

REPORT NUMBER: 102860812MID-003 ORIGINAL ISSUE DATE: February 21, 2017 REVISED DATE: N/A

EVALUATION CENTER Intertek 8431 Murphy Drive Middleton, WI 53562 Ph: (608)836-4400

RENDERED TO

Advanced Formliners, LLC DBA Speedy Mason 501 Eagle Court Onalaska, WI 54650

PRODUCT EVALUATED: Speedy Mason Panel EVALUATION PROPERTY: Fastener Pull-Through Resistance

Report of Testing Speedy Mason Panel for compliance with the applicable requirements of the following criteria: ASTM D1037-12: *Evaluating Properties of Wood-Base Fiber Particle Panel Materials,* Section 15: Nail-Head Pull-Through

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EST REPORT



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2 **REVISION SUMMARY**

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3 INTRODUCTION

Intertek has conducted testing for Advanced Formliners LLC DBA Speedy Mason, on their Speedy Mason Panel, to evaluate Fastener Pull-Through Resistance. Testing was conducted following the standard methods of ASTM 1037-12: *Evaluating Properties of Wood-Base Fiber Particle Panel Materials*, Section 15: *Nail-Head Pull-Through*. This evaluation began February 14, 2017 and was completed February 21, 2017.

4 TEST SAMPLES

4.1. SAMPLE SELECTION

Samples were independently selected for testing by Intertek representative Gregory Dupuis at Advanced Formliners, LLC.'s Onalaska, WI facility on February 2, 2017. Samples were received at the Evaluation Center on February 3, 2017 in good condition and labeled as MID1702030920.

4.2. SAMPLE AND ASSEMBLY DESCRIPTION

The Speedy Mason Panel is described as a 16" x 96" extruded polypropylene liner panel for use in a thin brick system.

Nails evaluated in this test were $1 \frac{1}{2}$ " ring shank nails, with a 0.354 in. diameter head and a 0.123 in. diameter shank.

Screws evaluated in this test were 2 1/2" screws, with a 0.326 in. diameter head and a 0.181 in. diameter shank.

5 TESTING AND EVALUATION METHODS

5.1. ASTM D1037 NAIL-HEAD PULL-THROUGH

Ten (10) test samples of the Speedy Mason Panel were prepared approximately 4 inches by 6 inches. The samples were conditioned for 40+ hours at a temperature of $23 \pm 2^{\circ}$ C and a relative humidity of 50 \pm 5%. Length and width dimensions were measured and recorded. The test samples were restrained by a test fixture containing a 3" diameter hole centered on the sample. A supplied nail fastener was driven through the nailing fin section of each sample until flush with the fins. The end of the driven fastener was then gripped by the test machine and loaded in tension at a uniform displacement of 0.06 in/min until failure. The maximum load required to draw each fastener through the test panel was recorded.



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5.2. ASTM D1037 SCREW-HEAD PULL-THROUGH

Ten (10) test samples of speedy mason panel board were prepared approximately 4 inches by 6 inches. The samples were conditioned for 40+ hours at a temperature of $23 \pm 2^{\circ}c$ and a relative humidity of $50 \pm 5\%$. Length and width dimensions were measured and recorded. The test samples were restrained by a test fixture containing a 3" diameter hole centered on sample. A supplied screw fastener was driven through the nailing fin section of each sample until flush with the fins. The end of the driven fastener was then gripped by the test machine and loaded in tension at a uniform displacement of 0.06 in/min until failure. The maximum load required to draw each fastener through the test panel was recorded.

6 **TESTING AND EVALUATION RESULTS**

6.1. RESULTS AND OBSERVATIONS

The average results for the nail and screw pull-through resistance tests are listed below. Note that an appropriate factor of safety has not been applied to these values and they may not be used for design.

Results for Speedy Mason Panel by Advanced Formliners, LLC DBA Speedy Mason			
Average Nail Pull-Through Resistance	116.9 lbf [5.5 S.D. lbf]		
Average Screw Pull-Through Resistance	109.5 lbf [3.3 S.D. lbf]		

7 CONCLUSION

Intertek has conducted testing for Advanced Formliners LLC DBA Speedy Mason, on their Speedy Mason Panel, to evaluate Fastener Pull-Through Resistance. Testing was conducted following the standard methods of ASTM 1037-12: *Evaluating Properties of Wood-Base Fiber Particle Panel Materials*, Section 15: *Nail-Head Pull-Through*. This evaluation began February 14, 2017 and was completed February 21, 2017. Results presented in the above table have not been adjusted with an appropriate factor of safety and should not be used in design.

