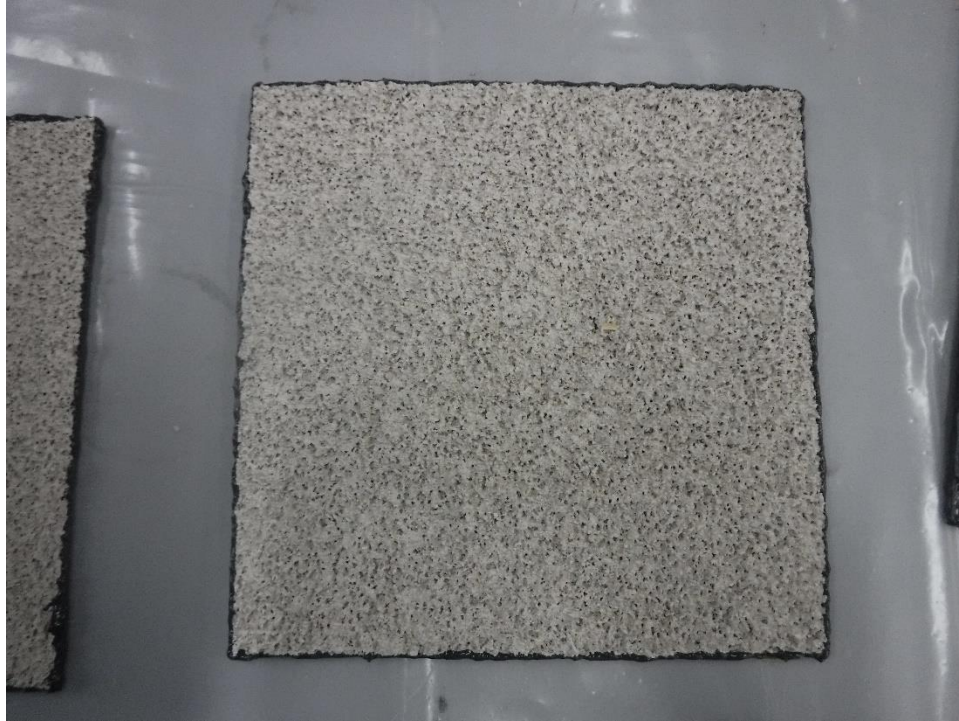


Photo No. 7
Specimens before Freeze-Thaw Cycling



Photo No. 8
Specimens After Freeze-Thaw Cycling

Appendix B - Data

V102120-79, ASTM C0297-16 TEST (Corrugated metal)
Summary Out Data

ICC NTA

SUMMARY DATA
ASTM C0297-16

Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions

Client: VIPEQ HISPANIA 2008 S.L. LP Test Location: ICC NTA
Job Number: V102120-79 *Nappanee, Indiana*

<p>General: Date Received: 3/25/2021 Construction Date: 4/14/2021 Constructed By: Melissa Johnson Performed By: Stephanie Truex Witnessed By: Lucas Ward</p>	<p>Apparatus: Balance: 00002 Measurement Device: 00691 Balance: 02454 Load Cell: 02091 Loading Frame: 00140</p>
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Results Summary:

Average Cross-Sectional Area (in. ²):	4.04
Average Ultimate Force P_{max} (lbf):	281
Average Ultimate Flatwise Tensile Strength F_z^{max} (psi):	70

Product Description:

Panel Trade Name: Vipeq F08 Corkshield on various substrate
 Panel Manufacturer: Vipeq Hispania 2008 S.L. LP
 Sheathing Material: Cork Granules From Amorim Adhered to S235JR (corrugated Metal siding)
 Core Material: N/A
 Core Manufacturer: N/A
 Test Variable: Samples constructed by client

Procedure Modifications: None

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SUMMARY DATA
ASTM C0297-16

Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions

Specimen Conditioning:

Conditioning Start Date: 4/28/2021
Start Temperature (°F): 72.1
Start Humidity (%R.H.): 50.1
Sensor Asset No.: 00587

Conditioning End Date: 4/29/2021
End Temperature (°F): 72.8
Start Humidity (%R.H.): 49.2
Sensor Asset No.: 00587

Table A1: Specimen Physical Properties

Specimen Number	Pre-Conditioning Average Measured Dimensions (in.)			Conditioned Weight* (g)
	Length	Width	Thickness	
1 131143	2.040	1.989	0.184	1238.600
2 131144	2.037	1.967	0.170	1219.880
3 131145	1.994	1.965	0.264	1235.600
4 131146	2.002	2.064	0.190	1221.560
5 131147	2.003	2.041	0.186	1237.520
Average	2.015	2.005	0.199	1230.632

*Bond blocks included in weight

Measured Panel Thickness w/Sheathing: 0.20 -in.