The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

Reported by:

Renor Seals Technician

Reviewed by:

Andrew Holstein Engineering Team Lead



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Appendix A- EQUIPMENT CALIBRATION

Equipment	Asset Number	Calibration Date
Instron Universal Test Frame	0870	1/4/2018
Mitutoyo 8" Caliper	1347	10/11/17



REPORT NUMBER: 102860812MID-004 ORIGINAL ISSUE DATE: March 28, 2017 REVISED DATE: N/A

EVALUATION CENTER Intertek 8431 Murphy Drive Middleton, WI 53562 Ph: (608)836-4400

RENDERED TO

Advanced Formliners, LLC 501 Eagle Court Onalaska, WI 54650

PRODUCT EVALUATED: Speedy Mason Panel EVALUATION PROPERTY: Water Vapor Transmission and Permeance

Report of Testing Speedy Mason Panel following the standard methods of ASTM E96-16: *Water Vapor Transmission of Materials*.

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TEST REPORT



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2 REVISION SUMMARY

DATE	SUMMARY
March 28, 2017	Date of original report



Advanced Formliners, LLC Report No. 102860812MID-004 March 28, 2017 Page 3 of 5

3 INTRODUCTION

Intertek has conducted testing for Advanced Formliners, LLC, on their Speedy Mason Panel, to evaluate Water Vapor Transmission. Testing was conducted following the standard methods of ASTM E96-16: *Water Vapor Transmission of Materials*. This evaluation began March 6, 2017 and was completed March 28, 2017.

4 TEST SAMPLES

4.1. SAMPLE SELECTION

Samples were independently selected for testing by Intertek representative Greg Dupuis on January 13, 2017. Samples were received at the Evaluation Center on February 3, 2017 in good condition and labeled as MID1702030920.

4.2. SAMPLE AND ASSEMBLY DESCRIPTION

The Speedy Mason Panel is described as a 16" x 96" extruded polypropylene liner panel for use in a thin brick system.

5 TESTING AND EVALUATION METHODS

ASTM E96 Water Vapor Transmission

Four (4) test samples of Speedy Mason Panel were prepared with a 2.5-inch diameter. The first sample (labeled A) was used as a control and attached to an empty 2.5-inch metal cup. The remaining samples (labeled B, C, and D) were attached to 2.5-inch metal cups filled with anhydrous calcium chloride desiccant to within 0.25 inch of the sample. All four (4) samples were placed in an environmental chamber at $23 \pm 2^{\circ}$ C and a relative humidity of $50 \pm 2\%$ for 408 hours. Periodic measurements were taken to determine weight change over the course of the 408 hours to determine the rate of water vapor transmission.



Advanced Formliners, LLC Report No. 102860812MID-004

6 TESTING AND EVALUATION RESULTS

6.1. RESULTS AND OBSERVATIONS

Results for Speedy Mason Panel by Advanced Formliners LLC		
Water Vapor Transmission per ASTM E96	0.05 (g/h·m ²) [S.D. 0.02 (g/h·m ²)] 0.08 (grains/h·ft ²) [S.D. 0.03 (grains/h·ft ²)]	
Permeance per ASTM E96	10.52 ng/(Pa.s.m2) [S.D. 3.45 ng/(Pa.s.m2)] 0.18 (Perms) [S.D. 0.06 (Perms)]	

7 CONCLUSION

Intertek has conducted testing for Advanced Formliners, LLC, on their Speedy Mason Panel, to evaluate Water Vapor Transmission. Testing was conducted following the standard methods of ASTM E96-16: *Water Vapor Transmission of Materials*. This evaluation began March 6, 2017 and was completed March 28, 2017.

The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

Reported by:

Renor Seals Technician

Reviewed by:

Andrew Holstein Engineer Team Lead



Advanced Formliners, LLC Report No. 102860812MID-004

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EQUIPMENT CALIBRATION

Equipment	Asset Number	Calibration Date
Envirotronics SH27 Environmental Chamber	0784	4/7/2017
Mettler Toledo AB3045 Analytical Balance	1045	1/25/2018



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Intertek Testing Services NA Inc. 8431 Murphy Drive Middleton, WI 53562

Telephone: +1 (608) 836-4400 Facsimile: +1 (608) 831-9279 www.intertek.com

Issue Date: April 26, 2017

Tony Szak Advanced Formliners LLC DBA Speedy Mason 501 Eagle Ct. Onalaska, WI 54650

Subject: Results of TAS 201 testing of Speedy Mason Panel Wall Assembly

Dear Mr. Szak,

This letter report serves to notify you regarding the results of recent impact testing of your Speedy Mason Panel Wall Assembly per TAS 201-94. Four sample wall assemblies were received at the Middleton Evaluation Center on April 17, 2017 and testing per TAS 201-94 commenced on April 18, 2017. Two missiles were fired at the first impact sample and the results are tabulated below and depicted in figures 1-4.

			Missile		
			Weight	Speed	
	Impact #	Impact Location	(lbm)	(fps)	Comments
	1	Sample 1 Center	9.2	49.9	Brick dislodged, OSB cracked, no
_		-			penetration. See figures 1-2.
	2	Sample 1 Lower Right	9.2	50.3	Brick dislodged, OSB cracked, through
	2		5.2	50.5	penetration. See figures 3-4.



Figure 1- Impact location #1 front view



Figure 2- Impact location #1 rear view



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Letter Report No: 102860812MID-005





Figure 3- Impact location #2 front view



Figure 4- Impact location #2 rear view

If you have any questions regarding this letter report, please do not hesitate to contact the undersigned.

Sincerely,

INTERTEK TESTING SERVICES NA INC.

Reported by:

Reviewed by:

Andrew Holstein, Ph.D. Engineering Team Lead Russ Burt Senior Associate Engineer





REPORT NUMBER: 102860812MID-006

ORIGINAL ISSUE DATE: May 8, 2017

EVALUATION CENTER Intertek 8431 Murphy Drive Middleton, WI 53562 Ph: (608)836-4400

RENDERED TO

Advanced Formliners LLC DBA Speedy Mason 501 Eagle Ct. Onalaksa, WI 54650

PRODUCT EVALUATED: Speedy Mason Panel Wall Assembly

EVALUATION SPECIFICATIONS:

Evaluated Specification	Result	
Air Infiltration per ASTM E283-12	<0.01 cfm/ft ² at 1.57 psf	
Water Penetration per ASTM E331-16	No Leakage at 11.27 psf	
Structural Performance per ASTM E330-14	Sustained +/- 112.5 psf	

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2 **REVISION SUMMARY**

DATE	SUMMARY
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3 INTRODUCTION

Intertek has conducted testing for Advanced Formliners LLC, DBA Speedy Mason on their Speedy Mason Panel Wall Assembly to evaluate air infiltration, water penetration, and structural performance.

This evaluation began April 17, 2017 and was completed April 19, 2017. All test records for this report will be retained until May 8, 2027.

4 TEST SAMPLES

4.1. SAMPLE SELECTION

Samples were independently selected for testing by Intertek representative Greg Dupuis on March 20, 2017. Samples were received at the Middleton Evaluation Center on April 17, 2017 in good condition and labeled as MID1704171029.

4.2. SAMPLE DESCRIPTION

The primary evaluated product was an extruded polypropylene wall liner system sold in 16" x 96" panels for use as a thin brick support system.