Test Data:

Test Date: 04/29/21
Test Machine Description: Instron Series 5580 Load Frame (00140)
Method of Bonding Specimens to Fixture Blocks: Adhesive
Environmental Chamber
Conditions (If applicable): N/A

Speed of Testing: 0.01 in/min.
Data Sampling Rate: 60 readings/min.

Table A2: Test Details and Results

Specimen Number	Post-Conditioning Average Measured Dimensions (in.)		Cross-Sectional Area (in. ²)	Ultimate Force P_{max} (lbf)	Ultimate Flatwise Tensile Strength F_z^{flu} (psi)	Elapsed Time ^a (min)
	Length	Width				
1 131143	2.040	1.989	4.057	324	80	4
2 131144	2.037	1.967	4.006	245	61	4
3 131145	1.994	1.965	3.919	296	75	4
4 131146	2.002	2.064	4.130	345	84	3
5 131147	2.003	2.041	4.089	194	47	3
Maximum	2.040	2.064	4.130	345	84	4
Minimum	1.994	1.965	3.919	194	47	3
Average	2.015	2.005	4.040	281	70	3.72
Std. Dev.	0.021	0.045	0.082	61.32	14.97	
COV (%)	1.06%	2.23%	2.02%	21.83%	21.53%	

^aElapsed time from start of test until ultimate is required to be between 3 to 6 minutes

Specimen Number	Failure Mode ^b	Notes
1 131143	CF	Cohesive failure
2 131144	CF	Cohesive failure
3 131145	CF	Cohesive failure
4 131146	CF	Cohesive failure
5 131147	CF	Cohesive failure

^b Failure Mode Definitions: CF - Core Failure CFCF - Cohesive Failure of Core-Facing Adhesive
FT - Facing Tensile Failure AFCF - Adhesive Failure of Core-Facing Adhesive

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SUMMARY DATA
ASTM C0297-16

Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions

Client: VIPEQ HISPANIA 2008 S.L. LP
Job Number: V102120-79

Test Location: *ICC NTA*
Nappanee, Indiana

General:	Apparatus:	Asset No.
Date Received: 3/25/2021	Balance:	00002
Construction Date: 4/14/2021	Measurement Device:	00691
Constructed By: Melissa Johnson	Balance:	02454
Performed By: Stephanie Truex	Load Cell:	02091
Witnessed By: Lucas Ward	Loading Frame:	00140

Results Summary:

Average Cross-Sectional Area (in ²):	3.98
Average Ultimate Force P_{max} (lbf):	268
Average Ultimate Flatwise Tensile Strength F_z^{FW} (psi):	67

Product Description:

Panel Trade Name: Vipeq F08 Corkshield on various substrate
 Panel Manufacturer: Vipeq Hispania 2008 S.L. LP
 Sheathing Material: Cork Granules From Amorim Adhered to PriPam Austerm (Stuuco) Sand Cement
 Core Material: N/A
 Core Manufacturer: N/A
 Test Variable: Samples constructed by client

Procedure Modifications: None

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SUMMARY DATA
ASTM C0297-16

Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions

Specimen Conditioning:

Conditioning Start Date: 4/28/2021	Conditioning End Date: 4/29/2021
Start Temperature (°F): 72.1	End Temperature (°F): 72.8
Start Humidity (%R.H.): 50.1	Start Humidity (%R.H.): 49.2
Sensor Asset No.: 00587	Sensor Asset No.: 00587

Table A1: Specimen Physical Properties

Specimen Number	Pre-Conditioning Average Measured Dimensions (in.)			Conditioned Weight* (g)
	Length	Width	Thickness	
1 131148	2.010	1.953	0.485	1225.180
2 131149	1.980	1.997	0.477	1231.300
3 131150	1.971	1.964	0.463	1231.200
4 131151	1.992	2.060	0.472	1232.060
5 131152	1.999	2.032	0.471	1232.060
Average	1.990	2.001	0.473	1230.360

*Bond blocks included in weight

Measured Panel Thickness w/Sheathing: 0.47 -in.