4.3. **PRODUCT SIZES:**

Overall Area :	Width	Height
32.0 ft ²	(in.)	(in.)
Overall Size	48	96

4.4. WALL CONSTRUCTION:

Speedy Mason panels (modular configuration) were installed on a 48" \times 96" wall specimen composed of nominal 2 \times 4 #2 Doug Fir wood studs spaced 16" on center and sheathed with 7/16" Oriented Strand Board (OSB). The OSB was attached to the studs with 2-3/8" \times 0.113" nails spaced 6" o.c. along the edges and 12" o.c. at the intermediate supports. Sheathing panels were installed in such a manner that resulted in a 48" unsupported horizontal seam at the vertical center of the wall. Typar water vapor barrier and 1" R-5 XPS continuous insulation was installed between the sheathing and Speedy Mason panels. The Speedy Mason panels were cut to 32" and 16" long and installed horizontally with #8 \times 2 ½" stainless steel screws through the nail track pattern spaced 8" o.c. Panels were installed in such a manner that resulted in a minimum of 288" of horizontal seams and 96" of staggered vertical seams. Speedy Mason Mortar Mix was applied to the panels and modular style 3/8" thin bricks were installed. Wall assemblies were allowed to cure for 28 days prior to installation and testing.

4.5. INSTALLATION

The wall assembly was installed in a nominal 2 x 12 Spruce-Pine-Fir wood buck and secured with two 16d common nails spaced 16" o.c. through the top and bottom plates. The perimeter of the wall assembly was sealed with silicone sealant and allowed to cure.



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4.6. **PRODUCT DRAWINGS:**

The test specimen drawings have been reviewed by Intertek and are representative of the test specimen reported herein. Test specimen construction was verified by Intertek per the drawings located in Appendix D. Any deviations are documented herein or on the drawings.

5 TESTING AND EVALUATION RESULTS

The following table contains the results of air infiltration testing in accordance with ASTM E283.

Test Pressure	Results	
Air Infiltration at 1.57 psf	<0.01 cfm/ft ²	

The following table contains the results of positive and negative uniform static load testing in accordance with ASTM E330. All loads held for a duration of 30 seconds. The vertical seals between the sample and buck were removed for structural loading so that the assembly was supported solely by the top and bottom plates. Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Load	Deflection		Permanent Set	
(psf)	(inch)	Span Ratio	(inch)	Span Ratio
+56.25 50% of Test Pressure	0.25	L/373	0.02	L/4663
+75.00 Design Pressure	0.36	L/263	0.04	L/2664
-56.25 50% of Test Pressure	0.40	L/236	0.04	L/2331
-75.00 Design Pressure	0.55	L/170	0.06	L/1695

*See Sketch #1 for Deflection indicator locations.

The following table contains the results of water penetration testing in accordance with ASTM E331. Prior to testing, the sample perimeter was sealed with silicone sealant and allowed to cure.

Test Pressure	Results
Water Penetration at 11.28 psf	Pass



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The following table contains the results of positive and negative structural overload testing in accordance with ASTM E330. All loads were held for 30 seconds. The vertical seals between the sample and buck were removed for structural loading so that the assembly was supported solely by the top and bottom plates. Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Load	Defle	ection	Permar	Permanent Set	
(psf)	(inch)	Span Ratio	(inch)	Span Ratio	
+112.5 Test Pressure	0.62	L/150	0.05	L/1865	
-112.5 Test Pressure	0.86	L/109	0.07	L/1435	

*See Sketch #1 for Deflection indicator locations.

Intertek observed no signs of failure in any area of the specimen during the ASTM E330 Structural Performance testing.



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6 CONCLUSION

Intertek has conducted testing for Advanced Formliners LLC, DBA Speedy Mason on their Speedy Mason Panel Wall Assembly.

This evaluation began April 17, 2017 and was completed April 19, 2017. All test records for this report will be retained until May 8, 2027.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Intertek.

If you have any questions or concerns about the testing contained herein, please do not hesitate to contact the undersigned.

INTERTEK

Completed by:_

Russ Burt Senior Associate Engineer

Reviewed by:

Andrew Holstein, Ph.D. Engineering Team Lead

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Location of Air Seal (1) Appendix B: Sample Photograph (1) Appendix C: Deflection Indicator Sketch (1) Appendix D: Product Drawing (1)



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Appendix A- LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.