Test Data:

Test Date: 04/29/21	Speed of Testing: 0.015 in/min.
Test Machine Description: Instron Series 5580 Load Frame (00140)	Data Sampling Rate: 60 readings/min.
Method of Bonding Specimens to Fixture Blocks: Adhesive	
Environmental Chamber	
Conditions (If applicable): N/A	

Table A2: Test Details and Results

Specimen Number	Post-Conditioning Average Measured Dimensions (in.)		Cross-Sectional Area (in. ²)	Ultimate Force P_{max} (lbf)	Ultimate Flatwise Tensile Strength F_z^{fu} (psi)	Elapsed Time ^a (min)
	Length	Width				
1 131148	2.010	1.953	3.926	267	68	2
2 131149	1.980	1.997	3.953	263	67	3
3 131150	1.971	1.964	3.871	295	76	2
4 131151	1.992	2.060	4.101	295	72	3
5 131152	1.999	2.032	4.062	223	55	3
Maximum	2.010	2.060	4.101	295	76	3
Minimum	1.971	1.953	3.871	223	55	2
Average	1.990	2.001	3.983	268	67	2.71
Std. Dev.	0.015	0.045	0.096	29.66	8.00	
COV (%)	0.77%	2.24%	2.41%	11.05%	11.85%	

^a Elapsed time from start of test until ultimate is required to be between 3 to 6 minutes

Specimen Number	Failure Mode ^b	Notes
1 131148	CF	Cohesive failure
2 131149	CF	Cohesive failure
3 131150	CF	Cohesive failure
4 131151	CF	Cohesive failure
5 131152	CF	Cohesive failure

^b Failure Mode Definitions: CF - Core Failure CFCF - Cohesive Failure of Core-Facing Adhesive
FT - Facing Tensile Failure AFCF - Adhesive Failure of Core-Facing Adhesive

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SUMMARY DATA
ASTM E2485-13, Standard Test Method for Freeze/Thaw
Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish
Method B: 10 Cycles

General:

Client: VIPEQ HISPANIA 2008 S.L. LP	Date Received: 3/25/2021
Job Number: V102120-77	Construction Date: 4/18/2021
Test Location: ICC NTA Nappanee, Indiana	Constructed By: Dave Lane

Procedure Modifications: None

Product Description:

Manufacturer: Vipeq Hispania
 Trade Name/Designation: Vipeq F08 Corkshield
 Material / Construction Description: 6-in x 6-in F08 Corkshield on PVC

Test Data:	Apparatus:	Asset No.
Performed By: Melissa Johnson	Oven:	02145
Witnessed By: Cody Meyer	Oven Sensor:	02452
Test Start Date: 4/19/2021	Water Sensor:	00394
Test End Date: 5/13/2021	Freezer:	02145
	Freezer Sensor:	02452

Specimens were subjected to 10 freeze-thaw cycles.
 Each cycle consists of air-drying at a temperature of 120°F for a minimum of eight hours,
 immersion in water at 70°F to 80°F for eight hours,
 and exposure to a temperature of -20°F for 16 hours.

Failure is defined as surface changes, as viewed by minimum 5× magnification, such as cracking, checking, crazing, erosion or other characteristics, that may affect performance as an exterior wall covering. There shall be no delamination, or indications of delamination, between components.

Specimen Number	Observations	Pass/Fail
1 131215	No evidence of cracking, checking, crazing, erosion or delamination was observed on the face of the material.	Pass
2 131216	No evidence of cracking, checking, crazing, erosion or delamination was observed on the face of the material.	Pass
3 131217	No evidence of cracking, checking, crazing, erosion or delamination was observed on the face of the material.	Pass
4 131218	No evidence of cracking, checking, crazing, erosion or delamination was observed on the face of the material.	Pass
5 131219	No evidence of cracking, checking, crazing, erosion or delamination was observed on the face of the material.	Pass

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Appendix C - Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	05/25/2021	N/A	Original report issue