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Appendix B- SAMPLE PHOTOGRAPH





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Appendix C- DEFLECTION INDICATOR SKETCH

Sketch #1: Deflection Indicator Locations (Bricks/sheathing omitted for clarity)



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Appendix D- PRODUCT DRAWING





REPORT NUMBER: 102860812MID-009 ORIGINAL ISSUE DATE: April 26, 2017

EVALUATION CENTER Intertek 8431 Murphy Drive Middleton, WI 53562 Ph: (608)836-4400

RENDERED TO

Advanced Formliners LLC, DBA Speedy Mason 501 Eagle Ct. Onalaska, WI 54650

PRODUCT EVALUATED: Speedy Mason Panel Wall Assembly EVALUATION PROPERTY: Dynamic Water Penetration

Report of testing Speedy Mason Panel Wall Assembly for Water Penetration in accordance with AAMA 501.1-05: *Standard Test Method for Water Penetration of Windows, Curtain walls and Doors using Dynamic Pressure*

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2 **REVISION SUMMARY**

DATE	SUMMARY		
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3 INTRODUCTION

Intertek has conducted testing for Advanced Formliners LLC, DBA Speedy Mason, on their Speedy Mason Panel Wall Assembly, to evaluate Water Penetration. Testing was conducted following the standard methods of AAMA 501.1-05: *Standard Test Method for Water Penetration of Windows, Curtain walls and Doors using Dynamic Pressure*. This evaluation began April 19, 2017 and was completed April 19, 2017.

4 TEST SAMPLES

4.1. SAMPLE SELECTION

Samples were independently selected for testing by Intertek representative Greg Dupuis on March 20, 2017. Samples were received at the Middleton Evaluation Center on April 17, 2017 in good condition and labeled as MID1704171029.

4.2. SAMPLE AND ASSEMBLY DESCRIPTION

The primary evaluated product was an extruded polypropylene wall liner system sold in 16" x 96" panels for use as a thin brick support system.

Speedy Mason panels (modular configuration) were installed on a 48" \times 96" wall specimen composed of nominal 2x4 #2 Doug Fir wood studs spaced 16" on center and sheathed with 7/16" Oriented Strand Board (OSB). The OSB was attached to the studs with 2-3/8" \times 0.113" nails spaced 6" o.c. along the edges and 12" o.c. at the intermediate supports. Sheathing panels were installed in such a manner that resulted in a 48" unsupported horizontal seam at the vertical center of the wall. Typar water vapor barrier and 1" R-5 XPS continuous insulation was installed between the sheathing and Speedy Mason panels. The Speedy Mason panels were cut to 32" and 16" long and installed horizontally with #8 \times 2 ½" stainless steel screws through the nail track pattern spaced 8" o.c. Panels were installed in such a manner that resulted in a minimum of 288" of horizontal seams and 96" of staggered vertical seams. Speedy Mason Mortar Mix was applied to the panels and modular style 3/8" thin bricks were installed. Wall assemblies were allowed to cure for 28 days prior to installation and testing.

The wall assembly was installed in a nominal 2 x 12 Spruce-Pine-Fir wood buck and secured with two 16d common nails spaced 16" o.c. through the top and bottom plates. The perimeter of the wall assembly was sealed with silicone sealant and allowed to cure.

Photos of the sample are included in Appendix B of this report.



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5 TESTING AND EVALUATION METHODS

5.1. AAMA 501.1-05 Standard Test Method for Water Penetration of Windows, Curtain walls and Doors using Dynamic Pressure

6 **TESTING AND EVALUATION RESULTS**

6.1. RESULTS AND OBSERVATIONS

Dynamic Test Pressure Duration		Results	
15 PSF	15 minutes	Pass- No leakage observed	

7 CONCLUSION

Intertek has conducted testing for Advanced Formliners LLC, DBA Speedy Mason, on their Speedy Mason Panel Wall Assembly, to evaluate Water Penetration. Testing was conducted following the standard methods of AAMA 501.1-05: *Standard Test Method for Water Penetration of Windows, Curtain walls and Doors using Dynamic Pressure*. This evaluation began April 19, 2017 and was completed April 19, 2017.

The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

Reported by:

Russ Burt Senior Associate Engineer

Reviewed by:

Andrew Holstein, Ph. D. Engineering Team Lead



April 26, 2017 Page 5 of 6

Appendix A- EQUIPMENT CALIBRATION

Equipment	Asset Number	Calibration Due
Timer	908	April 2018
WOLF Wind Generator	005436	October 2017
Spray Rack	005591	April 2017

Appendix B- PHOTOS





April 26, 2017 Page 6 of 6

Appendix C- DRAWING

